

Lower Duchesne River Wetlands Mitigation Project



UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION



UTE INDIAN TRIBE



FINAL ENVIRONMENTAL IMPACT STATEMENT

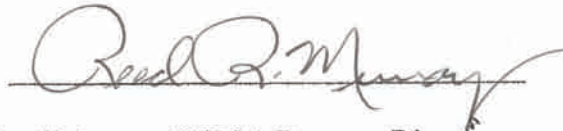
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**UTAH RECLAMATION MITIGATION AND
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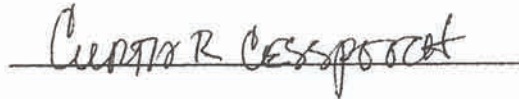
**Final Environmental Impact Statement
For the
Lower Duchesne River
Wetlands Mitigation Project**



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Cover Sheet
Lower Duchesne River Wetlands Mitigation Project

() Draft

(X) Final

Joint Lead Agencies/Project Partners

Utah Reclamation Mitigation and Conservation
Commission
U.S. Department of the Interior
Ute Indian Tribe

Counties that Could be Affected

Duchesne and Uintah, Utah

Cooperating Agencies

U.S. Bureau of Indian Affairs
U.S. Fish and Wildlife Service
U.S. Bureau of Reclamation
Duchesne County
Uintah County

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Abstract

This Final Environmental Impact Statement (FEIS) covers the Lower Duchesne River Wetlands Mitigation Project (LDWP). The LDWP responds to the need to mitigate for past impacts of the Strawberry Aqueduct and Collection System (SACS) flow diversions on Tribal wetland and wildlife resources along the Duchesne River downstream of Starvation Reservoir, as initially committed to by the 1965 Deferral Agreement. Three action alternatives were considered to restore wetlands and riparian habitat and associated Tribal benefits along the Duchesne River. All three alternatives are composed of a combination of fee lands to be acquired by the federal government and Tribal Trust lands. Under the Proposed Action, acquired fee lands would be transferred to Tribal fee status with no net loss of fee lands. Under the other alternatives, acquired fee lands would remain in federal ownership. All lands included within the project would be managed by the Tribe in accordance with plans specified in the Project Operating Agreement and Management Plans. All three alternatives would use a variety of restoration measures including rewatering oxbows, connecting oxbows to form contiguous systems, enlarging oxbows, enhancing water quality in oxbows, filling of one large drainage ditch to create a large marsh complex, replanting riparian areas with native woody trees and shrubs, removing non-native invasive species and changing management of areas adjacent to wetlands to benefit wildlife. The Proposed Action would comprise 4,807 acres. The Pahcease and Topanotes alternatives would comprise 6,765 and 6,648 acres, respectively. The No Action Alternative would not restore any wetland or wildlife habitat or compensate the Tribe for loss of associated wildlife on Tribal Trust lands. Major environmental issues identified during public scoping and the DEIS comment period are addressed in this FEIS, and include the following resource topics: potential economic impacts, acquisition of private land by the federal government, mosquito and weed control, impacts on water right holders, wildlife benefits and completion of the mitigation obligation.

Other Requirements Served

This FEIS is intended to serve other environmental review and consultation requirements pursuant to 40 CFR 1502.25 (a) and Section 7 of the Endangered Species Act.

Date DEIS Made Available to EPA and the Public: November 12, 2003

Date FEIS Made Available to EPA and the Public: April 14, 2008

READER'S GUIDE TO THE FEIS

This Final Environmental Impact Statement (FEIS) has been prepared to analyze and disclose the effects of three action alternatives for implementing restoration measures in the Lower Duchesne River area. This project is known as the Lower Duchesne River Wetlands Mitigation Project (LDWP). The FEIS is divided into the following sections:

- Table of Contents. This section provides detailed information on all the sections and subsections of the documents. Additionally, all the tables, maps and figures in the document are listed.
- Summary. A summary of the FEIS is located at the beginning of the document.
- Chapter 1 provides the project background, defines the purpose of and need for the LDWP and provides an overview of the alternatives.
- Chapter 2 presents construction details, land ownership and acquisition and features, and project management for the alternatives.
- Chapter 3 provides a comparative summary of the differences between alternatives.
- Chapter 4 includes a description of the baseline conditions in the project area and provides a summary of expected impacts from LDWP construction and operation.
- Chapter 5 summarizes consultation and coordination activities conducted during the LDWP planning process.
- The List of Preparers section describes the qualifications of the individuals who contributed to the preparation of the FEIS.
- Acronyms and Abbreviations and the Glossary provide a reference for terms used in the FEIS, while the References section provides information on sources quoted throughout the document.
- Appendices provide more detailed information on specific topics germane to the project. Included is information on Standard Operating Procedures that would be followed in project implementation (Appendix A), a Weed Control Plan (Appendix B), background information on the process used to assess wetland functions and results of that analysis (Appendix C), documentation of the processes used to determine impact analyses (Appendix D), a Mosquito Control Plan (Appendix G) and a local agricultural production evaluation (Appendix H). Pertinent agency correspondence and documents are also included in the appendices, such as correspondence from the U.S. Fish and Wildlife Service regarding threatened and endangered species (Appendix E), a Programmatic Agreement that would ensure certain stipulations are implemented to protect historic properties (Appendix F) and correspondence from the BIA regarding trust resources (Appendix I).

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**Lower Duchesne River
Wetlands Mitigation Project**

Final Environmental Impact Statement

SUMMARY

SUMMARY

S.1 INTRODUCTION

The Lower Duchesne River Wetlands Mitigation Project (LDWP) is a Federally mandated project to restore and enhance wetland, riparian and supporting upland along the Duchesne River in the Uinta Basin in Northeastern Utah. The project responds to a need to fulfill mitigation commitments made to the Ute Indian Tribe (Tribe) that resulted from the development of the Bonneville Unit of the Central Utah Project (CUP). The CUP is a major water development project that develops water resources for use locally in the Uinta Basin and that diverts and transports Colorado River water from the Uinta Basin to populous areas on the Wasatch Front. This trans-basin diversion has harmed the Tribe by reducing flows in the Duchesne River, causing a loss of wetlands and wildlife that were important to the Tribe. The purpose of the LDWP is to mitigate for these Tribal losses and to provide additional wetland-wildlife benefits to the Tribe.

S.1.1 Purpose of this Summary

A summary is an essential component of an Environmental Impact Statement (EIS) as required by the National Environmental Policy Act (see 40 CFR 1502.1). At a minimum, the summary should provide an accurate and thorough overview of the EIS. Additionally, it should stress the major conclusions of the EIS, areas of controversy (especially those raised by the public and governmental agencies) and the issues to be resolved. This summary fulfills this requirement in the following organizational format:

- S.1 Introduction and Purpose of the Summary
- S.2 Summary of Chapter 1, Highlighting Background Information and Development of the Proposed Action and Alternatives
- S.3 Public Concerns, Issues, and Areas of Controversy
- S.4 Summary Description of the Proposed Action and Alternatives
- S.5 Major Impact Conclusions, Affected Environment and Environmental Consequences
- S.6 Coordination and Consultation

S.2 SUMMARY OF CHAPTER 1

S.2.1 Background, Purpose and Need

The CUP, originally authorized in 1956 as part of the Colorado River Storage Project Act, is a massive water development project intended to assist Utah in utilizing its apportionment of waters from the Colorado River. The Bonneville Unit, the most expensive and complex subunit of the CUP, is being constructed to deliver water from the Uinta Basin to the populous Wasatch Front. One completed feature of the Bonneville Unit is the Strawberry Aqueduct and Collection System (SACS), an aqueduct system that gathers water from the upper Duchesne River and various tributaries. This water is transported to Strawberry Reservoir for storage and eventual use on the Wasatch Front.

As a result of construction and operation of SACS, wetland-wildlife habitat was lost along the Duchesne River and adjacent to Strawberry Reservoir. Much of these wetland losses occurred on Uintah and

Ouray Indian Reservation lands. As a result, the Tribe lost certain benefits associated with such wetlands, including wetland and riparian habitats, hunting opportunities, plants and fish and wildlife important to the Tribe.

The Federal government recognized as early as 1964 that construction of the CUP would harm the interests of the Tribe. In response, the U.S. Fish and Wildlife Service (FWS) recommended in 1965 that wildlife management areas totaling 6,640 acres be developed to replace wetland and waterfowl habitat for the benefit of the Tribe. The U.S. Bureau of Reclamation (Reclamation), the federal agency then responsible for constructing CUP, adopted this recommendation as a project feature in its September 1965 Supplement to the 1964 Definite Plan Report. The project commitment was affirmed again with the issuance of the 1988 and 2004 Definite Plan Reports for the Bonneville Unit.

The Central Utah Project Completion Act of 1992 (CUPCA) again reaffirmed the commitment of the federal government to complete all unfulfilled mitigation obligations of the CUP and at the same time recognized that fulfillment of these obligations had not kept pace with construction of project features. With the passage of CUPCA, Congress created the Utah Reclamation Mitigation and Conservation Commission (the Mitigation Commission) and gave that new agency the authority and responsibility to complete the unfulfilled CUP environmental mitigation obligations. The CUPCA also established the CUP Completion Act Office under the Office of the Secretary of the Department of the Interior (DOI) to oversee implementation of CUPCA.

The Mitigation Commission and the DOI are the joint-lead agencies for this Final EIS. The Tribe is a key project partner as there is a substantial involvement and commitment of Tribal trust resources involved in the LDWP. Decision making authority for selecting which LDWP alternative to implement rests with the three project partners for this FEIS: the Mitigation Commission, the DOI-Central Utah Project Completion Act Office and the Tribe.

S.2.2 The Development of the Proposed Action and Alternatives

In 1995, the Mitigation Commission initiated planning for the LDWP with the Tribe and DOI. By that time it had been 31 years since the original SACS mitigation obligation had been recognized by Reclamation in the 1964 DPR and in the 1965 Deferral Agreement with the Ute Tribe. Accordingly, a feasibility study was completed in 1998 that reevaluated and revised the original mitigation commitment to embrace more current concepts such as habitat restoration, wetland diversity and ecosystem management required in CUPCA. Greater consideration was given to a much broader range of wetland-dependent species, including deer, raptors, wading birds and songbirds. The U.S. Fish and Wildlife Service (FWS), U.S. Bureau of Indian Affairs (BIA) and Reclamation assisted the Commission, DOI, and Tribe in this planning effort.

The Draft Environmental Impact Statement (DEIS) for the LDWP, issued in 2003, presented three action alternatives. Each alternative addressed the obligation to provide mitigation to the Tribe for the impacts of SACS on wetlands adjacent to the Duchesne River and to provide additional wetland-wildlife benefits to the

Tribe. In addition, the Proposed Action presented in the DEIS also intended to fulfill the federal government mitigation obligation for the related Duchesne River Area Canal Rehabilitation Program (DRACR).

S.3 ISSUES, PUBLIC CONCERNS, AND AREAS OF CONTROVERSY

Several areas of concern and issues were raised during scoping, consultation with cooperating and other agencies, and public review of the DEIS. The impact analysis contained in Chapter 4 of this FEIS addresses those issues in detail. There were several recurring concerns or areas of controversy expressed during public review of the DEIS. In response, the Proposed Action was revised in several important ways (refer to Chapter 5 of the FEIS). Key and recurring issues as well as revisions that were made to the Proposed Action in response to those comments are summarized below and are addressed in greater detail later in this Summary and in the FEIS. A summary table of the environmental impacts of the Proposed Action and Alternatives is also provided at the end of this summary and Figure S-1 on the following page shows the Project Area Map for the Proposed Action.

Issue: The Duchesne River Area Canal Rehabilitation program (DRACR) mitigation obligation should be kept separate from the LDWP.

Response: The DRACR mitigation component has been eliminated from consideration in conjunction with the LDWP mitigation obligation. The Mitigation Commission will develop plans for the DRACR mitigation program, separate and apart from the LDWP.

Issue: The LDWP will increase mosquitoes [and the risk of mosquito-borne West Nile Virus] and the need for mosquito control.

Response: Approximately 43% of the project boundary provides suitable mosquito producing habitat under baseline conditions, and the Proposed Action would increase this amount by 11%. Although the Proposed Action would result in an increase in potential mosquito habitat, there would be less acreage of untreated mosquito habitat under the Proposed Action compared to baseline conditions (Figure S-2). This is because the LDWP would implement a comprehensive mosquito control program that has been expanded and included as Appendix G of the FEIS. All potential breeding habitats within the project boundaries would be treated in accordance with the Mosquito Control Plan.


Issue: The LDWP will increase the amount of weeds in the area and increase the burden on local governments and nearby private landowners for weed control.

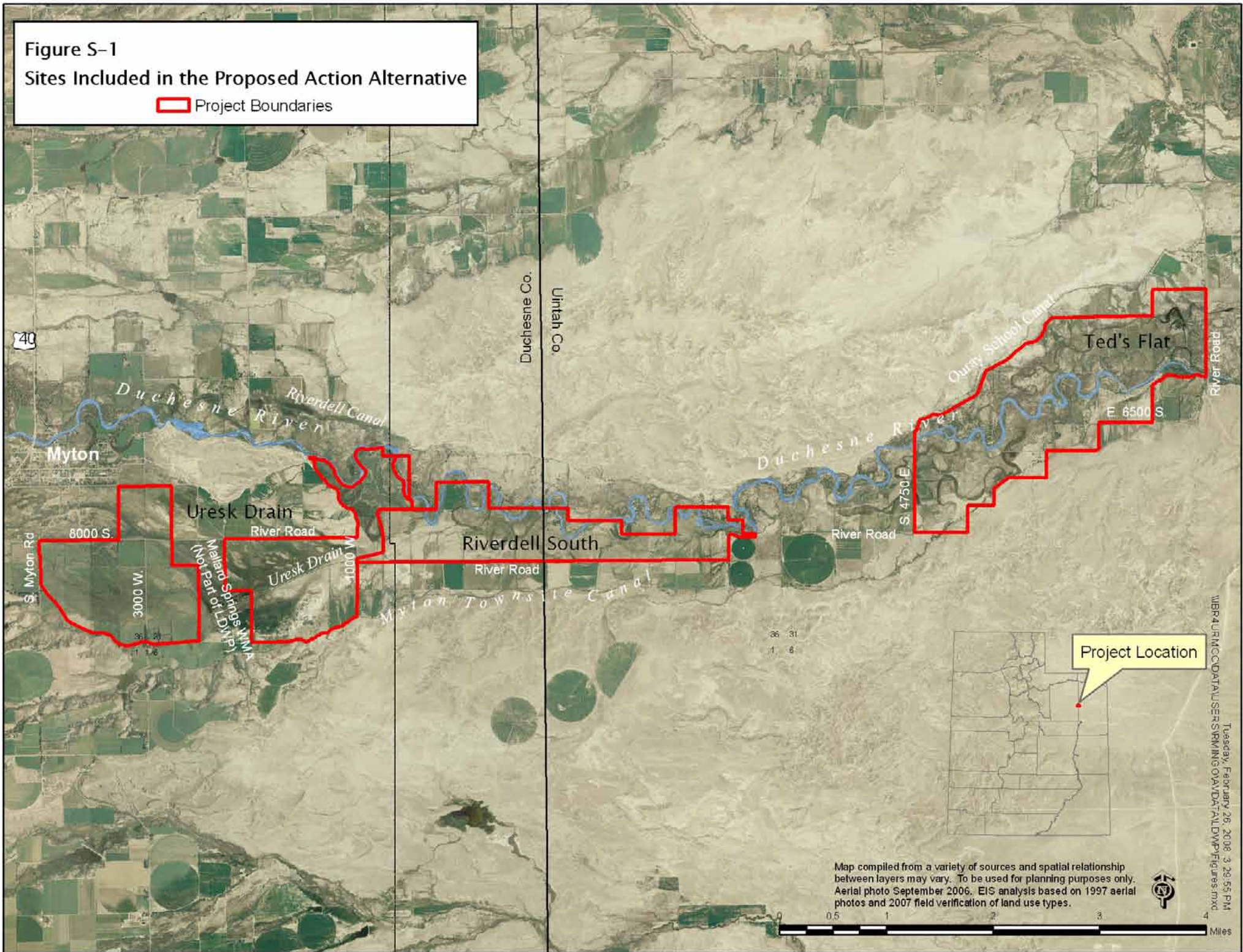
Response: The LDWP will result in a reduction in noxious weeds compared to the No Action Alternative, especially Russian olive, pepperweed, and tamarisk. Noxious weed control would take place during all phases of the project, from preconstruction and construction to operation and maintenance (O&M) in accordance with a detailed weed control plan included as part of the LDWP (Appendix B). Weed control is an LDWP project objective to improve wetland wildlife habitat.

Issue: Funding of mosquito and weed control.

Figure S-1

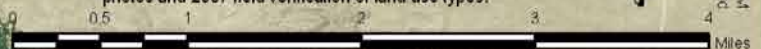
Sites Included in the Proposed Action Alternative

 Project Boundaries



Project Location

Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2006. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.

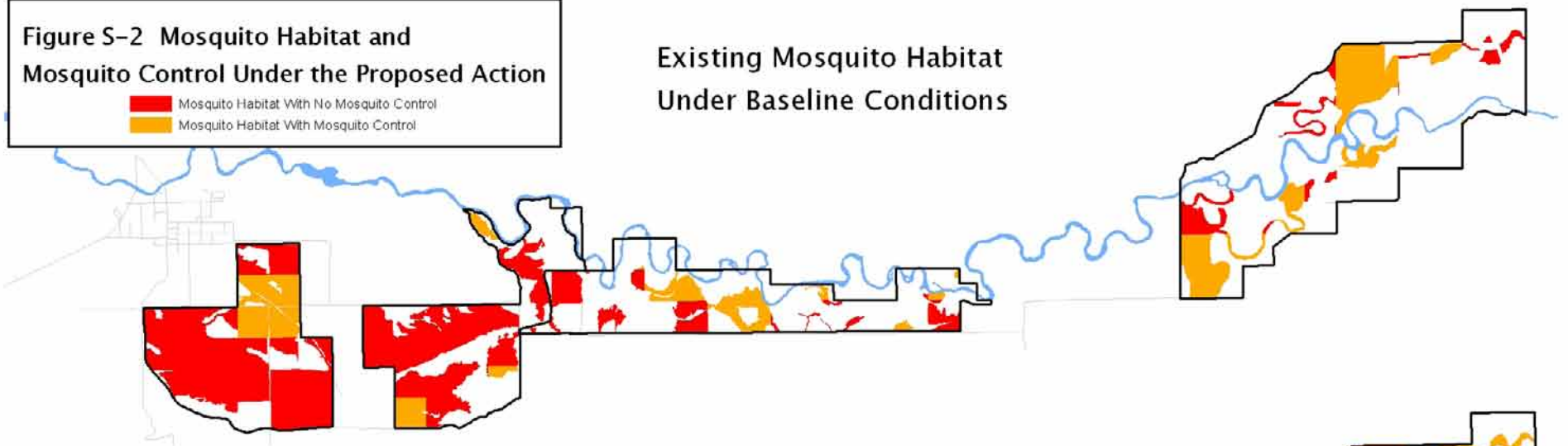


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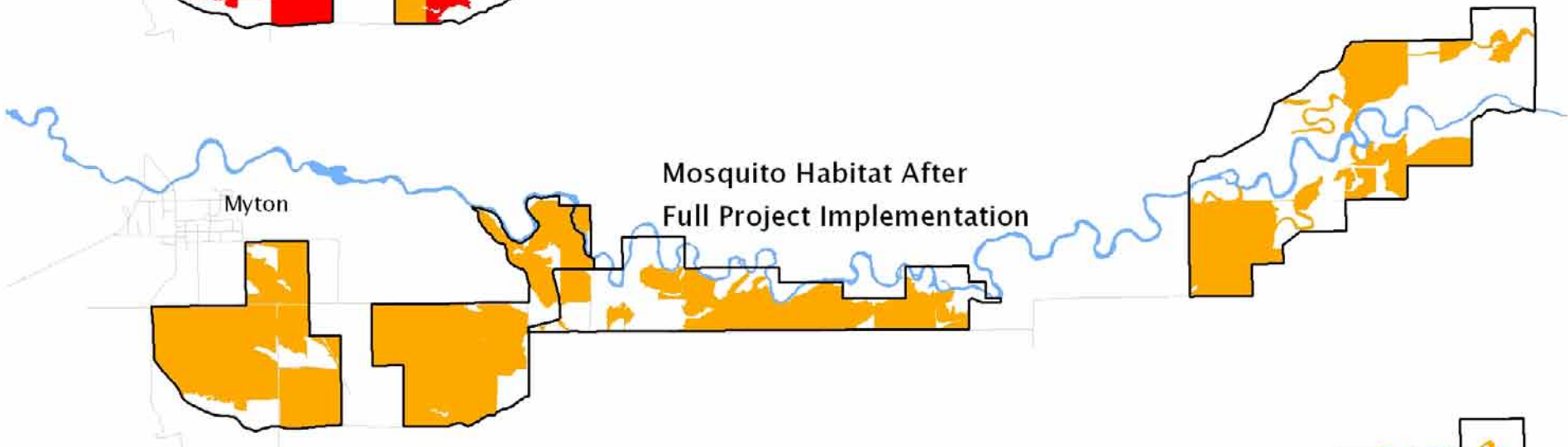
Figure S-2 Mosquito Habitat and Mosquito Control Under the Proposed Action

- Mosquito Habitat With No Mosquito Control
- Mosquito Habitat With Mosquito Control

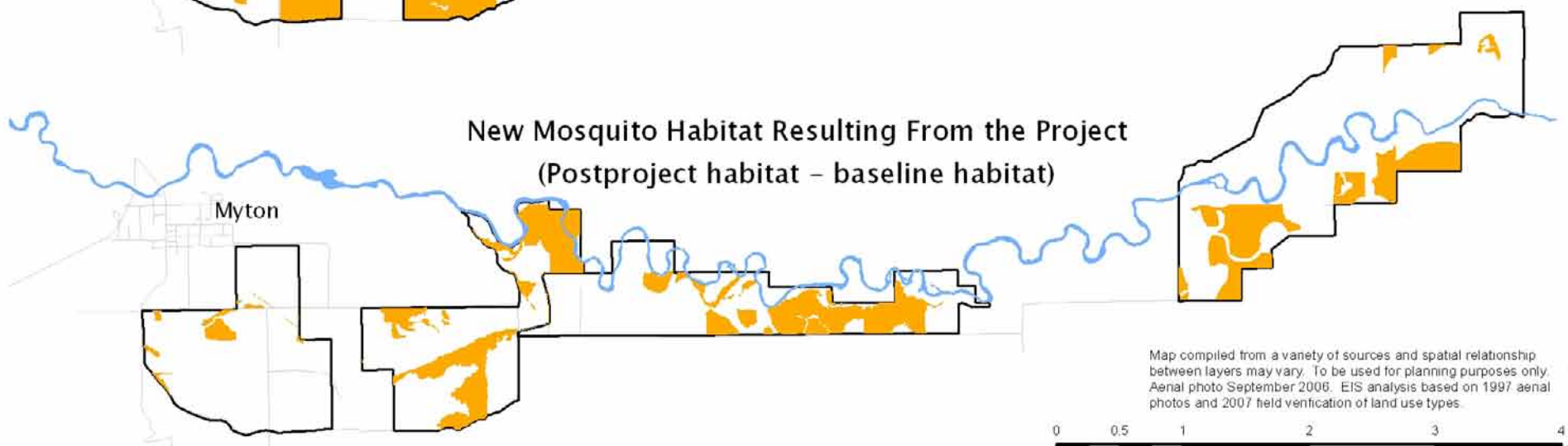
Existing Mosquito Habitat Under Baseline Conditions



Mosquito Habitat After Full Project Implementation



New Mosquito Habitat Resulting From the Project (Postproject habitat - baseline habitat)



Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2006. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.



Response: The weed and mosquito control programs will be initiated during construction of the project and continue throughout the life of the project. Funding will be provided by the Federal government specifically for the LDWP.

Issue: Acquisition of Private Lands. There were concerns expressed about (A) the use of eminent domain to acquire private lands for the LDWP; (B) loss of private land; and (C) the tax impact on local government by removing lands from the tax rolls.

Response: (A) The Mitigation Commission and DOI recognize the concerns about using eminent domain to acquire private lands. Although it is necessary for joint-lead agencies to preserve the right of eminent domain for the LDWP, it will be used only as a last resort in the event that all reasonable efforts to complete an acquisition on a willing-seller basis have failed. The process of acquiring lands by eminent domain is controlled by federal regulation and policy and is designed to protect both the private landowner and the taxpayer. (B) The Proposed Action has been revised to reduce the amount of acreage in the project and specifically to reduce the amount of private land needed. This was done primarily by eliminating the site with the most private land (the Flume site), and revising other site boundaries to avoid established cropland where possible. Project goals were revised to emphasize habitat connectivity, equal emphases on wetland and riparian habitat, and ecosystem management. The amount of private lands to be acquired under the Proposed Action has been reduced from 2,154 acres in the DEIS, to 1,592 acres in the FEIS (Figure S-3). (C) Private (fee) lands acquired on a willing-seller basis under the revised Proposed Action will be retained in fee

status under Tribal corporate ownership, thereby retaining those private lands on the local tax rolls and minimizing tax impacts of the project.

Issue: The impacts of the LDWP on local economies is not accurate in the DEIS, particularly regarding agricultural impacts and the effects on local property taxes and income taxes.

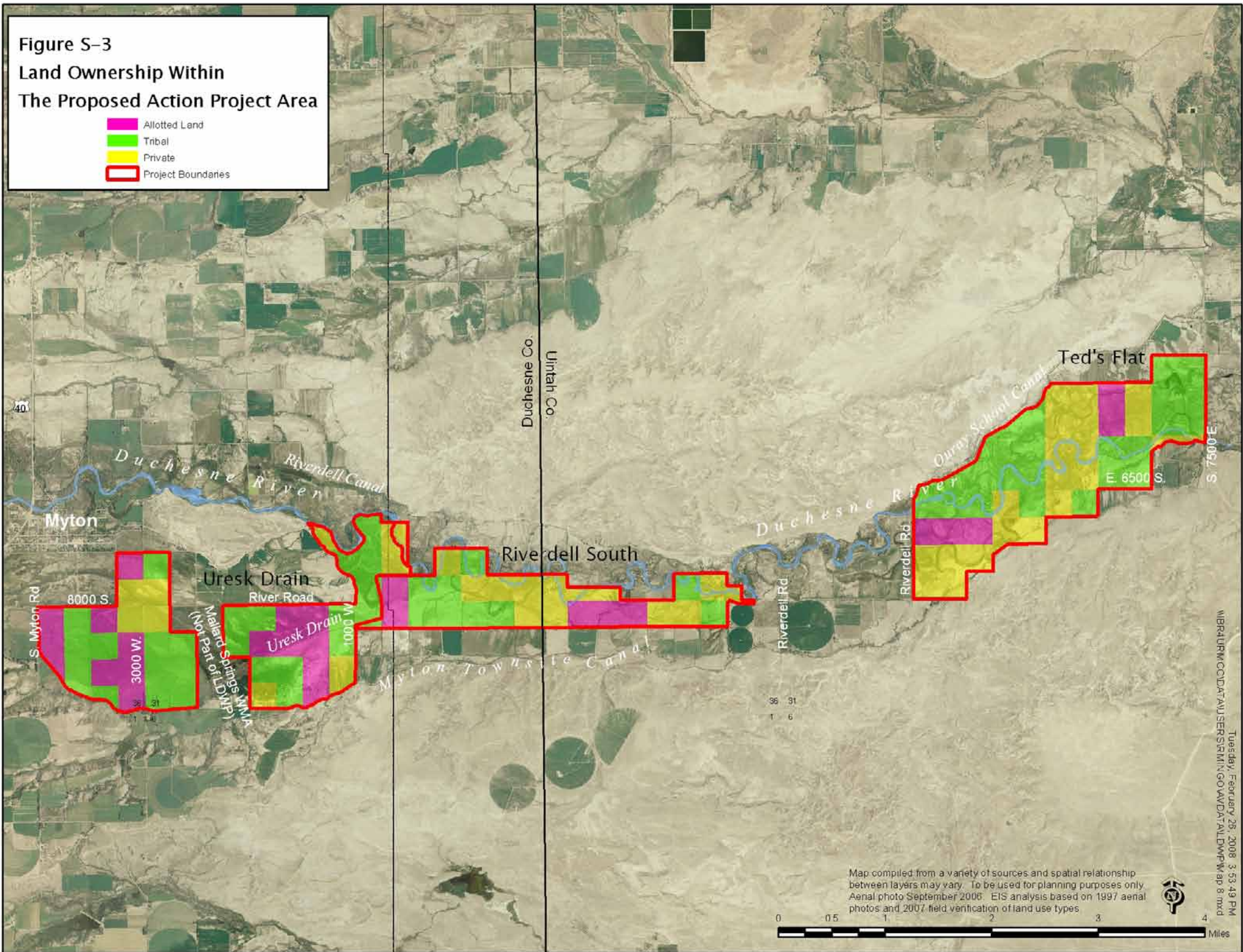
Response: The economic impact analysis was revised for the FEIS using the IMPLAN model, instead of the model developed by the State of Utah that was used for the DEIS. IMPLAN is accepted by and used by the State of Utah for all its economic impact forecasting. None of the changes in economic output under any of the action alternatives would account for more than a 0.1 percent change in the Uinta Basin economy. None of the alternatives would adversely affect any of the local infrastructure, including roads, or local social services.

Under the Proposed Action, the total annual tax change within the two-county area from both the conversion of private land to federal ownership and the conversion of some parcels from residential to greenbelt use could range from zero (with all residents relocating to similar value homes within the two-county area) to \$1,632. The total property tax loss within the two-county area for the Pahcease Alternative would range from \$3,808 (with all residents relocating to similar value homes within the two-county area) to \$7,918 annually. The total property tax loss under the Topanotes Alternative would range from \$3,364 to \$7,043 annually.

Figure S-3

Land Ownership Within
The Proposed Action Project Area

- Allotted Land
- Tribal
- Private
- Project Boundaries



Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2005. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.



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Issue: The LDWP will increase groundwater levels outside the project boundary, which will affect neighboring property, and may affect the cemetery in Myton.

Response: Under the Proposed Action, there would be no increase in the ground water table outside of the LDWP project boundaries with the exception of a slight increase in the water table within two existing oxbows south of River Road adjacent to the Riverdell South site. As a result, there would be no effects from the Proposed Action on adjacent infrastructure or cropland through ground water increase. Water test wells were installed in the vicinity of the Myton Cemetery. Results indicate that the groundwater table slopes away from Myton toward the east and south to the Duchesne River. Under the Proposed Action, the water volume and duration associated with water management of the restored wetlands, in conjunction with the baseline water table gradient and soil types, would cause only a very localized, if any, rise in the underlying water table in the Uresk Drain Unit. There would be no effect on the ground water levels at the Myton Cemetery.

Issue: The LDWP will change Duchesne River flows or water quality, and will affect junior water right holders.

Response: Under the LDWP, water availability to junior water right holders would not change in average and high flow years. In dry and very dry years, the Proposed Action could result in a reduction of 127 to 908 acre-feet of water to junior water right holders based upon the full exercise of the senior reserved Indian water rights appurtenant to project lands. The reduction of water for junior water right

holders would be greater under the other alternatives, ranging from 174 to 1,439 acre-feet. All alternatives would result in no measurable change in the Duchesne River flow at Randlett.

Under the Proposed Action, the LDWP would result in an increase in Total Dissolved Solids (TDS) of 0.68 ppm in the Duchesne River downstream of Myton, with no measurable change in the TDS concentrations at Randlett. The net increase in the Duchesne River TDS concentrations considering both surface and ground water contributions for the Pahcease and Topanotes Alternatives would be between 2.6 and 3.0 ppm downstream of Myton and up to 1.7 ppm at Randlett. None of these changes are considered significant when compared to natural TDS levels in the Duchesne River or seasonal fluctuations of TDS due to flow and agricultural uses of water, and would not likely be measurable.

The estimated long-term average annual salt load contributed to the Colorado River by the Duchesne River is 330,000 tons (BOR 1986, as cited in Swanson 2007), which represents 4 percent of the total annual Colorado River salt load of 8.2 million tons at Imperial Dam. Under all alternatives, total annual salt loading from wetlands and irrigated pastures in the project area through ground water seepage would increase by 115 to 1,125 tons of salt. This equates to an increase of 0.03 to 0.3 percent of the salt load of the Duchesne River, an amount too small to be measured at Imperial Dam or to be considered a significant change in the Colorado River.

Issue: Individuals will not be adequately compensated for unharvested crops left for wildlife purposes.

Response: The Proposed Action no longer includes the concept of conservation easement where landowners would be paid to leave 20% of their crops for wildlife purposes. All but 58 acres of cropland has been removed from the project boundaries under the Proposed Action. These 58 acres of cropland would be acquired for the project and developed and managed for wildlife benefits.

S.4 SUMMARY DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

S.4.1 Features Common to All Action Alternatives

The Proposed Action, Pahcease Alternative and Topanotes Alternative would use a variety of measures to rehabilitate wetland and riparian habitat in the Duchesne River corridor. These measures include rewatering oxbows, connecting oxbows to form contiguous systems, enlarging oxbows to at least their 1936 widths (as determined from aerial photographs), enhancing water quality in oxbows receiving agricultural return flows, filling portions of the Uresk Drain (a large drainage ditch) to create a large marsh complex, replanting riparian areas with native woody trees and shrubs, seeding of new wetland edges, removing non-native invasive species and changing management of areas adjacent to wetlands to benefit wildlife.

There are four oxbow systems within the entire project area that historically formed annually flooded, continuous side channels of the Duchesne River. Each alternative would connect the oxbow systems on the sites included within the alternative into a continuous backwater channel and expand

the oxbow widths. Where feasible, the oxbow systems would be reconnected to the Duchesne River by removing impediments to river flow through the oxbows. Oxbow reconnection was identified as feasible if the oxbow would be flooded by the mean annual flood, the flow that occurs on average every 2.3 years. Because the river has narrowed by up to 40 percent, been downcut by 2 to 4 feet and had its flow reduced by diversions, reconnection of all oxbows to the river is no longer feasible without either increased flows or river reconstruction.

Large marshes would be created on the Uresk Drain site in each alternative by filling portions of the main drainage ditch and constructing a series of berms to retain water on the site. Woody riparian vegetation would be planted on former Duchesne River floodplains and non-native and invasive riparian woody species such as tamarisk and Russian olive would be removed through chemical and mechanical means.

A number of upland habitats would not be converted to wetlands, but their value to wetland and riparian species would be enhanced by changes in management. These include portions of currently irrigated wet meadow-grassland complexes and desert shrub habitat. Irrigated grasslands would continue to be irrigated under the Proposed Action, but grazing would be eliminated unless necessary to achieve specific wildlife management objectives. Grasslands would continue to be managed to provide nesting and foraging sites for wildlife. Desert shrub habitats would be maintained as buffers between human activity areas and wetlands.

Land acquired for the project would be held in differing ownerships depending upon the alternative. For the Proposed Action, private lands acquired by the federal government from private landowners on a willing-seller basis would be transferred to Tribal ownership (fee status) and subsequently managed by the Tribe. Private lands acquired by eminent domain, if any, would remain in ownership of the United States and held on behalf of the Tribe. Tribal Trust land (both Reservation and allotted lands) would be placed under easements, with two consecutive 25-year easements used on the Riverdell South property, and for a length of time to be negotiated (a minimum of 10 years) within the other sites. All land would be developed and managed by the Tribe under a single management plan. There would be no conservation easements purchased on established cropland under the Proposed Action as originally proposed in the DEIS.

For the Pahcease and Topanotes Alternatives, all acquired private land would remain in federal government ownership for project purposes. Conservation easements instead of fee purchases would be used to acquire cropland.

Differences among the action alternatives occur in the total size, the final acres and types of wildlife habitats, the amount of private land acquired, the amount of Tribal land incorporated by easement, the final land ownership and management status and how established cropland would be treated. These differences are described below and summarized in the table at the end of this document.

S.4.2 The Proposed Action

- The project area encompasses 4,807 acres.

- Includes 2,681 acres of wetland and riparian habitat, of which 1,025 acres would be created or restored and 1,656 acres of existing habitat would be enhanced.
- Requires the acquisition of 1,592 acres of private land and compensation to the Tribe for loss of income on 3,215 acres of Tribal Trust and Allotted land that would be incorporated into the project. Acquired private land would be generally retained in fee status under Tribal ownership.
- All land would be managed by the Tribe under a single permit and access system.
- Fifty-eight acres of cropland would be acquired for wildlife habitat. No cropland would be placed under conservation easements.

S.4.3 Description of the Pahcease Alternative

- Encompasses 6,765 acres.
- Includes 3,055 acres of wetland and riparian habitat, of which 2,125 acres would be created or restored and 930 acres of existing habitat would be enhanced.
- Requires the acquisition of 1,787 acres of private lands and compensation to the Tribe for loss of income on 3,891 acres of Tribal Trust land that would be incorporated into the project.
- Utilizes the federally-owned Riverdell North property of 1,087 acres for the LDWP, creating a need to purchase an alternative site suitable for DRACR mitigation.
- Acquired private land would be retained by the federal government for project purposes resulting in a

- mix of government and Tribal Trust lands in the project area.
- All land would be managed by the Tribe under a multiple permit and access system.
- No cropland would be purchased strictly for wildlife habitat, but 239 acres of cropland would be placed under conservation easements.

S.4.4 Description of the Topanotes

Alternative

- Encompasses 6,648 acres.
- Includes 3,175 acres of wetland and riparian habitat, of which 1,461 acres would be created or restored and 1,714 acres of existing habitat would be enhanced.
- Requires acquisition of 2,171 acres of private land and compensation to the Tribe for loss of income on up to 4,477 acres of Tribal Trust land that would be incorporated into the project.
- Acquired private land would be retained by the federal government for project purposes, resulting in a mix of government and Tribal Trust lands in the project area.
- All land would be managed by the Tribe under a multiple permit and access system.
- No cropland would be purchased strictly for wildlife habitat, but 356 acres of cropland would be placed under conservation easements.

S.4.5 No Action Alternative

- Restores no wetlands or riparian habitats impacted by SACS.
- Results in a continued decline of existing cottonwood forest and continued expansion of riparian and wetland weeds.

- Results in mitigation obligations to the Tribe identified in the 1988 and 2004 Definite Plan Reports and the 1965 Deferral Agreement remaining unfulfilled.

S.5 MAJOR IMPACT CONCLUSIONS - AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

S.5.1 Introduction

This section summarizes important issues and concerns that are evaluated in chapter 4 of this FEIS, Affected Environment and Environmental Consequences. Chapter 4 is organized according to different resource topics, such as water resources or agriculture, and addresses issues raised during the scoping process, during public review of the DEIS, through agency consultation or by the EIS team during analysis. This summary will focus on the most important and controversial of the resource topics. Major issues that were addressed in these topic areas will be identified and the impact analysis for those issues will be summarized. Resource topics that contained little or no controversial information are briefly summarized or deleted from this summary (e.g., noise and air quality). The discussion generally follows the order of the resource topics as they are presented in chapter 4.

S.5.2 Wetland and Riparian Habitats

S.5.2.1 Issues and Concerns

Will the construction and operation of the LDWP change or reduce the existing acreage of wetland and riparian habitat types in the project area?

S.5.2.2 Impact Analysis

Under the Proposed Action, 18.5 acres of wetland and riparian habitats would be temporarily impacted and 7.3 acres permanently impacted. The permanent impacts generally occur where wetland berms are constructed across existing wetlands, notably in the Uresk Drain site. There would also be some conversion of existing wet meadow and emergent marsh habitats to other habitat types, but similar habitats would be developed elsewhere in the project area to compensate for such losses. Construction impacts under the Topanotes and Pahcease Alternatives would be similar to those of the Proposed Action.

The few acres of wetlands lost or altered by the LDWP would be more than offset by the restoration, creation and enhancement of wetlands envisioned by the project. The Proposed Action would restore or create 1,025 acres of wetland and riparian habitat and enhance the value of 1,656 acres of existing wetland and riparian habitats. The Pahcease Alternative would restore or create 2,125 acres and enhance 930 acres of wetland and riparian habitats. The numbers for the Topanotes Alternative are 1,461 and 1,714, respectively. Additionally, all the alternatives would improve the value and function of other existing habitats in the project area, such as cottonwood forests.

S.5.2.3 Issues and Concerns

What will be the impact of the project on wetland and riparian weeds in the project area?

S.5.2.4 Impact Analysis

Two of Utah's listed noxious weeds, pepperweed and Russian olive, are prevalent

in the project area. Tamarisk, a non-native invasive species, is also abundant in the active floodplain of the Duchesne River.

The LDWP would decrease the abundance of noxious weeds in the project area, representing a beneficial impact of the project. The Proposed Action would remove 339 acres of Russian olive and tamarisk as well as treat for pepperweed. The Pahcease and Topanotes would treat 801 and 578 acres of noxious weeds, respectively. Moreover, an ongoing weed control program, as outlined in Appendix B of this FEIS, would be an integral part of the LDWP Comprehensive Conservation and Management Plan.

S.5.3 Wildlife Resources

S.5.3.1 Issues and Concerns

The construction of the LDWP would alter wetland and riparian habitats in the project area, as well as impact the adjacent uplands. What effects will this alteration have on the health and populations of the different species of waterfowl, fish, songbirds, raptors and mammals that are currently found in the project area?

S.5.3.2 Impact Analysis

Construction of the LDWP would improve the habitat for all of the nine major wildlife species groups that were evaluated. Elimination of cattle grazing and better management of upland grasslands would benefit songbirds, provide grazing for mule deer, elk, and antelope and improve habitat for small mammals (in turn providing an additional food source for raptors). The restoration of cottonwood forests along the river corridor would provide habitat for a variety of birds, as well as nesting habitat

for raptors, golden and bald eagles and great blue herons. These forests would also provide winter habitat for mule deer as well as a wood source for beaver. The creation of open water areas and marsh habitat would benefit a variety of ducks and other waterfowl, while the reduction in cropping on agricultural lands would increase the food base for a number of species. There would be some minor negative impacts to wildlife as one type of habitat is converted to another, but these impacts are almost all temporary and would eventually be offset by improved habitat of similar types in other areas of the project. Generally, habitat improvements that benefit wildlife are considered to be significant beneficial impacts of the Proposed Action and alternatives.

S.5.4 Threatened, Endangered and Candidate Species (Listed Species)

S.5.4.1 Issues and Concerns

Would the LDWP affect any listed species through mortality, disturbance through key life stages or habitat degradation?

S.5.4.2 Impact Analysis

Only seven listed species are known to occur or to have potential habitat within the LDWP project area of influence: Two are plants (Uinta Basin hookless cactus and Ute ladies'-tresses orchid); two are fish known to occur in the Duchesne River in this area (Colorado pikeminnow and razorback sucker); two are birds (mountain plover and western yellow-billed cuckoo).

The construction and operation of the LDWP would not adversely impact any of these listed species but would benefit several of them. The Uinta Basin hookless

cactus is found in desert shrub north of the Riverdell Canal, where its habitat would be improved through the elimination of grazing (Pahcease Alternative only). Ute ladies'-tresses have been observed upstream on the Duchesne River, but not in the project area. Habitat improvements anticipated by the project are not expected to inhibit its possible emergence in the area. No impacts to either the Colorado pikeminnow or the razorback sucker are expected from the LDWP, because no change in water quantity or quality in the Duchesne River is anticipated. The western yellow-billed cuckoo is expected to benefit from the project as the restoration of the cottonwood forest provides improved roosting and feeding habitat.

S.5.5 Water Resources

S.5.5.1 Issues and Concerns

Would the construction and operation of the LDWP interfere with the water rights of existing users, reduce water availability or alter existing water supply patterns to these users?

S.5.5.2 Impact Analysis

All of the irrigable lands within the project area, except the Riverdell North property which has a 1916 water right, are supplied by certified 1861 Indian water rights and are authorized for direct diversion from the Duchesne River. These water rights, which will be available for the LDWP, total 12,403 acre-feet for the Proposed Action and up to 19,611 acre-feet for the other alternatives. Water budgets prepared for the Proposed Action identify a water requirement that ranges from 8,452 to 10,118 acre-feet, with water requirements of 11,286 to 14,420 acre-feet for the Pahcease and Topanotes

Alternatives. As these numbers indicate, there are secure water rights available on project lands to fulfill LDWP needs without obtaining water from other sources outside the project area.

Under the LDWP, the water budget would remain similar among years, instead of varying from year to year. This would not change water availability to junior water right holders in average and high flow years. In dry and very dry years, the Proposed Action could result in a reduction of 127 to 908 acre-feet of water to junior water right holders based upon the full exercise of the senior reserved Indian water rights appurtenant to project lands. The reduction of water for junior water right holders would be greater under the other alternatives, ranging from 174 to 1,439 acre-feet.

All alternatives would result in slight local increases in return flows among the sites, but no measurable change in the Duchesne River flow at Randlett.

S.5.5.3 Issues and Concerns

Would the LDWP affect ground water levels on properties outside of the project area?

S.5.5.4 Impact Analysis

Under the Proposed Action, there would be no increase in the ground water table outside of the LDWP project boundaries with the exception of a slight increase in the water table within two existing oxbows south of River Road adjacent to the Riverdell South site. As a result, there would be no effects of the Proposed Action on adjacent infrastructure or cropland through ground water increase. Under the other alternatives there would be an increased water table to the east of the Uresk Drain and adjacent to

the Flume. This increased water table could affect 40 acres of pasture land east of the Uresk Drain and nine acres of cropland adjacent to the Flume site. None of the alternatives would affect the ground water levels at the Myton Cemetery.

S.5.6 Water Quality

S.5.6.1 Issues and Concerns

Would the LDWP increase contaminants or salts in the mitigation wetlands to a point where wildlife would be adversely affected? Would the project affect salinity inputs to the Duchesne River in terms of the total amount or concentration of salts?

S.5.6.2 Impact Analysis

Boron and total dissolved solids (TDS) have been identified as the most problematic contaminants in the project area. Under the Proposed Action and alternatives, the wetlands would be operated as flow-through systems with a water quality control factor added to each site's wetland water budget to maintain water quality. By increasing the flow through the project area, concentrations of boron and TDS in surface water return flows entering the Duchesne River would be reduced under all alternatives by seven to nine percent.

The estimated long-term average annual salt load contributed to the Colorado River by the Duchesne River is 330,000 tons (BOR 1986, as cited in Swanson 2007), which represents 4 percent of the total annual Colorado River salt load of 8.2 million tons at Imperial Dam. Under all alternatives, total annual salt loading from wetlands and irrigated pastures in the project area through ground water seepage would increase by 115 to 1,125 tons of salt. This equates to an

increase of 0.03 to 0.3 percent of the salt load of the Duchesne River, an amount too small to be measured at Imperial Dam or to be considered a significant change in the Colorado River.

Under the Proposed Action, the net change of both the decreased TDS concentration of surface water runoff and the increased TDS concentration of ground water seepage would result in a TDS increase of 0.68 ppm in the Duchesne River downstream of Myton, with no measurable change in the TDS concentrations at Randlett. The net increase in the Duchesne River TDS concentrations considering both surface and ground water contributions for the Pahcease and Topanotes Alternatives would be between 2.6 and 3.0 ppm downstream of Myton and up to 1.7 ppm at Randlett.

S.5.7 Agriculture and Land Use

S.5.7.1 Issues and Concerns

Will the LDWP negatively impact the agriculture industry in the two counties through the elimination of grazing or changes in crop production in the project area? Will the LDWP impact agricultural production outside of the project area?

S.5.7.2 Impact Analysis

The LDWP would reduce agricultural output within the project area in two different ways. Grazing would be eliminated on 4,807 to 6,765 acres of pasture land to allow the creation and restoration of different wetland and upland habitats. The forage value of these lands for grazing varies from about 0.1 AUM to 2.5 AUMs per acre. As a result, elimination of grazing would result in a 0.2 percent reduction of the Uinta Basin livestock cash receipts.

Cropland would be addressed differently among the various alternatives. Under the Proposed Action 58 acres of cropland would be acquired and managed for wildlife purposes. Under the other alternatives no established cropland would be acquired, but from 239 to 356 acres of cropland would be placed under conservation easements in which the landowner would be paid to retain 20 percent of their crop for wildlife. These changes would result in a 0.1 to 0.2 percent reduction in marketable crop yield.

Neither action is expected to have a significant impact on the agriculture industry as a whole in the two counties.

There would be no direct effect on agricultural practices or production outside of the project boundaries under the Proposed Action. Under the other action alternatives, crop production on nine acres of cropland adjacent to the Flume site could be affected by an increase in the local groundwater table.

S.5.7.3 Issues and Concerns

Both Uintah and Duchesne Counties have adopted county land use plans that call for "no net loss of private land" in the county. How will the LDWP address these county policies?

S.5.7.4 Impact Analysis

Unavoidably, private lands would be acquired under all action alternatives ranging from 1,592 under the Proposed Action to 2,171 acres under the Topanotes Alternative. Between 3,215 to 4,477 acres of Tribal Trust and Allotted land would be placed under a negotiated easement. Acquired private land would be transferred to the Tribe as private fee lands under the

Proposed Action, but retained by the federal government under the Pahcease and Topanotes Alternatives.

S.5.7.5 Issues and Concerns

Will the LDWP split properties leaving the owners with uneconomical remainders?

S.5.7.6 Impact Analysis

There may be partial landholding acquisitions (acquisitions in which portions of the land holdings fall inside the LDWP boundary and portions fall outside of the boundary) under all alternatives. In the event of a partial landholding acquisition, the appraised value and the amounts offered to landowners would be based on not only the fair market value of the interest in the land the United States actually acquires, but also any difference in the before and after fair market value of the remaining parcel retained by the landowner.

S.5.8 Socioeconomics

S.5.8.1 Issues and Concerns

Will the LDWP have a positive or negative impact on socioeconomic conditions in the area? Will there be impacts on county services or community infrastructure? How will the LDWP affect county taxes?

S.5.8.2 Impact Analysis

Construction of the Proposed Action, Pahcease Alternative and Topanotes Alternative would increase the net economic output (\$924,729 to \$1,259,642), personal earnings (\$316,387 to \$375,305) and employment (13.1 to 15.1 jobs) in the local economy during construction. The net increase in revenue considers both the actual

decrease in agricultural revenue and the multiplier effect of this decrease. Even with the multiplier effect, the net economic output would be considerably larger than the decrease in agricultural revenue during construction for all alternatives.

Operation of the project would continue to contribute to increased revenue in the local economy by \$197,331 (Topanotes Alternative) to \$335,810 (Proposed Action and Pahcease Alternative). As for the construction economic analysis, the O&M period revenue accounts for both the decrease in agricultural output and the multiplier effect of this output. None of the changes in output represent more than a 0.1 percent change in the Uinta Basin economy. None of the alternatives would adversely affect any of the local infrastructure, including roads, or local social services. None of the alternatives would impact the Myton cemetery.

Changes in county tax revenues would vary among alternatives. Tax revenues would be affected by changes in two factors: changes in land ownership and changes in some parcel tax status from residential to greenbelt use. There would be no change in county taxes associated with changes in land ownership under the Proposed Action, as land would generally be maintained in fee status. Land acquired for the Pahcease and Topanotes Alternatives would remain in federal ownership resulting in annual county tax revenue decreases of \$3,808 and \$3,364, respectively.

Changes in tax revenues associated with acquisition of residences and conversion from residential to greenbelt use could result from the project.

Under the Proposed Action, the total tax change within the two-county area could range from zero (with all residents relocating to similar value homes within the two-county area) to \$1,632. The total property tax loss within the two-county area for the Pahcease Alternative from both the conversion of private land to federal ownership and the conversion of some parcels from residential to greenbelt use would range from \$3,808 (with all residents relocating to similar value homes within the two-county area) to \$7,918. The total property tax loss under the Topanotes Alternative would range from \$3,364 to \$7,043.

Under certain circumstances, these tax losses might be offset by federal reimbursements through the Payment in Lieu of Taxes (PILT) Program, a program that provides payments to counties to offset the practical costs of having lands in their jurisdiction that generate no tax revenues.

S.5.9 Health and Safety (Mosquito Control)

S.5.9.1 Issues and Concerns

One of the most controversial areas of concern regarding the LDWP is the concern that the project will increase marshy habitats that can provide potential breeding sites for mosquitoes. There are two important questions related to this issue: (1) will there be a significant increase in nuisance mosquitoes from wetlands and marshes within two miles of the town of Myton, and (2) will there be a significant increase in disease-bearing mosquitoes in the Uinta Basin that cannot be reasonably controlled?

S.5.9.2 Impact Analysis

Much of the land within the LDWP project boundaries is irrigated or contains wetlands and has the potential to produce mosquitoes. Under all alternatives, the existing wetland habitat would be maintained and irrigation of grasslands would continue. Additionally, there would be an increase of wetlands. Under the Proposed Action, there would be an eleven percent increase, or 497 acres, of potential mosquito-breeding habitat. Increases in the other action alternatives would be from 12 to 13 percent (776 to 849 acres). These increases would result in an overall increase of 0.4 to 1 percent increase in potential mosquito-producing habitat within the Uinta Basin. Within the Myton vicinity, there would be a net increase of 124 acres of potential mosquito breeding habitat, of which 68 acres would be of the West Nile Virus (WNV) vector (*Culex tarsalis*) type. This would be a significant impact if not for the implementation of a mosquito control program. Under all action alternatives including the Proposed Action, all potential breeding habitats within the project boundaries would be treated in accordance with a Mosquito Control Plan (refer to Appendix G of the FEIS) modeled after plans recommended by the Centers for Disease Control. Under baseline conditions for the Proposed Action, only 34 percent of the project area (1,592 acres) is presently treated by the local Mosquito Abatement Districts (MADs) for mosquitoes, with the remainder (3,215 acres) either untreated or only sporadically treated. Therefore, even though the amount of mosquito breeding habitat will increase locally under the Proposed Action or other action alternatives, there would be a mosquito-control program implemented on all LDWP project lands. Because most of the existing habitat within the project area is not currently treated for

mosquitoes, there would be a greater level of mosquito control in the LDWP area under the Proposed Action and alternatives than under baseline conditions (Figure S-4).

S.5.10 Recreation Resources

S.5.10.1 Issues and Concerns

Would the project change existing recreational use or access within the Duchesne River corridor?

S.5.10.2 Impact Analysis

There is the slight potential for recreational use of the project area to increase as the LDWP brings more wildlife to the area. Permits and access conditions for hunting, fishing and non-consumptive recreation would vary among the alternatives. Under the Proposed Action, hunting, fishing and non-consumptive recreation would require Tribal permits or Tribal permission for access. Multiple hunting/fishing permits (State and/or Tribal) plus Tribal permission for access could be required for the Pahcease and Topanotes Alternatives.

S.5.11 Transportation

S.5.11.1 Issues and Concerns

Would the LDWP change the existing levels of service (LOS) on roads that would be used by workers traveling to and from the job, deliveries of various materials or visits by recreational users? (LOS is a highway rating system that evaluates traffic flow conditions on various road segments. LOS declines as traffic increases and roads become unable to adequately handle traffic flow.) Would the LDWP result in any physical damage to the paved county roads

or close any roads necessary for property access?

S.5.11.2 Impact Analysis

During peak construction periods, it is expected that implementation of the LDWP would add up to 50 vehicle round trips per day to the road network in the surrounding area, particularly between Myton and Roosevelt. This volume of traffic is not expected to cause any deterioration in the road infrastructure nor any noticeable decline in the LOS on the roads. One exception to this might be during peak evening traffic periods in Roosevelt, where LDWP project traffic would add to the increasing congestion and might cause the LOS to decline slightly.

Although internal roads would generally be closed to motorized vehicles, except those needed for administrative use, all existing road rights-of-way necessary for property access would be maintained.

Wetlands would be constructed so as to not pond against county roads, culverts would be repaired or installed at wetland-county road crossings as necessary and the roadside drainage ditches maintained. As a result, there would be no impacts to county roads through surface or ground water.

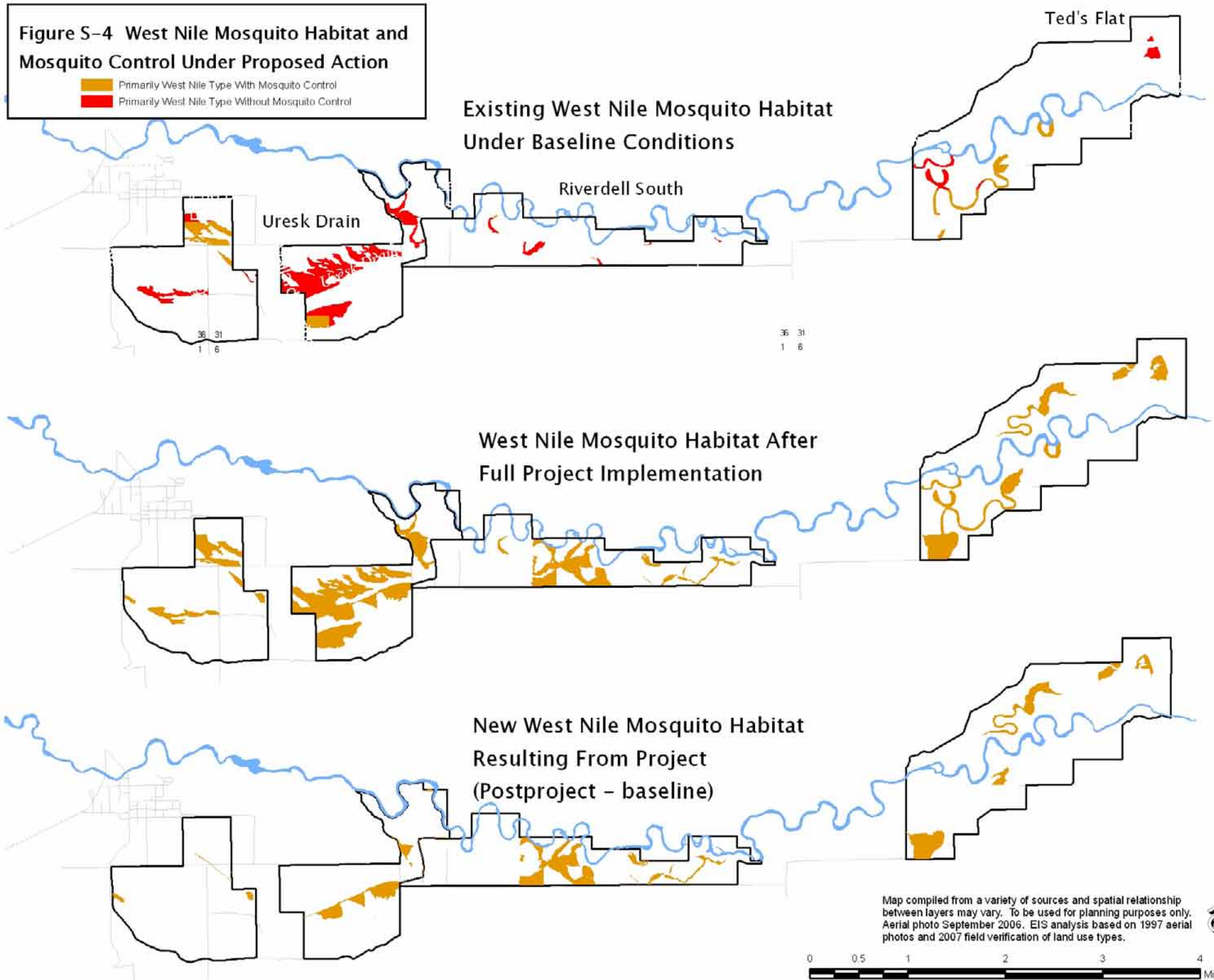
S.5.12 Cultural Resources

S.5.12.1 Issues and Concerns

Would the LDWP affect any prehistoric or historic sites eligible for the National Register of Historic Places (NRHP)? Would the LDWP affect any Tribe traditional or religious use areas?

Figure S-4 West Nile Mosquito Habitat and Mosquito Control Under Proposed Action

- Primarily West Nile Type With Mosquito Control
- Primarily West Nile Type Without Mosquito Control



Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2006. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.

S.5.12.2 Impact Analysis

Most of the known sites within the project area are historic structures or engineering features. Significant cultural resources in the LDWP project area are limited to four historic canals that have been determined to be eligible for the NRHP; the remaining five sites are either unevaluated or have been judged insignificant by field recorders. There would be no impacts to these known sites. There are no known sites of cultural importance or sacred sites to the Tribe within the project area.

Since cultural resources surveys of the impact area of influence have not been comprehensive, additional cultural and paleontological surveys and analyses would be conducted under a Programmatic Agreement among the Utah State Historic Preservation Office (SHPO), Mitigation Commission, DOI and the Tribe (see Appendix F of the FEIS).

S.5.13 Native American Trust Resources/Environmental Justice

S.5.13.1 Issues and Concerns

Would the LDWP affect Tribal sovereignty? Would the LDWP insure that Trust resources are utilized for the benefit of the Tribal owners? Would the project have a disproportional effect on minority or low income populations such as Tribal members?

S.5.13.2 Impact Analysis

The Proposed Action would occur on portions of the Uintah and Ouray Indian Reservation and would utilize land and water rights of the Tribe. The Tribe would be compensated for placing easements on its

land and leasing its water to the project. The Tribe would also receive the benefit of increased wetland-wildlife resources. The Tribe is a lead partner on this project for planning purposes specifically to ensure that tribal sovereignty and resources are protected. The Tribe has developed the conceptual project plans and would manage the entire wetland-wildlife area.

Under the Proposed Action, construction would occur over a 7-year period generating jobs for up to 30 local residents. Construction contractors would be required to give preference to qualified Ute Indians in hiring and income would be generated for some individual Ute Indians during project construction. Employment would be provided for an estimated regular staff of three personnel with periodic needs for temporary workers to meet operation and maintenance needs. Both project employment opportunities and increased wetland-wildlife resources would provide a positive impact on the Tribe (a minority and low-income population) without significantly affecting the health or safety of local residents or the local economy. None of the alternatives would disproportionately adversely affect low-income or minority communities.

S.6 SUMMARY OF CONSULTATION AND COORDINATION

S.6.1 Initial Project Planning

The Tribe, in conjunction with the Mitigation Commission and DOI, conducted extensive consultation and coordination while preparing this FEIS. Consultation and coordination was initiated in 1997 during preparation of project feasibility reports. Public input was sought by the Tribe through individual landowner contacts,

preparation and distribution of a survey to Tribal members, field tours of the project area and a series of presentations made by the Tribe to area high schools, at Tribal Council meetings and at public Mitigation Commission meetings. Less formal consultation with agencies, organizations and technical experts took place throughout the preparation of the initial environmental documents.

Early in the planning process, the lead federal agencies appointed representatives to be involved in an LDWP Planning Team. Planning Team members included representatives from the Tribe, Mitigation Commission, DOI, FWS, Reclamation and the BIA. The first Planning Team meeting was held on April 15, 1997, in Salt Lake City. Between April 1997 and initiation of the DEIS with public scoping meetings, 18 additional Planning Team meetings were held.

S.6.2 Development of the DEIS

Public scoping meetings were held in Fort Duchesne and Roosevelt on May 15, 2001, and in Salt Lake City on May 16, 2001. Thirty oral and written comments were received. Results of the scoping meetings and comments received during the scoping process were used to establish the scope of the DEIS and focus the environmental analysis on important issues and concerns. Issues and concerns focused on seven general categories: potential economic impacts, loss of private land (fee) status, project costs and long-term financing, mosquito and weed control, wildlife benefits and recognition of SACS impacts on wetlands. There was strong support for immediate completion of the mitigation obligation.

Prior to the DEIS preparation, draft project descriptions and an administrative DEIS were submitted to Planning Team members for review and comment. Preparation of a Preliminary DEIS (PDEIS) was initiated in January 2003; on April 30, 2003, this completed document was distributed to all cooperating and lead agencies, including Planning Team members, for review and comment. Comments on the PDEIS were used to prepare the DEIS. The following agencies participated in the PDEIS review:

- U.S. Department of the Interior
- U.S. Bureau of Indian Affairs
- U.S. Fish and Wildlife Service
- U.S. Bureau of Reclamation
- Ute Indian Tribe Business Committee
- Ute Indian Tribe Fish and Wildlife Advisory Board
- Utah Reclamation Mitigation and Conservation Commission

S.6.3 Review of the DEIS

The DEIS was filed with the Environmental Protection Agency on November 17, 2003, and a Notice of Availability (NOA) published in the Federal Register on November 24, 2003 (68 FR 65943). Public meetings were announced in the Federal Register NOA and within the Uinta Basin. Notices regarding the release of the DEIS were published in the Salt Lake Tribune (December 12, 2003), the Uinta Basin Standard (December 16, 2003), the Vernal Express (December 10, 2003) and the (Provo) Daily Herald (December 11, 2003). Flyers publicizing the DEIS release and announcing the dates, times and locations of public hearing meetings on the DEIS were posted in conspicuous locations throughout the Uinta Basin in November 2003. Announcements regarding the Uinta Basin

public hearings were made on two local radio stations (KNEU and KVEL).

Approximately 200 copies of the DEIS were distributed by mail or provided electronically to federal and state resource agencies, individuals and organizations for official review and comment. DEIS copies were also available at the public hearings to all individuals attending.

Three public hearings were held on the DEIS in December 2003; one in Fort Duchesne, one in Roosevelt and one in Salt Lake City. The public comment period remained open until January 16, 2004. In response to requests, the comment period was extended for an additional 30 days by additional notice in the Federal Register on February 5, 2004 (69 FR 5567) for a total of a 90-day comment period.

S.6.4 FEIS Coordination

All written and oral comments on the LDWP DEIS were considered and used to develop a revised Proposed Action that met the project Purpose and Need while also addressing issues raised during the DEIS review.

Subsequent to the DEIS release, Executive Order 13352 was issued on August 24, 2004, and implementing regulations associated with this Executive Order were issued on June 6, 2005. These documents provide that local governments with resource jurisdiction or special expertise be afforded, upon request, cooperating agency status. Uintah and Duchesne counties expressed interest in participating more closely in the LDWP planning effort and were extended offers (September 15, 2006) to participate as cooperating agencies during the FEIS preparation. Subsequently, both

counties participated in the FEIS preparation, along with the agency Planning Team members for the DEIS.

As a result of both public and agency Planning Team member input, the Proposed Action represented in this FEIS was revised as described in sections S.3 and S.4.

An administrative draft FEIS was completed on July 31, 2007 and distributed to all project partners and cooperating agencies on September 18, 2007. Additional input from these agencies was used in the preparation of the FEIS.

Table S-1. Summary of Environmental Impacts

| | Proposed Action Alternative | Pahcease Alternative | Topanotes Alternative |
|--|--|---|---|
| Mosquitoes | <p>There would be a eleven percent increase in potential mosquito-breeding habitat within the project boundaries which represents an overall increase of 0.4 percent in the Uinta Basin; not a significant impact. Within the Myton vicinity, there would be a net increase of 124 acres of potential mosquito breeding habitat, of which 68 acres would be of the West Nile Virus vector (<i>Culex tarsalis</i>) type. This would be a significant impact if not for the implementation of a mosquito control program.</p> <p>All potential breeding habitats within the project boundaries would be treated in accordance with a Mosquito Control Plan (refer to Appendix G of the FEIS). Under baseline conditions 66 percent of the project area (3,215 acres) is either untreated or only sporadically treated for mosquitoes. Therefore, there are significantly more acres of untreated mosquito habitat under baseline conditions compared to the Proposed Action Alternative.</p> | <p>Similar to the Proposed Action, except there would be a twelve percent increase in potential mosquito-breeding habitat</p> | <p>Similar to the Proposed Action, except there would be a thirteen percent increase in potential mosquito-breeding habitat</p> |
| Weeds | <p>Would remove 339 acres of Russian olive and tamarisk as well as treat for pepperweed, representing a beneficial impact of the project. A detailed Weed Control Plan is included as Appendix B of the FEIS.</p> | <p>Would remove 801 acres of Russian olive and tamarisk as well as treat for pepperweed, representing a beneficial impact of the project. A detailed Weed Control Plan is included as Appendix B of the FEIS.</p> | <p>Would remove 578 acres of Russian olive and tamarisk as well as treat for pepperweed, representing a beneficial impact of the project. A detailed Weed Control Plan is included as Appendix B of the FEIS.</p> |
| Private Land Acquisition and Project Size | <p>The project would encompass 4,807 acres including 1,592 acres of private land that would be acquired for the project.</p> | <p>The project would encompass 6,765 acres including 1,787 acres of private land that would be acquired for the project.</p> | <p>The project would encompass 6,648 acres including 2,171 acres of private land that would be acquired for the project.</p> |
| "No-net loss" of Private Lands Policy | <p>Acquired private land would be transferred to the Tribe as fee lands consistent with Duchesne and Uintah Counties' "no net loss" of private land policies.</p> | <p>Acquired private land would be retained by the federal government and would not be consistent with Duchesne and Uintah Counties' "no net loss" of private land policies.</p> | <p>Same as Pahcease Alternative</p> |

| Summary of Environmental Impacts | | | |
|---|--|--|---|
| | Proposed Action Alternative | Pahcease Alternative | Topanotes Alternative |
| Partial Land Acquisitions | There may be partial landholding acquisitions as part of the project (acquisitions in which portions of a property owner's land holdings fall inside the project boundary and portions fall outside of the boundary). In these instances, property owners would not only be compensated for the acquired lands, but also for any reduction in the value of the remainder property resulting from the acquisition. | Same as Proposed Action | Same as Proposed Action |
| Duchesne River Area Canal Rehabilitation (DRACR) | DRACR mitigation not included as an element of this alternative. | Same as Proposed Action | Same as Proposed Action |
| Groundwater Levels | There would be no increase in the ground water table outside of the LDWP project boundaries with the exception of a slight increase in the water table within two existing oxbows south of River Road adjacent to the Riverdell South site. There would be no effects on adjacent infrastructure or cropland through ground water increase. None of the alternatives would affect the ground water levels at the Myton Cemetery. | Same as the Proposed Action except there would be an increased water table to the east of the Uresk Drain and adjacent to the Flume. This increased water table could affect 40 acres of pasture land east of the Uresk Drain and nine acres of cropland adjacent to the Flume site. | Same as Pahcease Alternative |
| Water Rights | There are secure water rights available on project lands to fulfill project needs without obtaining water from other sources outside the project area. Could result in a reduction of 127 to 908 acre-feet of water to junior water right holders in dry and very dry years. No measurable change in the Duchesne River flow at Randlett. | Same as the Proposed Action except could result in a reduction of 174 to 1,439 acre-feet of water to junior water right holders in dry and very dry years. | Same as Pahcease Alternative |
| Water Quality | There would be net increase in TDS of 0.68 ppm in the Duchesne River downstream of Myton, with no measurable change in the TDS concentrations at Randlett; not a significant impact. | There would be net increase in TDS between 2.6 and 3.0 ppm in the Duchesne River downstream of Myton and up to 1.7 ppm at Randlett; not a significant impact. | Same as Pahcease Alternative |
| County Tax Revenues | The total loss of tax revenues within the two-county area would range from \$0 to \$1,632 annually. | The total property tax loss within the two-county area from both the conversion of private land to federal ownership and the conversion of some parcels from residential to greenbelt use would range from \$3,808 to | The total property tax loss within the two-county area from both the conversion of private land to federal ownership and the conversion of some parcels from residential to greenbelt use would range from \$3,364 to \$7,043 |

| Summary of Environmental Impacts | | | |
|--|---|--|--|
| | Proposed Action Alternative | Pahcease Alternative | Topanotes Alternative |
| | | \$7,918 annually. | annually. |
| Socioeconomics | Construction of the project would increase the net economic output (\$924,729 to \$1,259,642), personal earnings (\$316,387 to \$375,305) and employment (13.1 to 15.1 jobs) to the local economy. After construction, operation of the project would increase the net economic output by \$335,810 annually. Not a significant impact. | Same as Proposed Action | Same as Proposed Action except net economic output would increase by \$197,331 after construction. |
| Agriculture industry | Grazing would be eliminated on 4,807 acres of pasture land to allow the creation and restoration of different wetland and upland habitats. As a result, elimination of grazing would result in a 0.2 percent reduction of the Uinta Basin livestock cash receipts; not a significant impact. | Same as Proposed Action | Same as Proposed Action |
| Cropland | Fifty-eight acres of cropland would be acquired and managed for wildlife purposes and no longer used for crop production; not a significant impact. | No established cropland would be acquired, but from 239 to 356 acres of cropland would be placed under conservation easements in which the landowner would be paid to retain 20 percent of their crop for wildlife. These changes would result in a 0.1 to 0.2 percent reduction in marketable crop yield. | Same as Pahcease Alternative |
| Wetland and Riparian Habitat Types | 18.5 acres of wetland and riparian habitats would be temporarily impacted and 7.3 acres permanently impacted. Would restore or create 1,025 acres of wetland and riparian habitat and enhance the value of 1,656 acres of existing wetland and riparian habitats. Significant beneficial impact. | Negative impact similar to the Proposed Action. Would restore or create 2,125 acres and enhance 930 acres of wetland and riparian habitats. Significant beneficial impact. | Negative impact similar to the Proposed Action. Would restore or create 1,461 acres and enhance 1,714 acres of wetland and riparian habitats. Significant beneficial impact. |
| Wildlife Resources | Would improve the habitat for all of the nine major wildlife species groups that were evaluated. Habitat improvements that benefit wildlife are significant beneficial impacts. | Same as Proposed Action | Same as Proposed Action |
| Threatened, Endangered and Candidate Species (Listed Species) | Would not adversely impact any threatened, endangered or candidate species. Would benefit Uinta Basin hookless cactus and western yellow-billed cuckoo. | Same as Proposed Action | Same as Proposed Action |

| Summary of Environmental Impacts | | | |
|--|---|--|------------------------------|
| | Proposed Action Alternative | Pahcease Alternative | Topanotes Alternative |
| Recreation | Hunting, fishing and non-consumptive recreation would require Tribal permits or access permission. | Multiple permits and access permissions could be required to fish, hunt or recreate along the Duchesne River corridor. | Same as Pahcease Alternative |
| Transportation | <p>Increased traffic from construction vehicles is not expected to cause any deterioration in the road infrastructure nor any noticeable decline in the Level Of Service on the roads (a measure of volume and flow rates and traffic congestion).</p> <p>Although internal roads would generally be closed to motorized vehicles, except those needed for administrative use, all existing road rights-of-way necessary for property access would be maintained.</p> <p>There would be no impacts to county roads through surface or ground water.</p> | Same as Proposed Action | Same as Proposed Action |
| Cultural Resources | There would be no impacts to known sites eligible for listing to the National Register of Historic Places. There are no known sites of cultural importance or sacred sites to the Tribe within the project area. Consultation with the State Historic Preservation Officer would be conducted pursuant to an MOA with SHPO upon project implementation (refer to Appendix F of the FEIS). | Same as Proposed Action | Same as Proposed Action |
| Native American Trust Resources/Environmental Justice | Would not disproportionately adversely affect low-income or minority communities. | Same as Proposed Action | Same as Proposed Action |

**Lower Duchesne River
Wetlands Mitigation Project**

Final Environmental Impact Statement

CHAPTER 1

GENERAL OVERVIEW

CHAPTER 1: GENERAL OVERVIEW

1.1 INTRODUCTION

The Lower Duchesne River Wetlands Project (LDWP) is proposed to fulfill certain mitigation commitments of the Bonneville Unit of the Central Utah Project (CUP). The Strawberry Aqueduct and Collection System (SACS) is a key component of the Bonneville Unit, collecting water from the upper Duchesne River and its tributaries and storing it in Strawberry Reservoir for subsequent delivery to the Wasatch Front. Under full operation, the Bonneville Unit is expected to deliver approximately 102,000 acre-feet of water from the Uinta Basin to the Wasatch Front on an average annual basis.

As a result of construction and operation of SACS, wetland-wildlife habitat along the Duchesne River and adjacent to Strawberry Reservoir was lost. Most wetland impacts occurred on the Uintah and Ouray Reservation lands and, as a result, the Ute Indian Tribe (Tribe) experienced a loss of certain wetland-wildlife benefits such as reduced hunting opportunities and the loss of plants and wildlife important to the Tribe. The LDWP would restore, create and enhance wetland and riparian habitat along the Duchesne River to compensate for the impacts of SACS on wetlands, compensate the Tribe for lost fish and wildlife resources and provide associated Tribal wetland-wildlife resource benefits. Figure 1-1 depicts the location of the LDWP in relation to the Bonneville Unit and SACS impact area.

In 1995, the Utah Reclamation Mitigation and Conservation Commission (Mitigation

Commission) first provided funding to the Tribe as a lead planning agency for the LDWP and a project partner. The U.S. Department of the Interior (DOI), U.S. Fish and Wildlife Service (FWS), U.S. Bureau of Indian Affairs (BIA) and U.S. Bureau of Reclamation (Reclamation), having trust responsibilities to the Tribe, assisted in this planning. The goal was to develop a plan to meet SACS mitigation requirements that would be acceptable to the Tribe and the other partners and to provide additional compensation in the form of wetland-wildlife benefits to the Tribe. The project goals are to create and improve a mix of wetland and riparian habitat types to benefit a broad range of wetland-dependent wildlife, including waterfowl, and to provide compensation to the Tribe for loss of wetlands and other resources on the Uintah and Ouray Indian Reservation due to the CUP.

The LDWP Final Environmental Impact Statement (FEIS) analyzes three action alternatives that address the obligations to provide mitigation for the impacts of SACS on wetlands adjacent to the Duchesne River downstream of Starvation Reservoir and to provide additional wetland-wildlife benefits to the Tribe. Decision making authority regarding which alternative to implement rests with the Tribe, the Mitigation Commission and the DOI-Central Utah Project Completion Act Office.

This LDWP FEIS has been prepared based on a feasibility level of analysis. The material presented in this chapter describing the Proposed Action and alternatives has been summarized from a series of feasibility study reports prepared for the Tribe that describe

conceptual plans for the project (Basin Hydrology 1997, FWS 2000, Western Wetland Systems (WWS 1998 and 2000). Final design for the selected alternative would be prepared after the FEIS is finalized and the Record of Decision issued, but prior to construction.

Chapter 1 provides the project background, defines the purpose of and need for the LDWP and provides an overview of the alternatives. Chapter 2 presents construction details, land ownership and acquisition, project features and project management for the alternatives. Chapter 3 provides a comparative summary of the differences between alternatives. Chapter 4 includes a description of the baseline conditions in the project area and provides a summary of expected impacts from the LDWP construction and operation. Consultation and coordination activities conducted during the LDWP planning process are summarized in Chapter 5.

1.2 PURPOSE AND NEED

1.2.1 Need for the Proposed Action

Measures to improve wetlands along the Duchesne River are required as mitigation of the impacts of SACS on Tribal wetland-wildlife habitat in the Duchesne River corridor and to provide additional wetland-wildlife benefits to the Tribe. The project need was first recognized in the 1965 Deferral Agreement among the DOI, the Tribe and others, and the 1965 Fish and Wildlife Coordination Report (FWS 1965). The project need was accepted in Reclamation's 1965 Addendum to the 1964 Definite Plan Report for the Bonneville Unit and subsequent documents, including the 2004 Definite Plan Report for the Bonneville Unit. The project

need, and mitigation debt owed to the Tribe, remain unfulfilled more than 15 years after SACS facilities became operational and more than 40 years after project planning began.

With the diversion of flows from the Duchesne River, the river floodplain changed from a wide floodplain traversed by annually flooded backwater channels dominated by willow thickets, marshes and extensive areas of cottonwood forest to a single channel bordered by a much narrower floodplain (see also section 1.3.3). Diversions of water from the Duchesne River due to SACS and other water projects now approach 80 percent of the total annual flow (WWS 1998), with substantial loss of adjacent river-connected wetlands and riparian habitats. The habitat types affected most by SACS have been identified as river-connected and annually flooded backwaters, native shrub thickets, extensive marsh complexes and cottonwood forest.

The following needs would be met by the Proposed Action and alternatives:

- Acquire, develop and manage wildlife areas incorporating sufficient quality and quantity of wetlands within the Duchesne River corridor to compensate for Tribal wetland-wildlife losses resulting from construction and operation of SACS, and
- Provide additional wetland-wildlife benefits to the Tribe within the Duchesne River corridor as initially committed by the 1965 Deferral Agreement.

Legend

- Bonneville Unit of the Central Utah Project
- //// SACS Impact Area
- - - LDWP Project Area

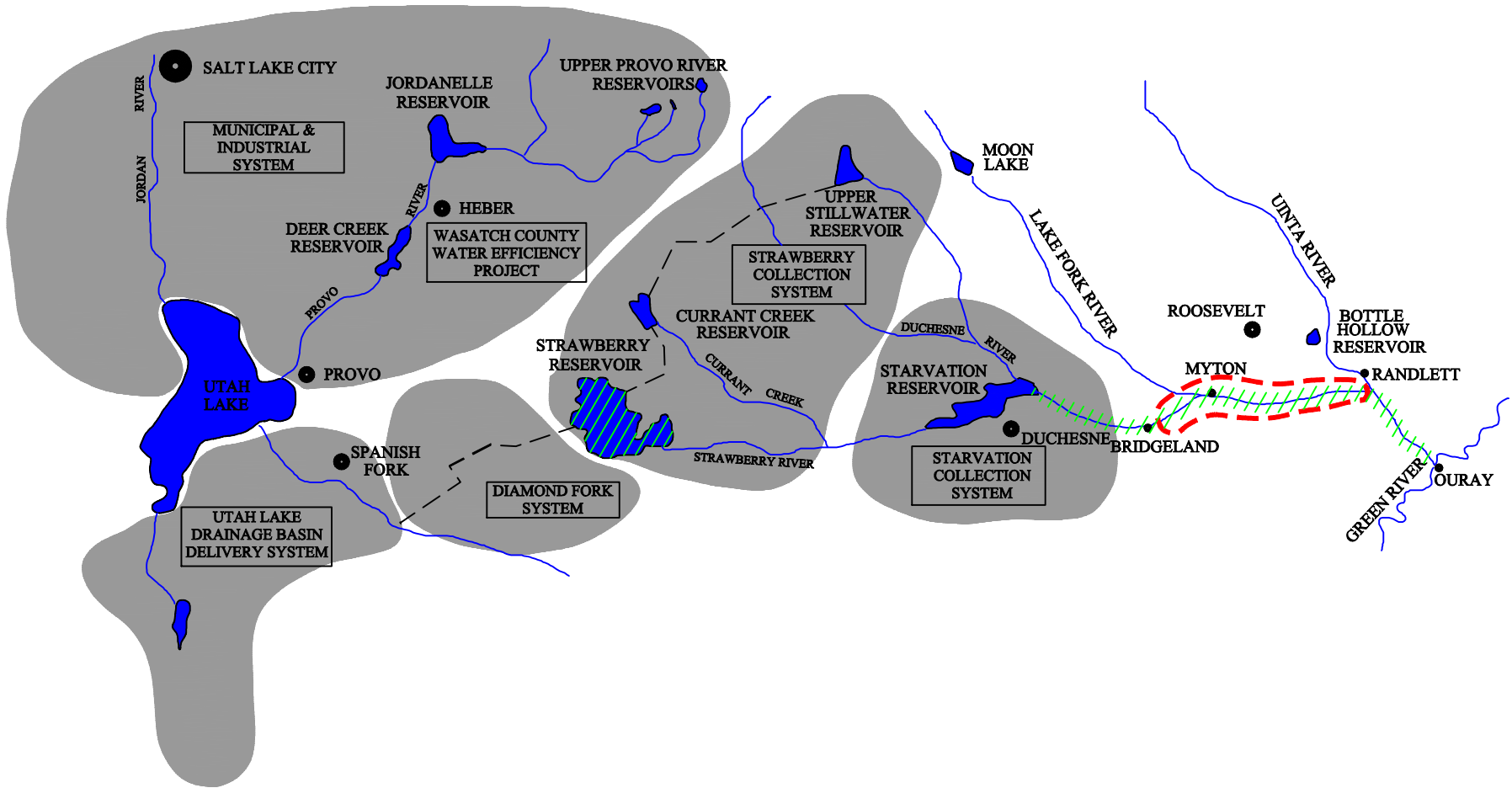


Figure 1-1. Location of the Lower Duchesne Wetlands Mitigation Project in Relation to the Bonneville Unit and the Strawberry Aqueduct and Collection System Impact Area

1.2.2 Purposes of the Proposed Action

The alternatives described in this FEIS are designed to meet the project need and the following specific purposes:

- Restore historical riverine wetland features on, or associated with, the Duchesne River,
- Implement a plan that contains a diversity of wetland and riparian habitat types,
- Develop habitat connectivity by incorporating contiguous blocks of riparian and wetland habitat along oxbows, river terraces and other riverine features, and
- Remain within funding authorization identified in the Mitigation Commission's Mitigation and Conservation Plan (2005).

1.3 HISTORY AND BACKGROUND

1.3.1 Statutory Background

The origins of the LDWP can be traced to the CUP Bonneville Unit Definite Plan Report (BOR 1964), which predicted substantial wetland impacts from SACS, and a 1965 FWS recommendation that management areas totaling 6,640 acres be developed to replace wetland and waterfowl habitat and provide additional benefits to the Tribe through waterfowl hunting. The identified waterfowl management areas would have consisted of approximately 59 percent (3,915 acres) of marsh or open water habitat and 41 percent (2,725 acres) supporting upland or cropland

(FWS 1965). The plan adopted by Reclamation was to develop 6,640 acres of waterfowl habitat for the benefit of the Tribe, of which 45 percent (3,000 acres) would be wetlands (BOR 1965). The recommendation was adopted by Reclamation as a project feature in its September 1965 Supplement to the 1964 Definite Plan Report. The 1988 and 2004 Definite Plan Reports for the Bonneville Unit continued to recognize the same requirement.

The Central Utah Project Completion Act (CUPCA, Public Law 102-575) created the Mitigation Commission to coordinate funding and implementation of fish, wildlife and related recreation mitigation measures for the CUP. CUPCA specifically directs the Mitigation Commission to implement, on a priority basis, unfulfilled mitigation commitments of past CUP decision documents. Section 304 states that “. . . the fish, wildlife and recreation projects identified or proposed in the 1988 Definite Plan Report which have not been completed . . . shall be completed in accordance with the 1988 Definite Plan Report.” Completion of the unfulfilled SACS wetland mitigation and compensation requirement to the Tribe is listed in the 1988 Definite Plan Report.

In 1992, the State of Utah and its elected officials in Congress supported passage of CUPCA, which established the terms and conditions for completing the CUP, including mitigation requirements. A major impetus for CUPCA was awareness that prior mitigation efforts had lagged behind CUP construction, or were inadequate when measured against modern environmental standards. It was the intent of Congress to balance the mitigation debt within Utah resulting from such development and to provide mitigation an equal footing compared to other project

purposes. As such, Congress prescribed the completion of mitigation responsibilities described in the 1988 Definite Plan Report. The LDWP is part of the federally-mandated CUP mitigation commitments. Reclamation initially committed to this project in CUP's 1964 Definite Plan Report and in the 1965 Deferral Agreement with the Tribe. Although the project has been revised over time, the commitment nonetheless remains unfulfilled.

1.3.2 Project Approach and History

In 1965, the FWS predicted that SACS would dewater river-connected backwaters along the Duchesne River and recommended that this loss of wetlands be mitigated by constructing waterfowl habitat for the benefit of the Tribe. Two general approaches to waterfowl habitat development were evaluated in the 1970s (Call Engineering 1975, Kaiserman Associates 1978). The first was to create a series of large impoundments that would be managed specifically for migrating waterfowl and to enhance fall hunting opportunities for the Tribe. The second was to create a series of small ponds for waterfowl breeding habitat. Neither plan was implemented.

In 1995, the Mitigation Commission provided funding to the Tribe to plan the LDWP. Because the project is being implemented more than 40 years after it was first recommended, project goals, previously developed plans and the actual nature of SACS impacts were reevaluated in a 1998 feasibility study (WWS 1998). This study identified that the main impacts of SACS construction and operation were:

- The loss of extensive systems of river-connected and annually flooded backwaters, and

- A substantial reduction in the extent, density, composition and regeneration of native riparian scrub-shrub and cottonwood forest.

Although loss of flooded backwaters undoubtedly impacted waterfowl use of the corridor, habitat was also lost for other wetland and riparian-dependent species such as deer, raptors, wading birds and songbirds. In 1997, the project goals were revised to include mitigation for riparian habitats (including cottonwood forests) to emphasize habitat restoration, wetland diversity and ecosystem management and to provide benefits to wetland and riparian-dependent species other than waterfowl.

Other considerations in developing a mitigation plan are listed below:

- Recognize that the project purpose is to compensate the Tribe for wetland-wildlife habitat loss resulting from SACS; plans need to be consistent with Tribal wildlife management interests.
- Ensure compliance with the standards identified by CUPCA Section 301(g)(4)(D) and (F) that mitigation activities complement the existing and future activities of appropriate federal and Tribal wildlife agencies and be consistent with the legal rights of the Tribe.
- Ensure compliance with the project need to replace Tribal wetland-wildlife habitat losses within the Duchesne River corridor and the directive that LDWP be planned and implemented within the funding limitations allocated for the project by DOI and the Mitigation Commission (7.9 million dollars in 1991 dollars).

- Use the most cost-effective methods to develop wetland and riparian habitat. This required utilization of existing topographic features to the maximum extent possible with a minimization of excavation and regrading of sites, favoring restoration of wetland and riparian habitats where they historically occurred over creation of habitats in new locations and avoidance, to the extent practicable, of residences and rotation croplands,
- Use a landscape approach to develop alternatives that include habitat connectivity, providing large blocks of wetland and riparian habitats, including both sides of the Duchesne River in the project area wherever feasible, including entire oxbow systems in individual sites rather than only parts of the formerly contiguous oxbows and striving to ensure close proximity of wetlands to each other, and
- Ensure compliance with the standards identified by CUPCA Section 301(g)(4)(A) that the Mitigation Commission must consider and apply in implementing mitigation and conservation projects. These standards include a requirement to “restore, maintain or enhance the biological productivity and diversity of natural ecosystems within the State which have substantial potential for providing fish, wildlife and recreation mitigation and conservation opportunities.”

A final planning consideration in developing project alternatives was the option to combine the mitigation obligations of SACS with wetland mitigation required for the Duchesne River Area Canal Rehabilitation Program

(DRACR). The DRACR mitigation obligation was identified by Reclamation in 1982. The Riverdell North property was purchased by the federal government as the site on which DRACR mitigation was to be conducted. The mitigation goal recommended by the FWS (FWS 1982) is to replace 390 wetland-wildlife habitat units through creation, restoration and enhancement of 450 acres of wetlands within the Riverdell North property. The mitigation obligation is unfulfilled. The Riverdell North property is located within the LDWP area (see Figure 1-2, located at the end of this chapter). Alternatives developed in the DEIS to accomplish both projects have been dropped from consideration due to public comment.

1.3.3 Duchesne River History

The Duchesne River historically was “highly turbid, strong flowing and turbulent” (Minckley 1973). Historic plat maps depict the river as consisting of numerous secondary channels and abandoned meanders, some of which were described as backwater sloughs (Brink and Schmidt 1996).

Major irrigation canals to divert water locally from the Duchesne River were constructed between 1907 and 1920, and by 1940 much of the Duchesne River floodplain had been converted to cropland (Brink and Schmidt 1996). Two major canals along the lower Duchesne River, the Grey Mountain Canal and the Myton Townsite Canal, both part of the Uintah Indian Irrigation Project, currently divert an average annual amount of 81,145 acre-feet. Other local irrigation diversions along the lower Duchesne River divert an additional 56,000 acre-feet.

Trans-basin deliveries of Duchesne River water to the Wasatch Front began in 1915

with the Strawberry Valley Project. Other trans-basin diversions have been added over time, including diversions from the North Fork Duchesne River by the Provo River Project in 1953. The largest and most recent diversions, beginning in 1967, occurred as a result of the CUP. Cumulatively, these water developments deplete a substantial portion of the Duchesne River flows.

From 1943 to 1990, annual flow depletions have averaged 43 percent of the natural flow. This percentage has increased over time. For example, from 1973 to 1990, depletions averaged 51 percent of total runoff; after the completion of Stillwater Reservoir in 1987, flow depletions averaged 79 percent with a high of 85 percent in 1990 (WWS 1998).

As a result of diversions from the Duchesne River and clearing of land for agriculture, the wetland and riparian habitats along the Duchesne River have been altered. Historically, the Duchesne River was described as an anastomosing channel with a nearly continuous network of side and backwater channels bordered by willow thickets and cottonwood forest. The Duchesne River has also been described as consisting of impenetrable willow thickets and marshy estuaries (Warner 1995). As average streamflow and flood magnitude in the Duchesne River have declined, individual backwater areas and oxbows have become isolated from the river as a result of their entrances being silted in or their being leveled for agricultural development. At the present time, active backwater channels are open only in three locations between Bridgeland and Ouray. Abandoned oxbows exist throughout the study area and are abundant near Bridgeland; however, with few exceptions, these oxbows are isolated from and are rarely, if ever, flooded by the river. The majority of

the oxbows still classified as wetland habitat are apparently supported by return flow from irrigated fields.

These changes, together with reductions in streamflow, have resulted in loss of riparian habitat and backwaters formerly used by native fish and wildlife. Currently, the Duchesne River is confined to a single channel with secondary channels in only two locations. River-connected backwater slough habitat and extensive willow thickets no longer exist. The floodplain cottonwood forest has been dramatically reduced in width, canopy cover, density and vigor. Many of the remnant cottonwoods along the Duchesne River are estimated to be from 100 to more than 150 years old, with recent cottonwood establishment limited in the corridor. Additionally, shrub density has increased in the corridor, primarily as a result of Russian olive and tamarisk establishment. Native shrubs of importance to wildlife and the Tribe culture have decreased in extent (WWS 1998).

1.4 OVERVIEW OF THE PROPOSED ACTION AND ALTERNATIVES

The DOI, Mitigation Commission and the Tribe considered a broad range of approaches that could be implemented to meet the purpose and need for the project. These measures included:

- Rewatering oxbows with a narrow supporting upland corridor,
- Rewatering oxbows with greater development of supporting upland and riparian areas (separate alternatives developed for different configurations of sites),

- Creation of large ponds for migrating waterfowl, and/or
- Release of stored flows from Starvation Reservoir in a manner that provides for riparian benefit.

All measures were evaluated for their technical, economic and environmental feasibility. Alternatives were developed that utilized the various measures. Those alternatives selected for evaluation in this FEIS are considered the most feasible when measured against the purpose and need for the project. Alternatives considered but eliminated from detailed analysis are discussed in section 1.5.

1.4.1 Location of Proposed Action and Alternatives

The LDWP area is located within a corridor along the Duchesne River that includes both the current and historical floodplains, including the pre-SACS active secondary channels and oxbows. Because the Duchesne River contained an extensive floodplain and secondary channel system, the corridor extends up to one mile from each side of the river. The 45-mile long corridor is located between the junction of Highway 40 and the old highway and Antelope Canyon Road near Bridgeland, Utah and the confluence of the Duchesne and Green Rivers just north of Ouray, Utah (Figure 1-2). Elevations in the

corridor range from 4,740 to 5,297 feet above mean sea level.

The Proposed Action and alternatives consist of a combination of sites that would be acquired, developed and managed as a single wetland-wildlife area. Five sites, ranging in size from 1,046 to 2,646 acres, make up the various alternatives (Table 1-1). These sites are the Flume, Uresk Drain, Riverdell North, Riverdell South and Ted's Flat sites (Figure 1-2). Each alternative contains a different combination of sites, and the size of the sites varies among alternatives (Figures 1-3 through 1-5, located at the end of this chapter). Subsequent discussions of the Proposed Action and alternatives make frequent reference to the specific sites and features shown in these figures.

Flume: The Flume site begins at an active secondary channel of the Duchesne River 4.5 miles west of Myton and 0.75 miles north of Highway 40. The site extends for 3.5 air miles along the Duchesne River corridor, ending at the Myton Townsite Canal.

The site consists of 2,646 acres and encompasses both sides of U.S. Highway 40 for the entire site length. This site is included in the Pahcease and Topanotes Alternatives.

Uresk Drain: The Uresk Drain site (acreage varies among alternatives) begins just north of

| Table 1-1. Summary of the Sites and Size of the Site Included in Each Alternative | | | |
|--|------------------------|-----------------------------|------------------------------|
| Site | Acres by Site | | |
| | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Flume | Not included | 2,646 | 2,646 |
| Uresk Drain | 1,856 | 1,929 | 1,929 |
| Riverdell North | Not Included | 1,087 | Not Included |
| Riverdell South | 1,046 | 1,103 | Not Included |
| Ted's Flat | 1,905 | Not included | 2,073 |
| Total Acres | 4,807 | 6,765 | 6,648 |

County Road 8000 South (also known as River Road), which borders the southern edge of the town of Myton. The site extends approximately two miles east of Myton to the Duchesne River and extends south to the Myton Townsite Canal. The Uresk Drain site is named after its major topographic feature, the Uresk Drain, a 2.5 mile long drainage ditch constructed in 1936 to remove the high water table from the “marshy land southwest of Myton” (SCS 1959). Hereafter, the site is referred to as the “Uresk Drain” and the drainage ditch as the “Drain.”

The Uresk Drain site is divided into four subareas:

- The Main Site, consisting of the area directly influenced by the Drain,
- The Goose Ponds, located between the Main Site and the Duchesne River,
- The West Fields, located between County Road 3000 West and the Myton Townsite Canal, and
- The Head of the Drain, located north of County Road 8000 South.

The Uresk Drain site borders the Duchesne River at its eastern boundary and is hydrologically connected to it through the Drain. The state-owned Mallard Springs Wildlife Management Area (hereafter referred to as Mallard Springs) is within the Uresk Drain Main Site but is not part of the LDWP. The Uresk Drain site is included in all alternatives, but its size varies among alternatives. The Uresk Drain site in the Proposed Action consists of 1,856 acres and contains only a limited portion of the “Head of the Drain”. The Uresk Drain site included in the Pahcease and Topanotes alternatives is larger (1,929 acres) as the entire “Head of the Drain” subarea is included.

Riverdell North: The Riverdell North site consists of 1,087 acres of federally owned property purchased in 1990 by Reclamation for DRACR mitigation. The site is located generally on the north side of the Duchesne River and includes the Riverdell Canal. Riverdell North borders the Uresk Drain site along most of its western boundary and the Riverdell South site along most of its southern boundary. The Riverdell North site is part of the Pahcease Alternative, but it is not included in either the Proposed Action or the Topanotes Alternative.

Riverdell South: The Riverdell South site is located generally on the south side of the Duchesne River. The site borders the Uresk Drain site on its western boundary, extending east for 3.5 miles along River Road. The Riverdell South site abuts the Riverdell North site. The Riverdell South site has two different configurations depending on the alternative (1,046 to 1,103 acres). The configuration of the Riverdell South property is smaller in the Proposed Action (1,046 acres) than in the Pahcease Alternative (1,103 acres), as it does not include cropland or residences along the site boundaries.

The Riverdell South site is included in the Proposed Action and Pahcease Alternatives. The Pahcease Alternative combines the Riverdell South with the Riverdell North site into a single biological management unit. The combination of the two Riverdell sites is not included in the Proposed Action.

Ted's Flat: The Ted's Flat site consists of from 1,905 to 2,073 acres and encompasses both sides of the Duchesne River, extending from the Ouray School Canal on the north property line to the Myton Townsite Canal on the south. The site is located in Uintah County, 3.5 miles east of the Duchesne-Uintah County line, and is 1.5 miles east of the Riverdell North/South site. The Ted's Flat site is included in the Proposed Action and the Topanotes Alternatives. The configuration of the Ted's Flat site is smaller in the Proposed Action (1,905 acres) than in the Topanotes Alternative (2,073 acres), as it does not include cropland or residences along the site boundaries.

1.4.2 Description of the Proposed Action

The Proposed Action includes both riparian habitat and oxbow restoration. The total project area, as depicted on Figure 1-3, encompasses 4,807 acres. The Proposed Action would require acquisition of 1,592 acres of private land and compensation to the Tribe for loss of income on 3,215 acres of Tribal Trust land that would be incorporated into the project. Acquisition is described in detail in section 2.1.3.2. The Proposed Action would restore, create or enhance 2,681 acres of wetland and riparian habitats. The alternative restores three oxbow systems totaling approximately 5 miles. Sites included in the alternative are the Uresk Drain, Riverdell South and Ted's Flat.

The Proposed Action would provide more wetland than riparian habitats. Riparian habitat would be restored in large blocks on the Ted's Flat site. Wetlands would be created on the Uresk Drain and along the oxbows on Riverdell South and Ted's Flat, both north and south of the river. The primary habitats bordering the restored oxbows and large wetland areas would be native shrub and managed grassland, with cottonwood forest bordering most of the Ted's Flat north oxbows.

Mitigation activities include restoring connections among oxbows to create large interconnected oxbow systems, constructing small berms to allow water retention, rewatering abandoned oxbows and replanting native riparian species in the Duchesne River floodplain.

1.4.3 Description of the Pahcease Alternative

The Pahcease Alternative is similar to the Proposed Action in that it combines riparian habitat and oxbow restoration. This alternative consolidates lands and habitats around Myton for cost-effective and efficient management. The project area, as depicted on Figure 1-4, encompasses 6,765 acres. The Pahcease Alternative would require acquisition of 1,787 acres of private land, compensation to the Tribe for loss of income on 3,891 acres of Tribal Trust land that would be incorporated into the project and acquisition or transfer of 1,087 acres of the federally owned Riverdell North property, which was purchased for DRACR mitigation. The LDWP would need to acquire additional lands to replace the Riverdell North property with other property suitable for DRACR mitigation or compensate Reclamation for the Riverdell North property. The Pahcease Alternative would restore, create and enhance 3,055 acres of wetland and riparian habitat. The alternative would restore two oxbow systems comprising nine miles. The Flume oxbow system and the Riverdell North oxbow would be connected to the river. Sites included in the alternative include the Flume, Uresk Drain and Riverdell North/South sites, all of which are contiguous.

The Pahcease Alternative would provide more wetland than riparian habitat. Riparian habitat would be restored in large blocks only on the Riverdell North property. The primary habitats bordering the restored oxbows and large wetland areas would be desert shrub and managed grassland.

Mitigation activities would be the same as for the Proposed Action.

1.4.4 Description of the Topanotes Alternative

The Topanotes Alternative is similar to the Proposed Action in that it combines riparian habitat and oxbow restoration. The project area encompasses 6,648 acres as depicted on Figure 1-5. The Topanotes Alternative would require acquisition of 2,171 acres of private land and compensation to the Tribe for loss of income on 4,477 acres of Tribal Trust land that would be incorporated into the project. The Topanotes Alternative would restore, create and enhance 3,175 acres of wetland and riparian habitat. The Topanotes Alternative differs from the Pahcease Alternative in that it does not utilize either the federally owned Riverdell North property or the Riverdell South property. Instead, the Ted's Flat parcel farther to the east is included. Sites included in the alternative include the Flume, Uresk Drain and Ted's Flat.

The Topanotes Alternative would provide approximately equal amounts of large wetland marsh, wetland oxbow and riparian habitats. Riparian habitat would be restored in large blocks only on the Ted's Flat site. The primary habitats bordering the restored oxbows and large wetland areas would be desert shrub and managed grassland. Cottonwood forest would border the Ted's Flat North oxbows.

Mitigation activities would be the same as for the Proposed Action.

1.4.5 Description of the No Action Alternative

The No Action Alternative would not restore any wetland or riparian habitats impacted by SACS. The mitigation obligations to the

Tribe identified in the 1965 FWS Coordination Act Report, the 1964 Definite Plan Report, the 1965 Deferral Agreement and both the 1988 and 2004 Definite Plan Reports would remain unfulfilled.

1.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The following alternatives were considered but eliminated from further study for the reasons indicated.

1.5.1 Large Ponds Alternative

The Large Ponds Alternative focused on creating large open water areas to be managed specifically for breeding and migrating waterfowl, consistent with plans developed but not implemented in the 1970s (Call Engineering 1975, Kaiserman Associates 1978). The total alternative project area would have been 3,297 acres, of which 1,409 acres would have been open water/deep marsh wetlands. There would have been no oxbow restoration. Sites included in the alternative were the Uresk Drain and Upper Wissiups. The Upper Wissiups site extends downstream 3.5 miles from the Wissiups Ditch intake (located approximately 3 miles downstream of the Uinta River confluence at Randlett).

Wetlands would have been developed by constructing large berms to create a series of wetland cells and excavating ponds from uplands. There would have been no riparian restoration and existing cottonwood forest would not have been preserved. There would have been a net loss of wet meadow, native scrub-shrub and riparian forest due to conversion to open water. Water

requirements for the impoundment operation on the Upper Wissiups were estimated at 45,000 acre-feet, exceeding the water available to be delivered to this site.

This alternative represented the alternative closest to the original 1964 recommendations that emphasized waterfowl impoundments. The alternative did not meet the Purpose and Need to replace habitats actually impacted by SACS, by restoring riverine features and providing for a diversity of wetland types.

1.5.2 Riparian Flow Alternative

This alternative concentrated on providing releases from Starvation Reservoir sufficient to provide overbank flooding, rewater oxbow systems and stimulate natural riparian species regeneration. The alternative required acquisition of all land within the current 10- to 25-year floodplain between Duchesne and Ouray.

The primary habitat focus of this alternative was on restoring native riparian shrub and cottonwood forest. The primary mitigation activities would have been to acquire land within the 10- to 25-year Duchesne River floodplain from Duchesne to Ouray, provide for initial excavation of selected oxbow inlets and release stored water from Starvation Reservoir in amounts and at appropriate times to provide for riparian benefit. Several components of the annual river hydrograph (the pattern of river flows) are important to maintaining native riparian vegetation. The native vegetation along the Duchesne River was historically dominated by willows and cottonwoods. These species have very specific hydrologic requirements (Scott et al. 1996, Rood and Mahoney 1990):

- A high spring flood flow to create new surfaces for vegetation establishment, maintain inlets to secondary channels and recharge alluvial aquifers. The spring flood must occur during the time that native willows and cottonwoods disperse seed as the seed is short-lived and will not germinate unless it lands on a bare, moist soil surface shortly after dispersal,
- A gradually declining decrease in flood flows so that newly establishing seedlings have sufficient water to maintain early growth, and
- Sufficient summer or base flow to maintain both seedlings and established riparian vegetation.

Both local and trans-basin diversions from the Duchesne River have altered the historic hydrograph. This alternative would have released stored water from Starvation Reservoir and/or bypassed natural flows in a manner that addressed all three critical hydrologic components. Specifically, implementation of the alternative would have:

- Released flows during the spring flood so that a peak of 6,000 cubic feet per second (cfs) would be reached at Myton and a peak of 7,000 cfs would be reached at Randlett at three to five year intervals,
- Moderated spring flood flow declines so that declines would not have exceeded 150 cfs per day,
- Increased summer base flows by 100 to 200 cfs, and
- Monitored flow releases so that they remained in the river and were not diverted into irrigation canals.

This alternative met the project need to restore habitats impacted by SACS, with a major emphasis on riparian habitat. Wetland-wildlife benefits to the Ute Tribe would have been less under this alternative than under other alternatives considered.

Land acquisition costs for this alternative were at least 8.3 million dollars, substantially higher than the other alternatives. Water requirements were 45,000 acre-feet/year, which exceeded the water that would have been available with land purchase. Additional water, if it were available, would have to be acquired at market cost, which was estimated at more than 20 million dollars; this amount exceeded the project budget.

The Riparian Flow Alternative was only considered feasible if additional water could have been dedicated to the project. Two additional water sources were investigated; (1) potential use of 44,400 acre-feet of water dedicated to instream fishery flows by the CUP under the Streamflow Agreement of 1980 (as amended in 1990) and (2) proposed flows to assist in the recovery of the Colorado River endangered fish.

Dedication of the 44,400 acre-feet of instream fishery flows to the LDWP was not feasible because water is generally only available upstream of the confluence of the Duchesne and Strawberry Rivers. The Streamflow Agreement does not provide for storage and re-regulation in a manner required under this alternative. Additionally, these flows are released in a relatively uniform pattern during the year, which would not meet the riparian requirements for higher flows during the spring and early summer periods.

In 1990, as modified in 2005, the FWS recommended that flows be changed in the

Duchesne River for the benefit of the Colorado River endangered fish. The recommended flow regime included increases in both the spring flood peak and summer base flows. There is general compatibility between riparian requirements and the proposed endangered fish flows, although some aspects of the hydrograph differ and would have required modifications to meet riparian needs (WWS 2000). After careful review, use of the 2005 recommended endangered fish flows as a component of the LDWP is not feasible.

1.5.3 Linear Oxbow Corridor Alternative

The Linear Oxbow Corridor Alternative focused on rewatering 10 miles of oxbows in four sites along the Duchesne River (the Flume, Uresk Drain, Riverdell North/South and Upper Wissiups). The alternative considered a variety of wetland-dependent wildlife groups but emphasized waterfowl habitat; thus, boundaries along the oxbows were truncated at the limit of where open water/marsh habitat could be developed, with a limited amount of supporting upland habitat. Mitigation activities included restoring connections among oxbows, constructing berms to allow water retention and rewatering of abandoned oxbows.

Since the alternative was formulated, oil and gas potential was discovered on the Upper Wissiups site and the site has since been leased for oil and gas exploration. With leasing of one of the sites, the size of the remaining sites was increased and became the Pahcease Alternative, which is considered in detail in the FEIS.

1.5.4 Expanded Oxbow Systems: Scattered Sites Alternative

The Scattered Sites Alternative combined both riparian habitat and oxbow restoration. The alternative would have restored four oxbow systems totaling 15 miles and one secondary channel system within five sites. The total project area would have been 7,727 acres, of which 4,752 acres (61 percent) would have consisted of wetland and riparian habitats. Of those 4,752 acres, 43 percent would have been wetland habitat, while 57 percent would have been riparian. Mitigation activities would have included restoring connections among oxbows to create large interconnected systems, constructing berms for water retention, rewatering oxbows and replanting native riparian species. Sites included in the alternative were the Flume, Uresk Drain, Riverdell North/South, Ted's Flat and Upper Wissiups.

The Scattered Sites Alternative met the project need of replacing riparian and wetland habitat types impacted by SACS and took advantage of the opportunity to include the DRACR and SACS mitigations into a single project. This alternative would have included all of the same sites as the current alternatives but less would have been acquired on each of the sites. The Scattered Sites Alternative also included 1,300 acres on the Upper Wissiups site. Since the alternative was formulated, oil and gas potential was discovered on the Upper Wissiups site and the site has since been leased for oil and gas exploration. With leasing of one of the sites, the size of the remaining four sites was increased and incorporated into the Proposed Action and Alternatives.

1.5.5 Green River Alternative

Several alternatives along the Green River were evaluated. Two alternatives were evaluated in 1999 (WWS 2000) to locate a single contiguous area or series of areas commensurate in size with the other alternatives being considered at the time (greater than 4,500 acres). A third alternative was evaluated in 2004. The three alternatives included the following elements:

- Combining the LDWP mitigation commitments with floodplain easement purchases associated with the RIP,
- Mitigating wetland-wildlife losses on Tribal land near the confluence of the Duchesne River with the Green and White Rivers, and
- Locating the mitigation on federal land managed by the Bureau of Land Management (BLM) along the Green River near the confluence of the White and Duchesne Rivers.

None of these alternatives met the LDWP purpose and need to mitigate wetland losses within the Duchesne River corridor where the impacts occurred. Each alternative had additional constraints making it infeasible.

Combining the FWS floodplain easement purchase program with the LDWP was not feasible because current and planned floodplain easement purchases were limited to floodwater access only, making management for Tribal wildlife objectives difficult. The ability to manage the land for wildlife nesting or other needs, change habitat types or address land use was not part of the floodplain easement purchase.

Tribal land at the confluence of the Duchesne River with the Green and White Rivers is flooded bottomland that is already managed by the Tribe for wetland-wildlife purposes and these lands would not provide a substantial increase in wildlife habitat. Additionally, land already managed under an existing Tribal wildlife proclamation would have had to be moved out of Tribal management and into a different category subject to federal oversight.

This alternative would have resulted in no additional overall wildlife benefits, no benefits to the Tribe and would not satisfy the mitigation commitments of the LDWP.

Federally owned land along the Green River is managed by BLM under the Vernal Resource Management Plan. Mitigation activities were not investigated in detail for this alternative because BLM had identified this area as one proposed for further oil and gas leasing, and not an area available for wetland mitigation - either now or in the future (Draft Environmental Impact Statement for the Vernal Resource Management Plan 2005).

1.6 AUTHORIZING ACTIONS, PERMITS AND/OR LICENSES

The actions or permits required to implement the LDWP are presented in Table 1-2. This table briefly describes the actions, permits and/or licenses and defines the responsible agency or organization. These actions, permits and/or licenses are required to complete the National Environmental Policy Act (NEPA) process and gain approval prior to construction. Operating agreements, management responsibilities and post-construction agency roles are described in section 2.1.4.

Table 1-2. Possible Authorizing Actions, Permits and/or Licenses for Construction.

| Agency or Organization | Actions, Permits and/or Licenses Required | Description |
|---|---|---|
| Federal Agencies | | |
| Ute Indian Tribe (Tribe) | Makes decision to accept the Proposed Action or alternative and leases Tribal Trust lands for the project. Participates in all historic preservation matters on Tribal Trust lands. | The Ute Tribe Business Committee must approve the NEPA compliance document in order to initiate project. |
| U.S. Department of the Interior (DOI) | Makes decision to accept the Proposed Action or alternative and provides federal acknowledgment of NEPA compliance. | DOI must approve the NEPA compliance document in order to initiate project. DOI must ensure it fulfills its Trust responsibilities. |
| Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission) | Makes decision to accept the Proposed Action or alternative and provides federal acknowledgment of NEPA compliance. | Mitigation Commission must approve the NEPA compliance document in order to initiate project and ensure it fulfills its Trust responsibilities. |
| U.S. Bureau of Indian Affairs (BIA) | Administers leases affecting Tribal Trust lands. Responsible for Indian water delivery to project. | BIA has trust responsibility for management of resources on Tribal Trust lands. |
| U.S. Fish and Wildlife Service (FWS) | Provides Endangered Species Act (ESA) (Section 7) consultation. | Consultation under Section 7 of the ESA may be required to determine if the project would affect threatened or endangered species. |
| | Prepares Fish and Wildlife Coordination Act (FWCA) Report. | FWS must prepare a FWCA report that identifies whether or not the mitigation obligation is achieved. |
| U.S. Bureau of Reclamation (Reclamation) | Authorizes use of Riverdell North property for Pahcease Alternative. Conducts land acquisition activities for CUP projects. | Riverdell North property is in the name of the United States under the jurisdiction and administration of Reclamation. |
| U.S. Army Corps of Engineers (COE) | Issues permit pursuant to Section 404 of the Clean Water Act (CWA). | Required for discharge of fill material into waters of the U.S. (including wetlands). |

| Agency or Organization | Actions, Permits and/or Licenses Required | Description |
|--|---|---|
| U.S. Environmental Protection Agency (EPA) | Provides oversight authority for Section 404 permits. | EPA will review Section 404 permit applications and recommend approval or denial of permits. They have authority to veto COE permit approvals. |
| | Reviews NEPA documents for compliance with federal regulations. | EPA will refer NEPA documents to the Council on Environmental Quality (CEQ) if they find the documents in non-compliance. |
| | Administers Water Quality Certification (Section 401) and National Pollutant Discharge Elimination System (NPDES) permits (Section 402) on Indian lands. | EPA provides Section 401 certification for any necessary Section 404 (wetlands) permits on Indian lands. EPA issues Section 402 Pollutant Discharge Elimination System permits and Section 402 General Construction Stormwater Discharge permits on Indian lands. |
| State Agencies | | |
| Utah State Historic Preservation Office (SHPO) | Administers Section 106 of the National Historic Preservation Act. Signatory to a Programmatic Agreement with the DOI, Mitigation Commission and Tribe to guide future studies and mitigation. | The Tribe, Mitigation Commission and SHPO will determine if a proposed project will have an impact on culturally or historically sensitive sites listed, or eligible for listing, on the National Register of Historic Places. |
| Utah Division of Water Rights (DWRi) | Issues stream alteration permits on non-Indian lands outside of the Uintah Indian Irrigation Project (UIIP). | The DWRi must issue a stream alteration permit for any feature affecting stream beds. The DWRi authority only applies to fee lands acquired for the project outside of the UIIP, not to any Tribal Trust lands. |
| Utah Division of Water Quality (DWQ) | Administers Water Quality Certification (Section 401) and National Pollutant Discharge Elimination System (NPDES) permits (Section 402) on non-Indian lands. | DWQ provides Section 401 certification for any necessary Section 404 (wetlands) permits on non-Indian lands. DWQ issues Section 402 Pollutant Discharge Elimination System permits and Section 402 General Construction Stormwater Discharge permits on non-Indian lands. |

| Agency or Organization | Actions, Permits and/or Licenses Required | Description |
|---|---|--|
| Utah Division of Wildlife Resources (DWR) | Approves requests for installation of easements across DWR lands. | Delivery of LDWP water east of Mallard Springs may require a new conveyance structure to avoid damaging the Mallard Springs wetland. |
| Other Agencies or Organizations | | |
| Duchesne/Uintah County Governments | Issues permits to construct in county road rights-of-way. | A permit may be needed to replace culverts, install water control structures, install fencing, construct access roads or other work within a county road right-of-way. |

1.7 INTERRELATED PROJECTS

This section describes projects that could contribute to cumulative impacts of the Proposed Action and alternatives. These projects are referred to as interrelated projects.

The Council on Environmental Quality (CEQ) defines cumulative impacts as “the impact on the environment, which results from the incremental impacts of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such action” (Section 1508.7). Cumulative impacts can occur when two or more projects affect the same resource in either time or space.

Only “reasonably foreseeable” projects need to be included in the cumulative impact analysis. This means that the project or action is identified and described in an appropriate public document and has a reasonable chance of being approved or funded. A project must be described in sufficient detail to allow a determination of its potential impacts. The determination of cumulative impacts is based

on net impacts (those impacts remaining after mitigation has been applied).

1.7.1 Colorado River Salinity Control Program

The Salinity Control Act (P.L. 93-320, 98-569 and 104-20) authorized the DOI to enhance and protect water quality in the Colorado River Basin. Reclamation and the Natural Resources Conservation Service (NRCS) have developed programs in Uintah and Duchesne Counties to reduce salt loading to the Duchesne River, and eventually the Green and Colorado Rivers. The programs reduce salt loading through rehabilitating existing canals and improving the efficiency of on-farm irrigation systems. In the Uinta Basin, the plan is to reduce the salt load into the Colorado River by 111,210 tons per year. As of the 2001 water year, the salt load has been decreased by 105,914 tons per year (Draper et al. 2002). By 2005, salt load reductions have exceeded the goal and totaled 162,630 tons per year (USDA 2006).

As a result of the program, irrigation-induced wetlands have been lost. The program has an

active policy of mitigating for these losses by either on-farm improvements or offsite mitigation. Since 1980, 2,941 acres of wetlands have been impacted by the program with a corresponding increase of 2,606 acres of farmland being managed for wetland wildlife (Draper et al. 2002). As of 2005, 2,649 acres have received wetland management under the program (USDA 2006).

Resources to be considered in the cumulative impact analysis include changes in water quality (reduction in salt loading) and temporary losses of wetland and riparian habitat.

Mitigation for some past impacts to wetlands under the Salinity Control Program has been completed, or identified for completion, within or adjacent to the LDWP project area. Acreage of wetland-wildlife habitat cited above represent mitigation. In addition, DRACR mitigation and the Mallard Springs wetland mitigation, which are described separately below, have been developed to offset salinity or related project impacts.

1.7.2 Mallard Springs Mitigation Plan

Mallard Springs is a 270-acre parcel owned by the State of Utah. It is located between the main part of the Uresk Drain and the West Fields area of the Uresk Drain. The Duchesne County Water Conservancy District has developed 38 acres of open water wetlands as mitigation for impacts incurred under the Colorado River Salinity Control Program (see section 1.7.1). The mitigation included plugging the Drain and constructing berms in portions of the site. The Mallard Springs plans are compatible (at a feasibility level review) with the LDWP plans for the Uresk

Drain site. Resource impacts from Mallard Springs include an increase of approximately 76 acres of open water wetlands near Myton and potential cultural resource impacts. Resources to be considered in the cumulative impact analysis include wetlands, wildlife and public health and safety.

1.7.3 Duchesne River Area Canal Rehabilitation Mitigation

The DRACR mitigation obligation was identified by Reclamation in 1982 and the Riverdell North property was purchased by the federal government as the site on which DRACR mitigation was to be conducted. The mitigation goal recommended by the FWS is to replace 390 wetland-wildlife habitat units through creation, restoration and enhancement of 450 acres of wetland within the Riverdell North property (FWS 1982). The mitigation obligation is unfulfilled. The Riverdell North property is displayed on Figure 1-2. Under all alternatives, DRACR mitigation would represent a separate but related project that would be developed independently of the LDWP. A separate DRACR mitigation plan has not been developed so the impacts can not be quantified. However, the plan would need to replace 390 wetland-wildlife habitat units, which would require development of approximately 450 acres of wetland. Resources to be considered in the cumulative impact analysis include wetland and wildlife resources. Additional resources to be considered in the cumulative impact analysis for the Pahcease Alternative only include changes in land use and county taxes through additional federal land purchase.

1.7.4 Riverdell North Property Water System Improvement Project

The Riverdell North property consists of 1,087 acres of land owned by the federal government primarily on the north side of the Duchesne River east of Myton. The property was acquired for mitigation of wetland losses resulting from DRACR as described in section 1.7.3 above. This parcel is included in the Pahcease Alternative for the LDWP as part of the combined Riverdell North and South sites. The Riverdell Property Water System Improvements Project (RWIP) proposes to improve the existing irrigation system on the property.

The RWIP would overlap the LDWP in space, as the two project areas are adjacent to each other along the Duchesne River, and the Pahcease Alternative includes the Riverdell North property. Resources to be considered in the cumulative impact analysis include an unquantified loss of wetlands and cottonwoods along 13,420 feet of canals. Mitigation for these losses would be accomplished on the Riverdell North property under a separate plan to be developed by the DOI and Mitigation Commission.

1.7.5 Section 203(a) Uinta Basin Replacement Project

The Uinta Basin Replacement Project (UBRP), authorized under Section 203(a) of CUPCA, is a proposed water resource project that would change water storage, enlarge an existing reservoir, stabilize thirteen high mountain lakes and add new water diversion and distribution facilities for irrigation and municipal water use. The project would also modify existing reservoir outlets to provide

water for instream flows on certain portions of the Lake Fork River.

The Section 203(a), UBRP project area of influence includes the Duchesne River downstream of Myton, as input from the Lake Fork River to the Duchesne River would be reduced by 3,345 acre-feet (4 percent of the annual flow) with a corresponding decrease in water quality (average increase of 242 ppm of total dissolved salts in the Lake Fork River). Construction of the project was completed in 2006. Water quality and quantity are resources to be considered in the cumulative impact analysis.

1.7.6 Colorado River Recovery Implementation Program

The Colorado River Recovery Implementation Program (RIP) is an interagency partnership developed to recover the endangered Colorado pikeminnow, razorback sucker, humpback chub and bonytail (see section 4.3 for additional details on these species), while still allowing for water resource development. Two of the program elements involve activities in the lower Duchesne River corridor; habitat management and research programs. The habitat management element includes identifying flows and changing reservoir operations to benefit endangered fish. The FWS (1990) recommended instream flows for the Duchesne River and updated the recommendations in FWS (2005) based on new research. However, the flows are still in the process of being implemented and the future level of implementation is uncertain. Therefore, the cumulative effects of this program element cannot be analyzed in this FEIS.

The research program includes collecting data on endangered fish and monitoring population

trends in the Duchesne River. Although only the lower 2.5 miles of the Duchesne River have been identified as critical habitat for the razorback sucker, research and monitoring occurs along the Duchesne River from Ouray to Myton. There are no resources to be considered in the cumulative impact analysis for those elements of the program involving the Duchesne River.


A third program element is a habitat development program that includes restoring floodplain habitats through flood easement purchase. The easements grant permission only to increase floodability of the property with minimal land use changes and no change in ownership. To date, 1,080 acres have been placed under easements in Uintah County, all along the Green River. There are no other pending easement acquisitions for the foreseeable future and none are planned for the Duchesne River. The floodplain easement acquisition program would overlap the LDWP in space for those resources that include all of Uintah County as their area of influence.

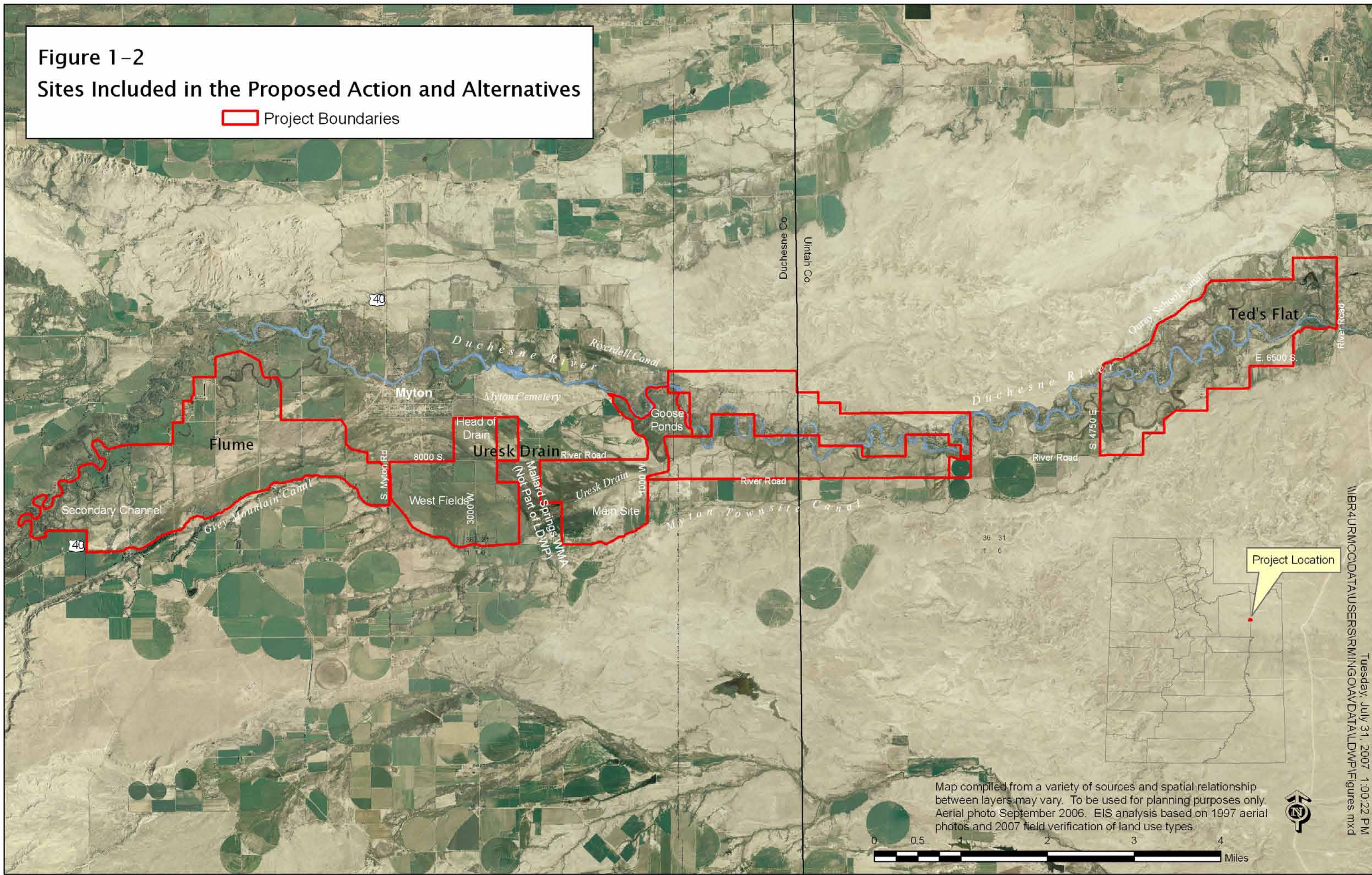
1.7.7 Past Water Resource Development Projects

The FWS quantified the effects of individual federal and non-federal water project depletions from the Duchesne River in a Biological Opinion dated July 29, 1998 (FWS 1998). The Duchesne River historically produced approximately 768,000 acre-feet of water annually based on a 1912-1990 time period (CH2M-Hill 1997). Federal projects deplete 447,000 acre-feet and private users deplete 120,000 acre-feet resulting in an average annual depletion of 567,000 acre-feet, or 74 percent of the average flow between 1912 and 1990. Theoretically, the average annual flow remaining in the Duchesne River is 201,000 acre-feet. However, the amount

depleted from the Duchesne River has increased over time. From 1943 to 1990, total flow depletions averaged 43 percent of the natural flow. From 1973 to 1990, depletions averaged 51 percent of total runoff. After the completion of Stillwater Reservoir in 1987, flow depletions averaged 79 percent with a high of 85 percent in 1990 (see section 1.3.3). This summary indicates the aggregate cumulative effects of total water depletions (federal and non-federal) from the Duchesne River.

Figure 1-2
Sites Included in the Proposed Action and Alternatives

 Project Boundaries



Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2006. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.

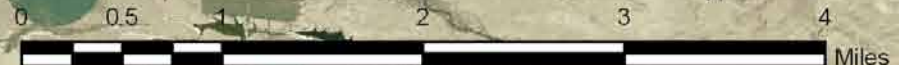

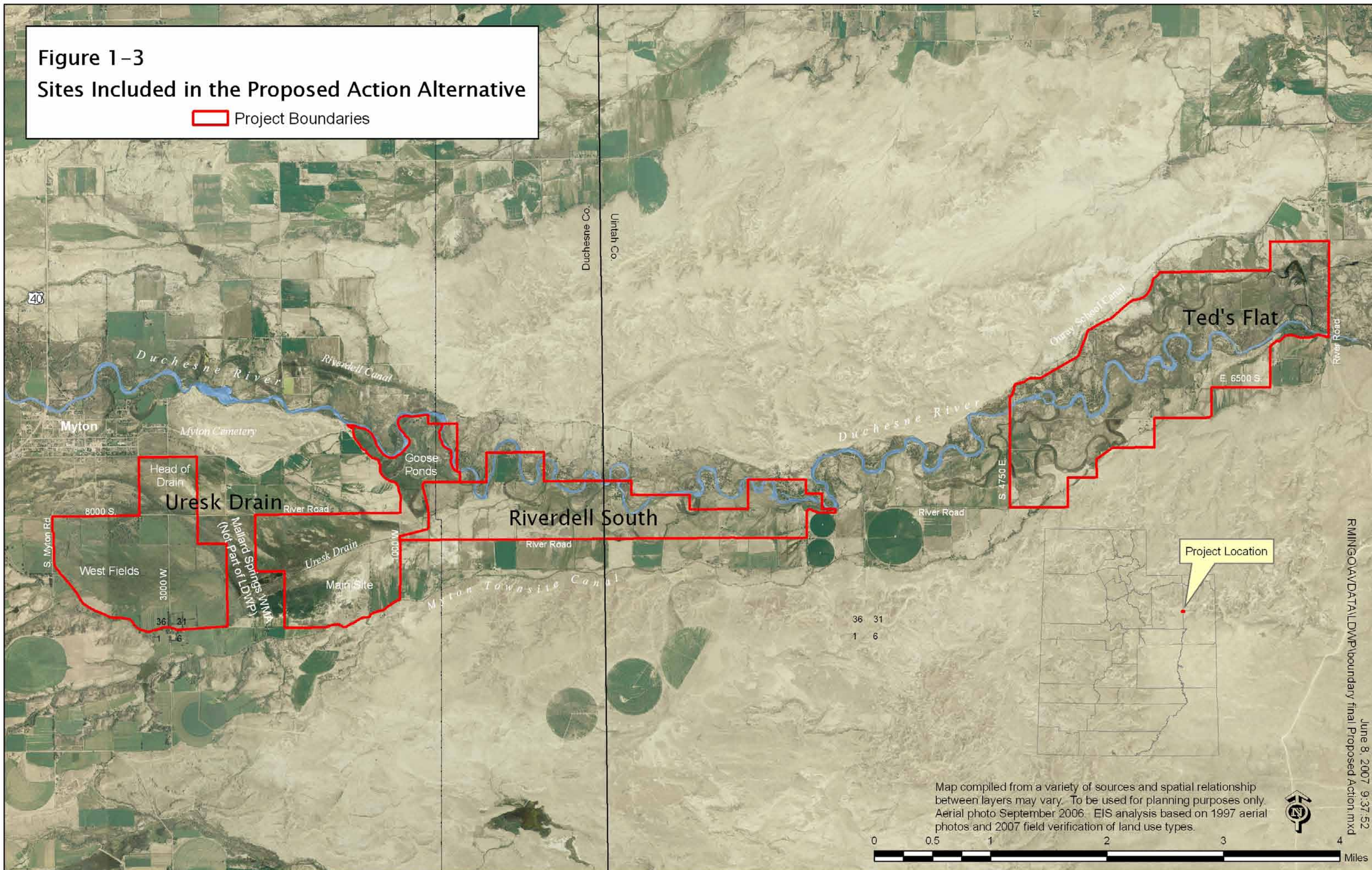


Figure 1-3
Sites Included in the Proposed Action Alternative

 Project Boundaries



Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2006. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.

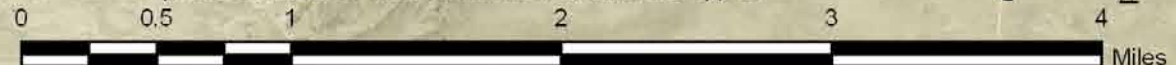

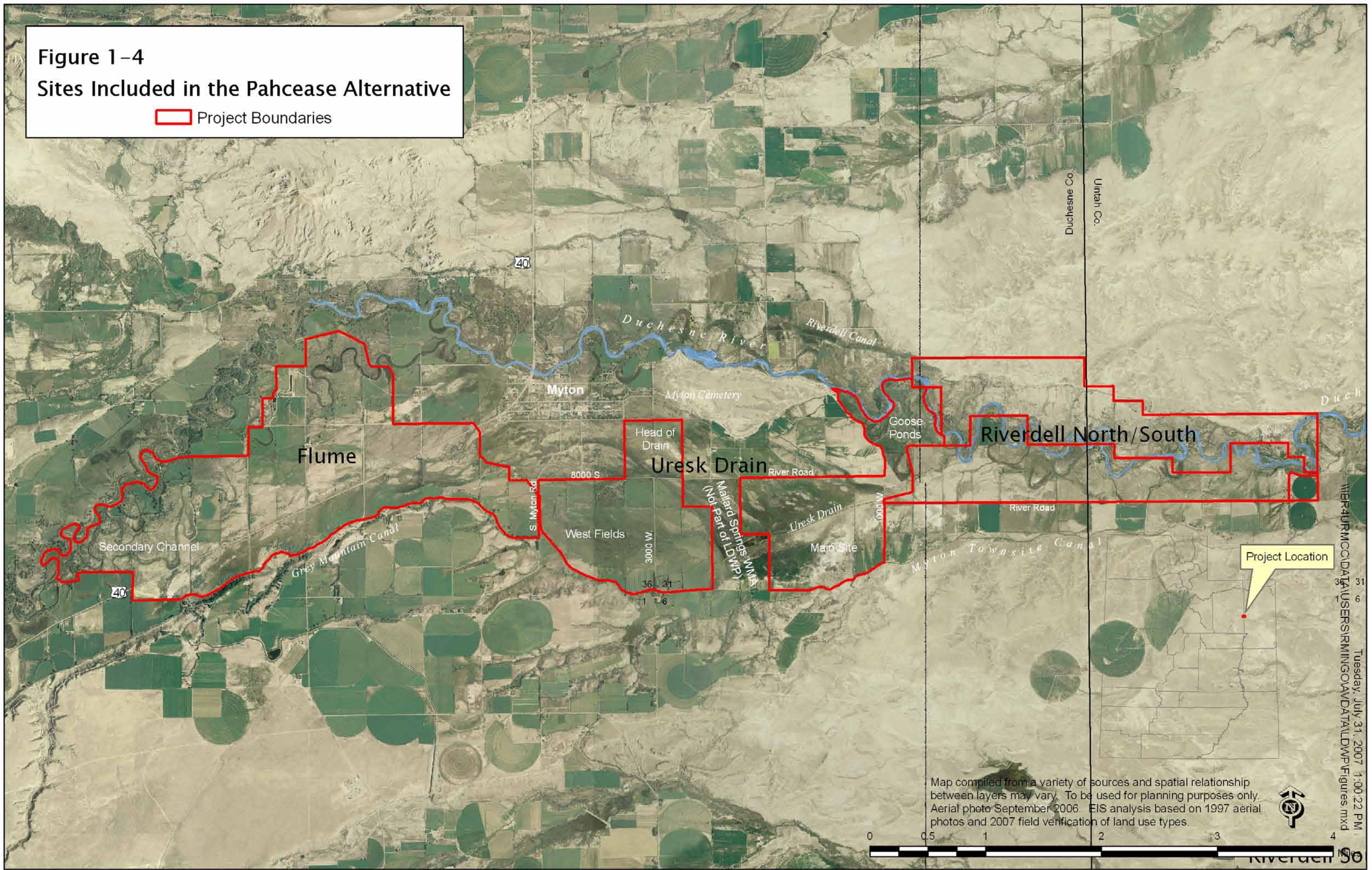


Figure 1-4

Sites Included in the Pahcease Alternative

 Project Boundaries




Project Location

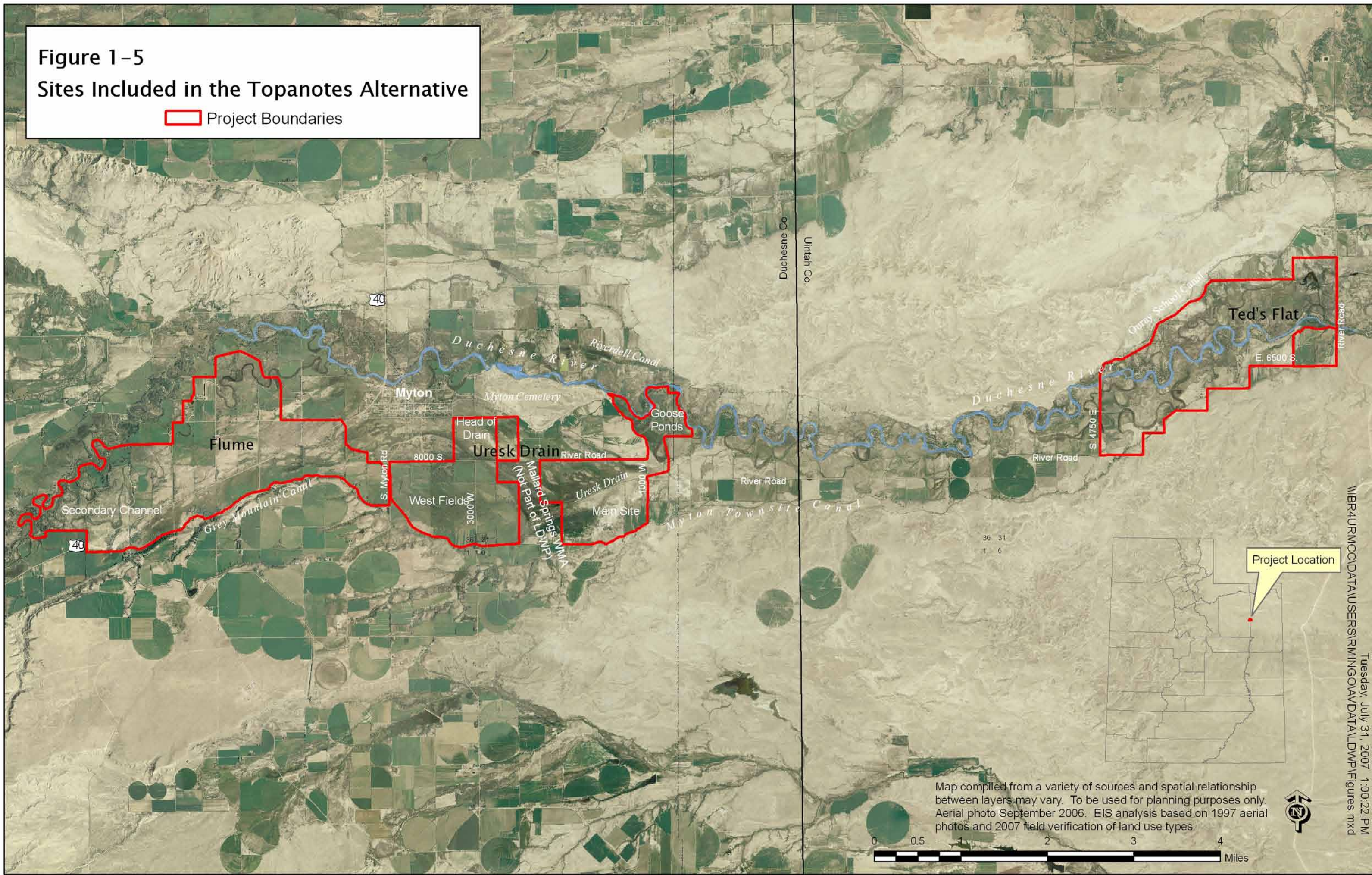
Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2006. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.



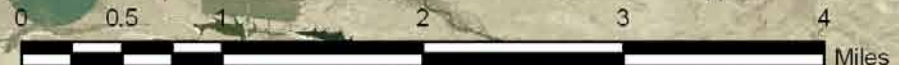
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Figure 1-5
Sites Included in the Topanotes Alternative

 Project Boundaries



Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2006. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.



**Lower Duchesne River
Wetlands Mitigation Project**

Final Environmental Impact Statement

CHAPTER 2

**DESCRIPTION OF THE PROPOSED ACTION
AND ALTERNATIVES**

CHAPTER 2: DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

2.1.1 Physical and Biological Features

2.1.1.1 Overview

The Proposed Action would use a variety of measures to rehabilitate 1,548 acres of wetland and 1,133 acres of woody riparian habitat in the Duchesne River corridor. These measures include rewatering oxbows, connecting oxbows to form contiguous systems, enlarging oxbows to at least their 1936 widths (as determined from aerial photographs), enhancing water quality in oxbows receiving agricultural return flows, creating large marsh complexes, replanting riparian areas with native woody trees and shrubs, seeding of new wetland edges, removing non-native vegetation and changing management of areas adjacent to wetlands to benefit wildlife.

Where feasible, the oxbow systems would be reconnected to the Duchesne River. Oxbow reconnection was identified as feasible if the oxbow would be flooded by the mean annual flood (the flow that occurs on average every 2.3 years). Because the river has narrowed by up to 40 percent, been downcut by 2-4 feet and has had its flow reduced by diversions, reconnection of all oxbows to the river is no longer feasible without either increased flows or river reconstruction.

Table 2-1 lists the measures that would be completed at each site under the Proposed Action and alternatives. Maps 1 through 5, located at the end of chapter 2, show the location of the proposed measures. Standard Operating Procedures (SOPs) are listed in Appendix A. These procedures will be followed and are designed to minimize impacts to the human environment. Figures 2-1 through 2-5, also located at the end of chapter 2, show the location of specific sites included in the various alternatives and their main topographic features.

Table 2-1. Summary of Construction Measures for the Proposed Action and Alternatives.

| Type of Measure | Measure | | |
|--------------------|--|--|--|
| | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Site: Flume | | | |
| Biological | N/A, The Flume is not included in the Proposed Action. | <ul style="list-style-type: none"> • Replant cottonwoods on 239 acres of burned or cleared former cottonwood forest. • Replant riparian shrubs on suitable floodplain point bar habitat; supplementally plant riparian shrubs on 23 acres of secondary channel banks; plant native shrubs along oxbow connection channels (15-30 acres, depending on final channel design). • Seed 256 acres of wetland edges along the oxbow system and Pit Wetland complex. • Remove Russian olive and tamarisk from 330 acres. • Plant wildlife cover on 122 acres of upland adjacent to the oxbow system. | All construction measures would be the same as described for the Pahcease Alternative. |

| Type of Measure | Measure | | |
|--------------------|-----------------|--|---|
| | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Physical | N/A | <ul style="list-style-type: none"> • Excavate a 440-foot long connection between the secondary channel and the beginning of the oxbow system. • Excavate channels between 4 isolated oxbows to restore a continuous oxbow system. • Recontour portions of 3,500 feet of the former oxbow system that has been ditched. • Construct a series of 11-12 berms with water control structures along the oxbow system to expand wetlands laterally. Berms estimated to average 145 feet long and 4 feet high with a top width of 5 feet and 3:1 slopes. • Install an inverted siphon approximately 50 feet upstream of the junction of the oxbow system with the Myton Townsite Canal. • Replace 4 culverts located under unimproved dirt roads. • Install 10 miles of new fencing to exclude livestock. • Expand 3 disjunct wetland areas into an 82-acre complex by excavating a 500-foot long channel among the wetlands. • Rewater 190 acres of dried wetlands. • Construct temporary access roads to berms (0.5 acre); construct 1 permanent access road to the river-oxbow connection (1,200 feet; 0.34 acre). | All physical measures would be similar to those of the Pahcease Alternative. |
| Management Changes | N/A | <ul style="list-style-type: none"> • Continue to irrigate 813 acres of grassland-wet meadow complexes but eliminate grazing and manage for wildlife nesting and cover. • Eliminate grazing from 680 acres of greasewood/desert shrub as a buffer for wildlife along the highway. • Purchase conservation easements on 112 acres of cropland and convert 14 acres of cropland to wet meadow through an increase in the adjacent water table. | All management changes would be similar to those of the Pahcease Alternative. |
| Water Management | N/A | <ul style="list-style-type: none"> • Operate the oxbows as a flow through system with a water quality control factor of 1.5 (see section 2.1.1.8 for a description of the water quality control factor). | Water management would be similar to that of the Pahcease Alternative. |

| Type of Measure | Measure | | |
|--------------------------|---|---|--|
| | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Site: Uresk Drain | | | |
| Biological | <ul style="list-style-type: none"> • Replant 87 acres of cottonwood forest adjacent to the Duchesne River in the northeast portion of the site and 110 acres of native shrub habitat in the Main site. • Seed 214 acres of wetland edge. • Remove Russian olive and tamarisk from 248 acres. | All construction and management measures would be as described for the Proposed Action. | All construction and management measures would be as described for the Proposed Action. |
| Physical | <ul style="list-style-type: none"> • Plug the Uresk Drain from County Road 1000 West to Mallard Springs with impermeable clay. • Construct 3 berms across the Uresk Drain. Berms to average 2,170 feet long, 5.5 feet high, 10 feet top width with a 3:1 slope and a central water control structure. Construct a small berm with central water control structure 25 feet west of the County Road. • Plug the main Uresk Drain west of Mallard Springs and smaller side drains by small berms. • Construct a pipeline south of the Mallard Springs ponds, if necessary, to convey Tribal water to the eastern portion of the site without damage to the ponds. • Excavate 0.5 acre of upland between the Uresk Drain and an upland peninsula to create a nesting island in the Goose Pond wetland. • Install 4 miles of new fencing and repair 4 miles of fencing to exclude livestock. • Construct a temporary construction access road (1 mile in length) along the south edge of the Uresk Drain on existing fill material, with 3 temporary small stream/ditch crossings. Construct 3 smaller access roads to cross the Uresk Drain on top of the clay plug and 1 access road to the clay borrow pit (500 feet in length). | <p>All construction and management measures would be as described for the Proposed Action, with the following additions:</p> <ul style="list-style-type: none"> • Construct 1 berm 1,000 feet long and 2 berms 125 feet long at the head of the Uresk Drain. | All construction and management measures would be as described for the Pahcease Alternative. |

| Type of Measure | Measure | | |
|------------------------------|--|--|--|
| | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Management Changes | <ul style="list-style-type: none"> Continue to irrigate 562 acres of grassland-wet meadow complexes in the West Fields but eliminate grazing and manage for wildlife nesting and cover. Eliminate grazing from 135 acres of desert shrub as a buffer for wildlife. Acquire and change the management of 58 acres of alfalfa for wildlife. | <p>All construction and management measures would be as described for the Proposed Action, with the following additions:</p> <ul style="list-style-type: none"> Manage 80 acres of grassland-wet meadow complexes for wildlife at the Head of the Drain. Purchase conservation easements on 58 acres of alfalfa. | All construction and management measures would be as described for the Pahcease Alternative. |
| Water Management | <ul style="list-style-type: none"> Operate the wetland as a flow through system with a water quality control factor of 1.27 (see section 2.1.1.8 for a description of the water quality control factor). | All construction and management measures would be as described for the Proposed Action. | All construction and management measures would be as described for the Proposed Action. |
| Site: Riverdell North | | | |
| Biological | N/A | <ul style="list-style-type: none"> Replant 426 acres of degraded or cleared cottonwood forest and riparian shrub. Remove Russian olive and tamarisk from 136 acres. Drill seed grasses, plant crops or otherwise manage for wildlife on 304 acres of fallow land (the terrace is too high above the water table to be suitable for cottonwood restoration). Seed 20 acres of wetland edges. Rewater dying cottonwoods along the Riverdell Canal. Maintain 194 acres of desert shrub as Uinta Basin hookless cactus habitat and an additional 127 acres as other upland wildlife habitat. | N/A |
| Physical | N/A | Excavate a 600-foot to 800-foot long connection between the river and the North oxbow. | N/A |
| Management Changes | N/A | Provide active management for wildlife benefit on the currently fallow lands. | N/A |
| Water Management | N/A | Operate the north oxbow as a flow through system with a water quality control factor of 1.5 . | N/A |

| Type of Measure | Measure | | |
|------------------------------|---|--|---|
| | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Site: Riverdell South | | | |
| Biological | <ul style="list-style-type: none"> • Replant 163 acres of degraded or cleared cottonwood forest and riparian shrub. • Seed 227 acres of wetland edges. • Remove Russian olive and tamarisk from 87 acres. • Maintain 240 acres of desert shrub as a buffer from River Road | All construction and management measures would be as described for the Proposed Action. | N/A, Neither the Riverdell South nor the Riverdell North sites are included in the Topanotes Alternative. |
| Physical | <ul style="list-style-type: none"> • Construct 10 berms along the South Oxbow. Berms to average 225 feet long, 4 feet high with 3:1 slopes. Install water control structures in each berm. • Excavate channels between 4 oxbows to restore a contiguous 7 oxbow system. • Construct approximately 1 acre of temporary access roads to the berms. • Install 9 miles of new fencing to exclude livestock. | All construction and management measures would be as described for the Proposed Action. | N/A |
| Management Changes | <ul style="list-style-type: none"> • Continue to irrigate 223 acres of grassland or fallow grass fields but eliminate grazing and manage for wildlife nesting and cover. | All construction and management measures would be as described for the Proposed Action with the following addition: <ul style="list-style-type: none"> • Purchase conservation easements on 58 acres of alfalfa | N/A |
| Water Management | <ul style="list-style-type: none"> • Operate the oxbows as flow through systems with a water quality control factor of 1.27 (see section 2.1.1.8 for a description of the water quality control factor). | All construction and management measures would be as described for the Proposed Action. | N/A |

| Type of Measure | Measure | | |
|-------------------------|---|--|---|
| | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Physical | <ul style="list-style-type: none"> Construct 5 berms along the south oxbow system, each 250-700 feet long, 4 feet high, 3:1 slopes each with a water control structure. Excavate 500 feet of channel to connect 3 currently isolated oxbows to the main system. Construct 5 berms (averaging 80 feet wide and 3 feet high) along the north oxbow system, each with a water control structure. Recontour approximately 1,000 feet of ditched oxbows south of the Swamp wetland. Install 2 culverts under River Road. OPTIONAL: Excavate an inlet estimated at 5 feet deep, 10-15 feet wide and 500 feet long to provide a direct river connection to the north oxbows. | N/A | All construction and management measures would be as described for the Proposed Action. |
| Management Changes | <ul style="list-style-type: none"> Continue to irrigate 258 acres of grassland-wet meadow complexes, but eliminate grazing and manage for wildlife nesting and cover. Eliminate grazing from 414 acres of desert shrub and manage as a wildlife buffer. | N/A | All construction and management measures would be as described for the Proposed Action with the exception that conservation easements would be purchased on 172 acres of cropland with a requirement that at least 20 percent of the crop be left for wildlife and that existing cottonwoods along the ditches and hedgerows be maintained/replanted. |
| Site: Ted's Flat | | | |
| Biological | <ul style="list-style-type: none"> Supplementally plant 664 acres of low terrace and 190 acres of point bars, oxbow connection channels and small channels dissecting the south terrace with riparian shrubs and cottonwoods. Seed 215 acres of new wetland edges and oxbow connection channels. Spot treat Russian olive and tamarisk on 105 acres. | N/A, The Ted's Flat site is not within the Pahcease Alternative. | All construction and management measures would be as described for the Proposed Action. |

| Type of Measure | Measure | | |
|--------------------|---|----------------------|---|
| | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Physical | <ul style="list-style-type: none"> Construct 5 berms along the south oxbow system, each 250-700 feet long, 4 feet high, 3:1 slopes each with a water control structure. Excavate 500 feet of channel to connect 3 currently isolated oxbows to the main system. Construct 5 berms (averaging 80 feet wide and 3 feet high) along the north oxbow system, each with a water control structure. Recontour approximately 1,000 feet of ditched oxbows south of the Swamp wetland. Install 2 culverts under River Road. OPTIONAL: Excavate an inlet estimated at 5 feet deep, 10-15 feet wide and 500 feet long to provide a direct river connection to the north oxbows. | N/A | All construction and management measures would be as described for the Proposed Action. |
| Management Changes | <ul style="list-style-type: none"> Continue to irrigate 258 acres of grassland-wet meadow complexes, but eliminate grazing and manage for wildlife nesting and cover. Eliminate grazing from 414 acres of desert shrub and manage as a wildlife buffer. | N/A | All construction and management measures would be as described for the Proposed Action with the exception that conservation easements would be purchased on 172 acres of cropland with a requirement that at least 20 percent of the crop be left for wildlife and that existing cottonwoods along the ditches and hedgerows be maintained/replanted. |
| Water Management | <ul style="list-style-type: none"> Operate the oxbows as flow through systems with a water quality control factor of 1.27 (see section 2.1.1.8 for a description of the water quality control factor). | N/A | All construction and management measures would be as described for the Proposed Action. |
| Water Management | <ul style="list-style-type: none"> Operate the oxbows as flow through systems with a water quality control factor of 1.27 (see section 2.1.1.8 for a description of the water quality control factor). | N/A | All construction and management measures would be as described for the Proposed Action. |

2.1.1.2 Oxbow Restoration

2.1.1.2.1 Overview

The sites included in the Proposed Action contain three oxbow systems that historically formed annually flooded, continuous side channels of the Duchesne River. The Proposed Action would connect the three oxbow systems into continuous backwater channels and expand the oxbow widths where ditched.

2.1.1.2.2 Oxbow Restoration

Currently isolated oxbows would be physically connected in the Riverdell South and Ted's Flat (both north and south of the river) sites to form continuous oxbow systems. The width and depth of each connection would vary according to the gradient between oxbows. The material excavated from the connection channel would be used on site as part of the earthen berms. Each connection channel bank would be planted with bare root shrubs and seeded to reduce weed establishment. Four connections would be necessary in the Riverdell South oxbow system and three in the Ted's Flat south oxbow system.

Oxbow widths would be expanded to their approximate historical width by three measures; removing levees along the oxbow edges, recontouring portions of ditched sections and installing a series of berms across the oxbows. The specific mix of measures would be determined during final design.

The purpose of the berms would be to spread water laterally and create pools of shallow water within the oxbows without significantly affecting the potential for water flow-through. Berms would typically vary in length from 80-

250 feet, have a top width of 5 feet, with 3:1 slopes and with an average height of 4 feet. These dimensions are based on a feasibility level of analysis, and dimensions may vary with final design. Actual final dimensions will be designed to provide an undulating shape along contours that blends naturally with the terrain.

The approximate location of berms was based on existing topographic data, feasibility analysis of grade and individual oxbow configurations. Exact berm locations would be determined during detailed design when site topographic and geotechnical survey data are available.

Berms would be constructed of compactable earthen fill with a spillway designed for a 10-25-year rainfall event, with the spillway capacity varying with site and location of the berm within the site. A small, flashboard, canal gate or similar type water control structure would be inserted in the spillway, if necessary, to allow flexibility in operations to meet desired wetland acreage and habitat goals.

Berms would be protected from erosion by a combination of revegetating the berm and by placing riprap along the downstream sides of the berm in selected locations.

Culverts would be replaced where unimproved roads cross the oxbows.

All sites would be fenced to exclude livestock.

Figure 2-6 provides a schematic cross section of wetlands upstream of a typical oxbow berm.

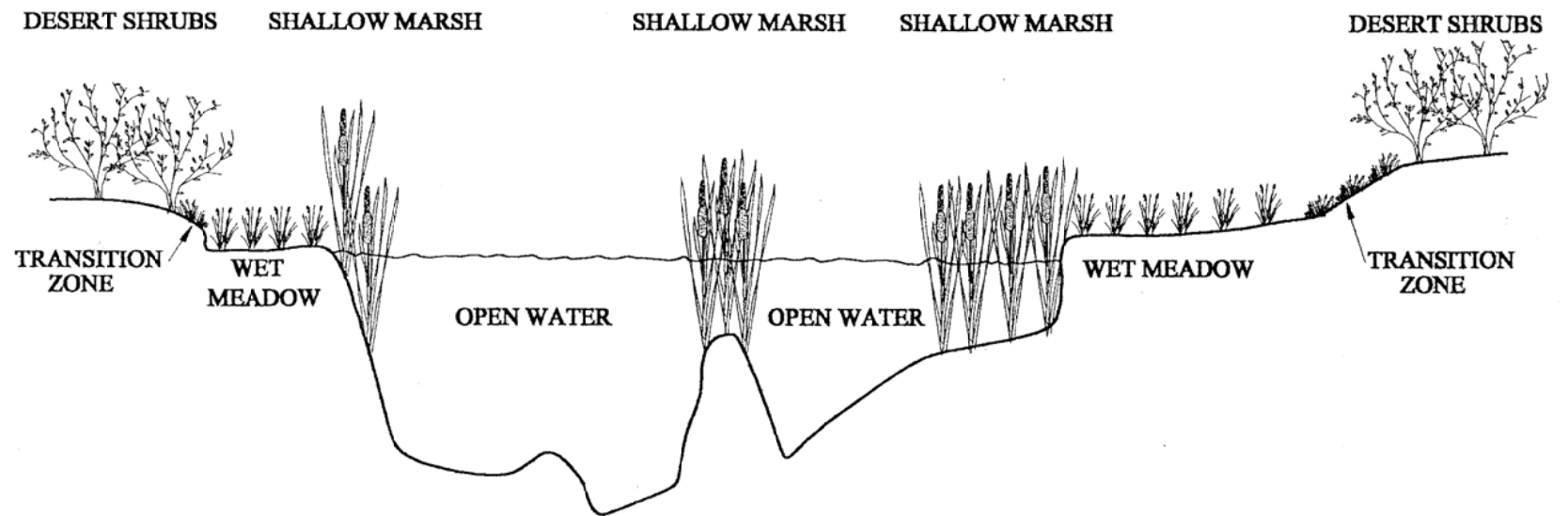


Figure 2-6. Schematic Cross Section of Wetlands Upstream of a Typical Oxbow Berm

2.1.1.2.3 River Reconnection of Oxbows

Connection of the Ted's Flat north oxbow system to the Duchesne River is physically feasible but may not be possible within the project budget cap; however, impacts of the connection are analyzed in the FEIS in the event additional funds are secured for the project. Connection would require excavation of an approximately 500-foot long inlet channel.

The connection to the Duchesne River would occur on project land and would be stabilized by the immediate planting of riparian shrubs and/or herbaceous species along the channel banks.

2.1.1.3 Large Marsh Complexes

In 1956, the Uresk Drain site was described by the Soil Conservation Service (SCS) as a large marshy area south of Myton that should be drained (SCS 1956). The site was altered between 1936-1939 by a 2.5 mile drainage ditch that averages 10 feet in width and ranges in depth from one to six feet below the soil surface. Soils on the Uresk Drain site are variable. In general, the soils north of the Drain consist of a layer of silts and clays (averaging 3 feet in depth) over cobbles. South of the Drain, clays deeper than 3 to 5 feet from the surface occur. The Drain on the eastern portion of the site (the one-mile section between Mallard Springs and County Road 1000 West) was constructed along the break between the two soil types so that it intercepted the shallow cobble layer to promote drainage. The cobble-clay contact occurs from 0.5 to 2.5 feet above the base of the Drain.

Under the Proposed Action, the Drain would be plugged on the eastern portion of the site.

A clay plug would be placed along the entire length of the Drain to seal the exposed cobble contact, but filling of the entire Drain would not be necessary. The clay for the plug would be obtained on site in an area previously identified as consisting of low permeability clays (Kaiserman Associates 1978).

A mix of berms (in areas of soils shallow to cobble) and excavation in deeper clays would be used to recreate a large marsh complex.

Three large berms would be placed east of Mallard Springs. These berms would typically average 2,170 feet in length and 5.5 feet in height with a 3:1 side slope. Typical berm tops would be ten feet wide to allow motorized access for maintenance. Berms would be placed perpendicular to the Drain and constructed on topographic contours. Berms would be placed so that the upstream berm would be approximately 12 inches above the high water elevation of the next downstream berm. This would allow a maximum ponded open water depth of four feet directly behind each berm grading to marsh between the berms and to wet meadow on the lateral edges of the open water-marsh complex. Berms would also be placed so that the ponded water behind the last berm would not flood the adjacent Mallard Springs property. Map 2 depicts the approximate location of the proposed berms based on available topographic data.

Final berm dimensions and placement, as well as the appropriate mix of berms and excavation, would be determined during the design phase of the project. As for the berms along the oxbows, final dimensions would be designed to provide an undulating shape along contours that blends with the natural terrain.

Berms would be constructed of compactable, earthen fill using the material left on site from the original excavation of the Drain. Each berm would contain one or more spillways to ensure that downstream water rights are transferred. Water control structures and spillways would be as described for the oxbow berms.

West of Mallard Springs, the area influenced by the Drain narrows from a maximum of 2,000 feet to less than 500 feet. The Drain construction did not puncture the cobble-clay contact in this area. Clay plugs would not be necessary west of Mallard Springs as the Drain was not excavated deep enough to break the seal between the upper silts and clays and the underlying alluvial material. Flooding of adjacent lands would be accomplished by placing a series of four berms across the Drain and adjacent ditches. Berm length would vary from 30 feet to 500 feet, depending on topography.

2.1.1.4 Isolated Marsh Complexes

A number of isolated wetlands would be created, or enhanced, as part of the Proposed Action. Wetlands larger than 50 acres in size can be located on Figures 2-1 through 2-5. These wetlands are referred to as the “Pit Wetland”, the “Full Connector Wetland” and the “Swamp Wetland.” The Pit and Full Connector Wetlands are in the Flume south of Highway 40 and are included in the Pahcease and Topanotes Alternatives, but not the Proposed Action. The Swamp Wetland is located in the Ted’s Flat site north of the river and is included in the Proposed Action and the Topanotes Alternative.

The Ted’s Flat north oxbow system terminates in an approximately 60-acre wetland referred to locally as “the Swamp,” which was not part

of the original oxbow system. The Swamp Wetland was developed as an irrigation reservoir for farming on the adjacent Randlett Farms. Randlett Farms is now served by a new pressurized water system and the Swamp Wetland is not currently being used for irrigation. The Swamp Wetland currently consists of a mixture of wetland types and is bordered by a large area of native riparian shrubs. The Swamp Wetland would be maintained in its current condition with the exception of Russian olive removal along portions of the wetland edges.

2.1.1.5 Riparian Restoration

Riparian planting is proposed only for areas located within 10 vertical feet of the bankfull stage at the current grades. No soil excavation or grading is proposed within riparian planting areas. Mechanical removal of noxious weeds and installation of an above ground temporary irrigation system would be required in some areas; these activities may result in some soil disturbance (see also section 2.1.1.6).

2.1.1.6 Biological Features Common to All Sites

Planting would occur in phases according to the schedule described in section 2.1.5.1. Planting may require mechanical augering to the water table in order to place cottonwoods and native shrubs at this depth. Temporary irrigation would be supplied by an above ground irrigation system that could be moved from planting block to planting block as soon as the native woody species have reached the summer water table. It is estimated that each block would require temporary irrigation for three years.

Non-native and invasive riparian woody species, such as tamarisk and Russian olive, would be removed through use of a combination of chemical and mechanical means. Methods that could be used include a foliar chemical spray, mechanical removal of plants including all roots or stump cutting followed by immediate application of an appropriate herbicide. Control of some species may require herbicide application in two successive years. Treatment would be in phases corresponding to the planting phases. This would typically require tamarisk and Russian olive on an identified planting block to be either; (1) treated in the fall, with riparian planting proceeding on the same block the following spring, or (2) treated in the spring, with riparian planting proceeding on the same block the following spring.

The primary herbaceous noxious weed occurring in the project area is giant whitetop, also referred to as pepperweed, which is beginning to establish along the edges of oxbows receiving return flows. This species would be chemically treated prior to construction.

There are a number of other noxious and invasive species occurring within the project vicinity. Appendix B provides a weed control plan for all species occurring within the LDWP area of influence.

Edges of wetlands to be expanded or created along the oxbow systems and in the Uresk Drain would be seeded with a mix of rapidly growing wetland species with high wildlife food value (e.g., three-square bulrush and smartweeds). Seeding would be done in the fall prior to flooding of new wetland areas. Upland grasses would be seeded in previously grazed desert shrub areas immediately adjacent to the oxbows.

2.1.1.7 Management Changes

A number of upland habitats would not be completely converted to wetlands, but their value to wetland and riparian species would be enhanced by changes in management. These habitats include portions of currently irrigated wet meadow-grassland complexes, desert shrub and all existing cropland. Irrigated grasslands would continue to be irrigated under the Proposed Action, but grazing would be eliminated unless necessary to achieve specific wildlife management objectives. Grasslands would be managed to provide nesting and foraging sites for wildlife. Active management of the grasslands would be necessary to prevent Russian olive and tamarisk encroachment, which has occurred on abandoned pasture land within the project vicinity. This management may require periodic haying with the cutting timed to avoid critical wildlife nesting periods. Short-term (e.g., less than one week), high intensity grazing or herbicide application may also be used to control Russian olive and tamarisk. The managed grasslands are located primarily adjacent to the Uresk Drain marsh complex.

Desert shrub habitats would be maintained as buffers between human activity areas and wetlands. Grazing would be eliminated from all wildlife buffer areas unless necessary to achieve specific wildlife management objectives.

Existing rotation cropland has been avoided to the extent possible with cropland retained in the project area only where adjacent to the proposed wetlands or necessary to complete the wetland-wildlife habitat goals. Rotation cropland along site boundaries has mostly been eliminated from the project area. Rotation croplands are defined as established farms in which corn, small grains or alfalfa

are produced with the planting of specific crops varying among years, and that have been in continuous production for at least five years. The management of acquired croplands would change as the cropland would be managed for wildlife. These changes would include, but are not limited to, retaining a portion of the crop for wildlife and adjusting cropping schedules to be compatible with nesting bird requirements.

The management changes described in this section apply only to the land within the LDWP project area and do not apply to adjacent parcels.

2.1.1.8 Water Management

The water supply for each site would consist of a mix of sources including groundwater, Duchesne River flows during spring run-off, return flows and irrigation water supplied directly from main irrigation canals. Existing turnouts would be used to supply water to all sites. The sources of water for each site are listed in Table 4-37.

Agricultural return flows, some of which contain high levels of salts, enter each site. Under the Proposed Action, return flows would continue to enter the sites. To maintain water quality within tolerable salinity levels for wetland-dependent wildlife, considerable outflow from the wetland is required. Under the Proposed Action, wetlands on all sites would be operated as flow-through systems and not as impoundments that are filled and emptied each year. A water quality control factor would be applied to each site's wetland water budget to cover the flow-through system requirements. Water quality control factors are factors applied to wetland water budgets to account for the extra water required to flow through the wetland to

prevent accumulation of salts. Because of incomplete mixing of waters within wetlands, the actual amount of water required to maintain a salt balance at an acceptable limit can only be approximated based upon the salinity of the inflowing water. Water quality control factors for each site were derived from data presented in Christiansen and Low (1970). A water quality control factor of 1.27 was identified as necessary for those sites receiving inflow with total dissolved solids (TDS) levels less than 800-1,000 parts per million (ppm). Sites with TDS concentrations greater than 1,200-1,500 ppm in the inflow water require a water quality control factor of 1.5. This means that the water budget for each site was increased by 27 to 50 percent over that required to meet the consumptive use of water by wetland plants and evaporation. The supplemental water required to operate the wetlands as flow-through systems that control salinity would represent a non-consumptive use of water that would be returned to the Duchesne River.

Water from the canals would continue to be used for irrigation. Water would be delivered to the wetlands according to the interim duty schedule currently being implemented within the project area until the proposed Compact between the Tribe and the State of Utah regarding water issues is signed. At that time water will be delivered according to the duty schedule adopted as part of the Compact. There would be no change in the amount or timing of diversion of water from the Duchesne River. Wetland water requirements would be met using water rights leased from the Tribe and/or obtained with the purchase of land. There are sufficient water rights associated with the land in the project area to meet the water requirements of the wetlands and the project would not interfere with the legal water rights of other users. If it became

necessary to transfer water rights within the project area, the BIA would follow all administrative procedures necessary for transferring water rights. Additional details regarding water resources can be found in section 4.5.

The proposed river-oxbow connections would be constructed without placement of weirs, sills or other structures in the Duchesne River. As a result, river flows would only enter the oxbows during the high spring run-off periods. Section 4.5 provides further details of the timing and flows under which spring run-off peaks would enter the oxbows. Temporary irrigation would be necessary for all plantings outside the current floodplain. Water would be required to ensure sufficient irrigation water during the proposed 7-year planting period. Water requirements are described in detail in section 4.5.

2.1.2 Construction Procedures

2.1.2.1 Typical Construction Procedures

Berms would generally be constructed from upstream to downstream with work alternating between wetland and upland sections along the oxbows so that construction in wetlands occurs during the driest portion of the year. Berm construction would be scheduled, to the extent possible, so that work in wetlands would occur outside the peak irrigation season (May 15 through August 15) when return flows raise water tables to their highest level. Irrigation water would not be supplied to project lands during construction to reduce the amount of return flows originating within the project area and to facilitate construction. Agreements could be reached with adjacent landowners or Mallard

Springs to reduce or eliminate irrigation during construction to further lower the water table, as up to 60 percent of existing wetlands within individual sites are estimated as being supported by return flows from adjacent properties. A cofferdam (a temporary small dam) would be constructed in portions of wetlands with standing water to temporarily dewater the area during berm construction. No fill would be placed in standing water.

Vegetation, organic soil layers and wetland topsoil would be removed along the foundation for the berms. Topsoil containing native wetland species would be removed with a scraper and temporarily stockpiled. Following berm construction, this material would be applied to the sides of the berm and soils disturbed during construction to facilitate wetland plant reestablishment. All clearing would be confined to a specified zone to minimize the expense of reestablishing vegetation and minimize potential for weed establishment on disturbed soils.

The earthen material for the oxbow berms, and berms on the western portion of the Uresk Drain, would be derived from each individual site immediately upstream and downstream of the berm. The soils along the oxbows have been mapped as consisting primarily of three or more feet of silty clay loam over more coarse-textured alluvial material deposited when the oxbow was part of the active Duchesne River channel system. Only the upper soil layers would be used for berm construction. A minimum of 18 inches of fine-textured material would be required to remain over the underlying alluvial soils. Prior to construction, additional investigation of soils would be conducted to ensure that the current seal between silts and clays and more coarse-textured materials would not be penetrated during construction. If possible,

excavation of soil for the berms would be done so that the borrow zone would provide irregularly shaped, deep and shallow water zones upstream of the berm. The estimated width of the disturbance zone for each oxbow berm would be approximately 130 feet, of which up to 100 feet would be temporary disturbance and from 10 to 30 feet (the width of the berm base) would result in permanent disturbance.

At the Uresk Drain, the spoil material removed during original Drain construction would be used for berm construction on the eastern portion of the site (the portion east of Mallard Springs) if geotechnical analyses identified the material to be of suitable texture and strength. The total disturbance zone along each berm would be approximately 90 feet, of which 40 feet would represent permanent disturbance at the berm base and 50 feet would represent temporary disturbance during construction. Prior to berm construction, the exposed cobble-clay contact in the Drain would be plugged with impermeable clay. The material for the clay plug would be obtained south of the Drain in an upland area. Map 2 shows the location of impermeable clays within the Uresk Drain site as mapped by Kaiserman Associates (1978). The clay borrow pit would be approximately 10 acres in size and four feet deep. Final shaping of excavated sides would be to a minimum of 3:1 slope. The borrow pit would be flooded with completion of the berms and would serve as a deepwater pool within the marsh complex.

Soil excavated during construction of inlets or channels connecting oxbows would be used in berm construction, if of suitable texture. Any remaining excess material would be transported to a suitable offsite disposal site. Locations for temporary stockpiling of

materials would be determined during design and construction to minimize impacts to existing vegetation and wetlands.

Inlets to oxbow systems would be constructed last, with river reconnections occurring during the summer under low flow conditions. Water would be gradually introduced through the channels and into the oxbow systems to allow initial vegetation growth prior to operation at full continuous flow conditions. Water in all wetlands would be carefully managed during the first three to five years following construction to allow the desired vegetation to become well established and to minimize erosion until the channels are vegetated. Both interim construction and post-construction water management plans would ensure that all water rights and downstream water delivery obligations would be met during and after construction. Section 2.1.4.3 describes the general operating agreements to be developed to provide for monitoring and post-construction operation.

Construction would not affect any existing utilities. No utilities are buried in the construction zone, but a buried main gas transport line is located adjacent to portions of the project area. The gas line would be staked prior to construction and no construction activity would be allowed in the vicinity of the gas line.

2.1.2.2 *Typical Equipment and Specifications*

Equipment that could be used to construct the Proposed Action includes:

- Scraper
- Harrow
- Low ground pressure bulldozer
- Grader (to shape slopes)
- Track and rubber tired front end loader
- Bulldozer
- Trackhoe
- Dump truck
- Stinger (modified excavator used specifically for planting in cobbly soils)
- Gas-powered pump (to temporarily dewater areas during construction)
- Sheepsfoot roller
- Compactor
- Dragline excavator
- Small load cement truck
- Low bed tractor trailer (to transport heavy equipment)
- Rubber tired tractor
- Gas-powered auger
- Drill seeder

Table 2-2 presents the typical noise levels and air emissions associated with the types of construction equipment that would be used to construct the Proposed Action and alternatives.

Table 2-2. Typical Noise and Air Emissions Associated with Construction Equipment under the Proposed Action and Alternatives.

| Equipment Type | Noise Levels | | Typical air emissions based on 8 hour per day operation | | |
|-----------------------------|----------------------|------------------------|---|-----------|------------|
| | Range at 50 ft (dBA) | Nominal at 50 ft (dBA) | NOx lb/mo | SOx lb/mo | PM10 lb/mo |
| Scraper | 73-95 | 85 | 1,003 | 106 | 79 |
| Bulldozer | 72-96 | 84 | 791 | 69 | 34 |
| End-loader, rubber tired | 71-96 | 82 | 704 | 64 | 48 |
| End-loader, tracked | 71-96 | 82 | 704 | 64 | 48 |
| Trackhoe | 71-93 | 85 | 1,248 | 110 | 78 |
| Dump truck | 70-92 | 85 | 1,344 | 112 | 84 |
| Compactor | 84-90 | 86 | 0.5 | 0.4 | 6.8 |
| Dragline excavator; stinger | 71-93 | 85 | 1,248 | 110 | 78 |
| Portable pump, gas | 69-81 | 74 | 115 | 13 | 6.4 |
| Tractor-trailer, transport | 70-92 | 85 | 1,344 | 112 | 84 |
| Portable auger | 68-87 | 81 | 163 | 27 | 14 |
| Flatbed truck | 76-85 | 80 | 672 | 56 | 42 |
| Pickup truck | 76-85 | 80 | 2.3 | 0.6 | 15 |
| Grader | 73-95 | 85 | 672 | 64 | 64 |
| Small load cement truck | 70-90 | 85 | 960 | 80 | 40 |

2.1.2.3 Temporary Construction Access

Construction workers and equipment would gain access to the sites from existing county and Tribal roads and private roads acquired with property purchase. Additional temporary access roads to berm locations along the oxbow systems would be constructed on portions of each site. The access roads would be constructed within uplands and consist of a cleared and compacted (if necessary) 15 foot-wide travel route. All temporary access roads would be removed following

construction and the roads ripped to a minimum depth of six inches, recontoured to natural conditions and seeded with a seed mix similar to that of native species found in nearby communities.

The Uresk Drain site east of Mallard Springs contains existing wetlands. Because of this, temporary access routes have been designated in this document to avoid wetland impacts other than the temporary crossings described below. The approximate locations of temporary construction access routes for the Uresk Drain site are shown on Map 2.

Culverts sized to handle expected flows would be placed at temporary crossings and covered with clean gravel fill. Culverts and fill would be removed and original grades restored following construction. The Uresk Drain site construction may require larger construction equipment than the other sites included in the LDWP area, due to the need to transport clay and other fill within the site from locations not immediately adjacent to the berms. As a result, temporary access roads would be constructed at widths of up to 30 feet.

The location of temporary construction access roads on the Riverdell South, Ted's Flat and the western portion of the Uresk Drain sites would be determined during final design, but it is anticipated that at each site from one-half to two acres of temporary access roads would be constructed.

2.1.3 Land Ownership, Land Acquisition and Land Use

2.1.3.1 Land Ownership

The LDWP is located in the northern portion of the Uintah and Ouray Indian Reservation within the area originally designated as the Uinta Valley Reserve, established by Executive Order on October 3, 1861. Although all the land in the Reservation was originally reserved for Indians, over the years land ownership patterns changed. Within the LDWP there is now Tribal Trust land, allotted land held in trust for individual Tribal members, fee (private) owned land, which was either purchased from allottees or homesteaded when the Reservation was opened to non-Indian settlement in 1905, and the federally owned Riverdell North property (Pahcease alternative only). As discussed below in section 2.1.3.2, there are restrictions

and limitations on the acquisition of land held in trust for the Tribe or individual Tribal member allottees.

Maps 6 through 8, located at the end of the Chapter, depict existing land ownership in the LDWP Project Area for the Proposed Action and alternatives. Table 2-3 provides a summary of land ownership for the Proposed Action and alternatives. There is no state or federally owned land within the Proposed Action project area, but the Uresk Drain site abuts the state owned Mallard Springs property and the Riverdell North property is contiguous with the Riverdell South property. The Mallard Springs property is depicted on the project maps for reference, but is not incorporated into the project area.

| Table 2-3. Summary of Land Ownership by Site and Alternative (acres). | | | | | |
|---|--------------------------|-----------------|---------------------|----------------|--------------|
| Site by Alternative | Fee | Allotted | Tribal Trust | Federal | Total |
| Proposed Action | | | | | |
| Uresk Drain | 326 | 588 | 942 | 0 | |
| Riverdell South | 478 | 197 | 371 | 0 | |
| Ted's Flat | 788 | 200 | 917 | 0 | |
| Total | 1,592 | 985 | 2,230 | 0 | 4,807 |
| Pahcease | | | | | |
| Flume | 894 | 639 | 1,113 | 0 | |
| Uresk Drain | 379 | 584 | 966 | 0 | |
| Riverdell North/South | 514 | 204 | 385 | 1,087 | |
| Total | 1,787¹ | 1,427 | 2,464 | 1,087 | 6,765 |
| Topanotes | | | | | |
| Flume | 894 | 639 | 1,113 | 0 | |
| Uresk Drain | 379 | 584 | 966 | 0 | |
| Ted's Flat | 898 | 199 | 976 | 0 | |
| Total | 2,171 | 1,422 | 3,055 | 0 | 6,648 |
| ¹ An additional 1,087 acres of fee land would be acquired to replace the Riverdell North property for DRACR mitigation | | | | | |

2.1.3.2 Land Acquisition

2.1.3.2.1 Fee Land Acquisition

The joint lead agencies must comply with the federal requirements to complete CUP mitigation requirements. The land and water right acquisition program would be implemented within the narrow scope of the authorized project. Although the Duchesne and Uintah Counties' Land Use Plans are not binding on the federal government, the joint lead agencies will make every reasonable effort to complete land acquisitions on a willing seller basis with no net loss of fee lands in the counties. Additionally, the project partners

have revised the project area so that established farms or portions of established farms, especially if along the project boundaries, would generally not be acquired unless deemed critical to the success of the project.

Fee property (land and water), required for project implementation and management, would be permanently acquired or encumbered in one of several possible ways, including:

- Fee title purchase from willing sellers,
 - Donations, and
 - Eminent domain (last resort) acquisition
- Although, fee purchase from willing sellers is expected to be the primary land acquisition method.

Acquisition negotiations would be conducted with each individual property owner. Ownership changes would be associated with purchase of fee title by the United States Government. Subsequently, acquired fee land would be transferred to the Tribe as fee land (not held in trust). Private property owners would be compensated at the fair market value of the highest and best use of their property. No land currently owned by local cities, Duchesne County, Uintah County or the State of Utah would be acquired for the Proposed Action.

Land acquisition would follow a standard process required by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. The purpose of the Act is to provide uniformity and fairness in the treatment of property owners. The process is summarized as follows:

- a. A determination is conducted by the head of the acquiring agency as to the minimum estate (fee title or conservation easement) and area needed for project purposes,
- b. A real estate appraisal is made by a licensed real estate appraiser to determine the fair market value of the highest and best use of the parcel being acquired. This value is to represent what a willing seller would sell the property for and what a willing buyer would pay for the property, neither being under duress to buy or sell,
- c. A written offer to purchase the property is made to the landowner. This offer is generally hand delivered along with a brief explanation of the project.
- d. Negotiations are conducted individually with each landowner. Every reasonable effort is made to negotiate an agreement

that is fair to both the landowner and the taxpaying public, and

- e. Only after all reasonable efforts have been made to come to a mutual agreement on a fair and reasonable price, and have not been successful, would the proposed acquisition be recommended by the agency representative for consideration for condemnation.

Acquisitions may involve lands that have been enrolled in, or otherwise participate in, federal agricultural support programs, including involvement in the federal Salinity Control Program. A variety of means exist for resolving such encumbrances as a part of the acquisition process under federal regulations. Value of on-farm improvements would be reflected in appraisals and be a part of monetary compensation to landowners. A detailed evaluation of specific issues, by land parcel, is not possible at this stage of planning. However, the particular financial impacts of each acquisition would be fully evaluated under federal acquisition guidelines.

The joint lead agencies would make every reasonable effort to acquire needed properties on a willing seller basis. If needed properties cannot be acquired on a willing seller basis, property required to fulfill the project needs would be acquired by eminent domain. The full range of available land acquisition flexibility allowed under law will be explored with landowners to ensure, to the extent reasonable, that project goals can be achieved by means of land acquisitions that are mutually agreeable.

Fee lands acquired by the federal government from private landowners on a willing seller basis would be placed in Tribal ownership (fee status) and subsequently managed by the Tribe.

Fee lands acquired by eminent domain would be held by the US under the jurisdiction of the BIA on behalf of the Tribe. All acquired land would be developed and managed by the Tribe under a single management plan.

Under the Proposed Action, all lands in Riverdell South would be managed for wetland-wildlife benefits for the life of the project, a minimum of 50 years. Lands in the Uresk Drain and Ted's Flat sites would be managed for wetland-wildlife purposes for a length of time to be negotiated, with a minimum time period of 10 years.

2.1.3.2.2 Land Acquisition Schedule

Project implementation would generally start in the Uresk Drain where the least amount of private land acquisition would be required. Offers to purchase land and subsequent negotiations would, therefore, first take place with landowners within the Uresk Drain. However, the joint lead agencies would consider offers to purchase properties within the entire project boundary at any time. The land acquisition time frame and schedule will be a function of many factors, including available funding, manpower resources required to complete land acquisitions and the willingness of property owners to sell their properties at the current fair market value. Consequently, an exact time frame for land acquisition cannot be established at this time. The majority of the land acquisitions can likely be completed within five to seven years of project initiation.

The land acquisition time frame for an individual landowner would vary, but land acquisition would be preceded by an official offer letter and negotiations with the landowner.

2.1.3.2.3 Tribal Trust Land Acquisition

Tribal Trust lands (including both Reservation and allotted lands) are subject to different restrictions on ownership purchase and sale than are fee lands. The Tribe cannot sell Trust land, only exchange, lease or convey an easement. Tribal Trust leases are limited to specific terms (e.g., 25-year renewable or non-renewable lease). Easements on Tribal Trust land are similar to leases in that the land remains in Tribal Trust; however, easements on Tribal Trust land are different from leases in that the length of the easement can be negotiated for any period.

Tribal Trust easements are different from conservation easements on fee lands in that Tribal Trust easements are for a negotiated period of time, whereas conservation easements on fee land are most often set in perpetuity.

2.1.3.2.3.1 Allotted Lands

The Proposed Action includes 985 acres of allotted land, which is held in trust by the United States for individual Tribal members. These lands, which are typically held in 40 acre tracts, often have numerous owners with undivided interests in the parcel. Rather than attempting to acquire these lands by purchase, the Tribe proposes to obtain easements on those allotted lands included within the project. Compensation would be at the fair market value for the use of the Trust lands and water rights for the LDWP. Because some project boundaries are located according to topographic features rather than property lines, a portion of a particular allotment may be within the Project with the remainder lying outside the Project. The LDWP would compensate allottees for that portion of an

allotment included within the Project boundaries and placed under an easement.

2.1.3.2.3.2 Uintah and Ouray Indian Reservation Land

The Proposed Action includes 2,230 acres of Tribal Trust land held by the United States in trust for the Tribe (Tribal Trust lands). Under the LDWP, the Tribe would enter into leases or easements on Tribal Trust land for construction, habitat restoration and protection or other purposes. Such easements would be negotiated among the Tribe, Mitigation Commission, BIA and DOI regarding the appropriate compensation and terms of the easement. Compensation for land and associated water rights would be at the fair market value for the use of Trust lands and water rights for the LDWP. To the extent any additional water is required for the LDWP, Tribal water rights may be leased and transferred to those lands with compensation based upon the fair market value for leasing water rights. Under all circumstances, easements and leases would have to comply with the applicable legal limitations.

2.1.3.3 Land Use

Most of the land within the project area is either used for grazing or is idle. Table 2-4 provides a summary of existing land use and agricultural production within the Proposed Action project area. The BIA (Hansen 2001, BIA 2001) and Hanberg (2007, see Appendix H) evaluated the current use and production of Tribal (both Tribal Trust and allotted) and fee land according to the following categories:

- **Crop.** Land currently in production for alfalfa, corn and/or small grains. Established cropland is cropland that has been in production for at least five years.

- **Irrigated Pasture.** Pasture consists only of irrigated or potentially irrigated pasture. Most pasture land in the LDWP area is dominated by saltgrass and is considered unimproved pasture.
- **Other.** All other land included non-irrigated land, wetlands, riparian areas and dry hillsides.

Under the Proposed Action, cropland would be managed for wildlife purposes. Management of the irrigated pasture and other lands would be changed, as grazing would be restricted.

2.1.3.4 Mineral Rights

Mineral rights would remain with the existing mineral right owner and would generally not be acquired with land purchase, lease or easement.

Table 2-4. Summary of Existing Land Use and Agricultural Production within the Proposed Action Project Area.

| Land Use | Acres by Land Ownership | | | Total Acres | Range of Production Per Acre |
|----------------------|-------------------------|-----|---------|-------------|------------------------------|
| | Tribal ¹ | Fee | Federal | | |
| Established Cropland | 28 | 30 | 0 | 58 | 4 Tons/Acre |
| Irrigated Pasture | 1,314 | 585 | 0 | 1,899 | 2-3 AUMs/Acre |
| Other | 1,873 | 977 | 0 | 2,850 | 0-1 AUMs/acre |

Source: Hanberg (2007)

¹Includes all Tribal Trust lands.

2.1.4 Operation and Maintenance

2.1.4.1 Management Objectives

The Tribe, in cooperation with the Mitigation Commission, would develop a detailed Comprehensive Conservation and Management Plan (Management Plan) that specifies the habitat developments, their management and the public uses that would be permitted. The Management Plan would likely be patterned after the Comprehensive Conservation and Management Plan for the nearby Ouray National Wildlife Refuge (FWS 2000). The primary management objective would be to restore and maintain wildlife habitat lost through the construction of SACS. Recreational uses compatible with the overall wildlife habitat goals would be allowed. Such uses would likely include angling, hunting, environmental education, pedestrian use, other non-motorized use and wildlife observation. Prohibited uses would include off-road motorized vehicle use. The LDWP area would be managed as a special use wetland-wildlife natural resource area under the Proclamation of the Tribal Wildlife Advisory Board and Tribal Business Committee.

2.1.4.2 Public Access

Public access would be allowed for uses related to wetland-wildlife resources, as specified in the Management Plan. Access to the LDWP area would be either via paved county roads, including U.S. Highway 40 and River Road, or existing dirt roads. Internal access would be through existing dirt roads. Parking would be in areas already widened for parking. Many of the dirt roads within the project boundaries are unimproved and some require high clearance vehicles for access. Existing parking areas are typically large enough to accommodate no more than one to five vehicles, although up to 25 vehicles could be accommodated at the Goose Ponds area of the Uresk Drain if graded. There would be minimal improvement of existing roads or improvement of parking areas as a result of the LDWP project.

Most internal roads would be closed to motorized vehicles, except those needed for administrative use or to maintain existing property access within existing rights-of-way. All existing road rights-of-way necessary for property access would be maintained.

Wildlife-related public uses may require walking some distance from parking locations. Access directly to the Duchesne River within less than a half-mile of parking would likely be possible at the Goose Ponds area of the Uresk Drain and Ted's Flat along River Road.

Other access points within the project area would likely include access to the Uresk Drain and the Riverdell South oxbows at existing roads and small parking areas off River Road. Specific access points and parking areas would be detailed in the Management Plan.

Restrictions on access may be necessary in some areas to meet the wetland-wildlife management goals. Restrictions could consist of complete area closure where sensitive resources occur. Seasonal closures may also be necessary to protect wildlife during nesting, fawning or other seasonally-sensitive periods. The Management Plan would identify any necessary access restrictions to meet the wildlife goals.

Hunting and fishing would require the appropriate Tribal permits on all Tribal Trust land placed under easements for the project and on most fee land acquired for the project and placed in Tribal ownership (fee status). On parcels of fee land acquired within the Project but legally off the Reservation, the permitting of hunting and fishing will be regulated under existing or future Operating Agreements negotiated between the state and the Tribe.¹

¹Some fee lands within the Project may be subject to the United States Supreme Court ruling in *Hagen v. Utah*, 510 U.S. 399 (1994), as applied in *Ute Indian Tribe v. State of Utah*, 114 F.3d

Nonconsumptive recreation, such as wildlife watching, would be allowed as specified in the LDWP Management Plan. Nonconsumptive recreational use by non-Tribal members would require permission from the landowner (Tribe).

2.1.4.3 Operating Agreements

The Tribe would develop Operating Agreement(s) with the Mitigation Commission and DOI, and possibly other appropriate entities, for technical and management assistance. The Operating Agreement(s) would establish a framework for the LDWP Management Plan described above. The Operating Agreement(s) would identify areas of responsibility and authority, specify costs of management and commit funding to support ongoing development, operation and maintenance, and management of the project. Funding sources, assistance with management and operation and maintenance may include one or more of the following: user fees, volunteer efforts, federal, state or local funds or private donations.

The Operating Agreement(s) and Management Plan would jointly address, but would not necessarily be limited to, the following:

- Legal land and real property management
- Public access and use
- Agricultural (crop and grazing) management
- Biological/resource monitoring and management

1513 (10th Cir. 1997). Hunting, fishing and access to those lands will be regulated pursuant to operating agreements negotiated between the Tribe and the State of Utah.

- Water management
- Mosquito and weed control, including control of both existing weeds and preventing the establishment of new noxious and/or invasive weeds.

Management objectives for the alternatives would vary slightly from the Proposed Action according to specific objectives of each alternative, but are generally similar. Additional or differing management considerations, if any, are described under each alternative (sections 2.2 through 2.3).

2.1.4.4 Operation and Maintenance Procedures

The Proposed Action includes measures to control noxious weeds and replant extensive areas of the Duchesne River corridor with native plants. The project construction period includes temporary irrigation of riparian species and initial control of Russian olive, tamarisk and pepperweed in heavily infested areas. Revegetation and weed control would require long-term monitoring and additional weed control to ensure wetland and wildlife habitat goals are met through the life of the project. Of particular concern will be that measures are taken to prevent Russian olive, tamarisk and pepperweed from reestablishing, and that measures are also taken to prevent other invasive species such as cattail, reed canary grass and giant reed from establishing.

Routine inspections would be made of all structures to make sure they are operating properly. Wetland water levels would be monitored on a more intensive basis, with flows adjusted as necessary to allow newly seeded wetland plants to establish, control non-desired species encroachment and maintain salinity levels within the desired range.

Fencing and water control structures will need regular maintenance and/or repair. Irrigation diversion and headgate maintenance would continue to be the responsibility of the Uintah and Ouray Irrigation Project.

2.1.4.5 Mosquito Control

Mosquito control would be an important component of the Proposed Action. The Proposed Action would increase the area of open water and wetlands, potentially increasing mosquito habitat (section 4.10 provides additional discussion of mosquito habitat). Under the LDWP, an Integrated Pest Management (IPM) approach to mosquito control would be implemented by the Tribe. According to the Center for Disease Control (CDC), “Prevention and control of arboviral diseases is accomplished most effectively through a comprehensive, integrated mosquito management program using sound integrated pest management (IPM) principles. IPM is based on an understanding of the underlying biology of the transmission system, and utilizes regular monitoring to determine if and when interventions are needed to keep pest numbers below levels at which intolerable levels of damage, annoyance, or disease occur. IPM-based systems employ a variety of physical, mechanical, cultural, biological and educational measures, singly or in appropriate combination, to attain the desired pest population control.” (CDC 2003, p.27).

This approach is similar to the one used by the Mosquito Abatement Districts found in Duchesne and Uintah Counties, which emphasizes monitoring and surveillance, treatment preference of mosquito larvae over adults and use of adulticides (generally organophosphates such as Malathion) when larval control has not been effective or in emergency situations.

Details of the LDWP Mosquito Control Plan are provided in Appendix G.

Certain other biological or physical control procedures could also be used to reduce mosquito populations as part of the overall IPM Plan, such as temporary dewatering of some wetland areas to expose mosquito larvae to predation, habitat enhancement for native aquatic predators, controlling weeds that would prevent the planned water flow-through operation and increasing water velocity in wetlands to minimize stagnant water conditions in selected locations. The use of mosquitofish (*Gambusia affinis*) would not be allowed because of the potential for these fish to enter the Duchesne River and prey on native and game fish in the river.

2.1.5 Summary of Other Characteristics

2.1.5.1 Construction Schedule

The Proposed Action would be constructed over several years, beginning with land acquisition. Implementation of the proposed physical and biological measures would proceed over a minimum 7-year period. During this period, construction would proceed on a site-by-site basis for construction of wetland features necessary to establish oxbow connections, manage water and establish wetland plants along the oxbows. Six to nine months are estimated as being necessary to construct the physical oxbow features on each site, which would be primarily outside of the riparian planting blocks. Riparian planting would occur on a phased basis consisting of approximately 120 acres for replanting, and up to 200 acres where only supplemental planting is necessary, each year. Riparian planting may extend through multiple seasons on a site if

more than one planting block per site is identified. All disturbed land would be planted the same year it was disturbed unless disturbances would continue over more than one year. Initial control of noxious weeds is an integral portion of the project and control of tamarisk, Russian olive and pepperweed would likely require treatment in two subsequent seasons.

Construction would proceed according to the success and schedule of land acquisitions. Physical feature construction would not likely overlap in time among sites, but riparian planting and weed control would likely occur concurrently among the different sites. Figure 2-7 depicts the construction schedule for the Proposed Action.

2.1.5.2 Number of Workers and Employment Opportunities

The Proposed Action would use the services of two construction teams: a planting/weed control team and a physical feature construction team. The planting/weed control team would require the use of both skilled and unskilled labor and would work seasonally. The average size of the planting/weed control team would be up to twenty workers who would work on a seasonal, not permanent, basis. The construction team would consist of an average work force of up to ten workers, who would also work on a seasonal, not permanent, basis. The maximum number of employees on-site at any given time would be thirty. There would be no permanent construction jobs associated with the LDWP.

It is estimated that two-thirds of the construction work force would come from the Uinta Basin and that the remaining one-third may include residents from Wasatch, Summit, Utah or Salt Lake Counties.

Figure 2-7. Proposed Action Construction Schedule

| ID | Task Name | Y1 | | | | Y2 | | | | Y3 | | | | Y4 | | | | Y5 | | | | Q1 | | |
|----|-------------------------------|---|----|----|----|---|----|----|----|---|----|------------------|----|---|----|----|----|----|----|------------------|------------------|----|--|--|
| | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | |
| 1 | Land Acquisition | [Solid grey bar spanning all 21 quarters] | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Uresk Drain | | | | | [Thick black bar with downward arrowheads at Y2 Q3 and Y4 Q4] | | | | | | | | | | | | | | | | | | |
| 3 | Weed control | | | | | [Solid grey bar] | | | | | | | | | | | | | | | | | | |
| 4 | Riparian terrace planting | | | | | | | | | [Solid grey bar] | | | | | | | | | | | | | | |
| 5 | Wetland construction/planting | | | | | | | | | | | [Solid grey bar] | | | | | | | | | | | | |
| 6 | Begin O&M period | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Riverdell North/South | | | | | | | | | [Thick black bar with downward arrowheads at Y3 Q4 and Y5 Q4] | | | | | | | | | | | | | | |
| 8 | Weed control | | | | | | | | | | | [Solid grey bar] | | | | | | | | | | | | |
| 9 | Riparian terrace planting | | | | | | | | | | | | | [Solid grey bar] | | | | | | | | | | |
| 10 | Oxbow construction/planting | | | | | | | | | | | | | | | | | | | [Solid grey bar] | | | | |
| 11 | Begin O&M period | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | Ted's Flat | | | | | | | | | | | | | [Thick black bar with downward arrowheads at Y4 Q4 and Y5 Q4] | | | | | | | | | | |
| 13 | Weed control | | | | | | | | | | | | | | | | | | | [Solid grey bar] | | | | |
| 14 | Riparian terrace planting | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | Oxbow construction/planting | | | | | | | | | | | | | | | | | | | | [Solid grey bar] | | | |
| 16 | Begin O&M period | | | | | | | | | | | | | | | | | | | | | | | |

Following construction, the LDWP would fund two to three full time employees as management staff. Additional workers would be hired as necessary during the growing season to assist with fence maintenance, weed control, monitoring and other tasks that are most intensive during the summer months. Most of this work force would come from the Uinta Basin.

2.1.5.3 Material Used During Construction

Table 2-5 lists material requirements for the Proposed Action and alternatives. The majority of the materials necessary for physical construction would consist of earthen fill obtained from local sources. The plant material would be supplied from regional nurseries. A relatively small amount of concrete would be used during construction of water control structures, if these features are necessary.

Table 2-5. Construction Material Requirements for the Proposed Action and Alternatives.

| Type of Material | Use of Material | Source of Material | Amount of Material by Alternative | | |
|---------------------|---|-------------------------------------|-----------------------------------|-------------------------------|-------------------------------|
| | | | Proposed Action | Pahcease | Topanotes |
| Clay | Plug Uresk Drain | On-site | 30,000 cu yds | 30,000 cu yds | 30,000 cu yds |
| Compactable fill | Build berms | On-site | 28,912 cu yds | 27,602 cu yds | 28,352 cu yds |
| 3-strand wire fence | Exclude livestock | Local source | 15 miles | 25 miles | 14 miles |
| Concrete | Water control structures | Local source | 270 cu yds | 260 cu yds | 270 cu yds |
| Rip-rap | Protect sides of water control structures | Local source | 270 cu yds | 260 cu yds | 270 cu yds |
| Vegetation | Revegetate cottonwood forest | Contract for collection/propagation | 60,150 cottonwood poles | 52,250 cottonwood poles | 75,130 cottonwood poles |
| | Revegetate floodplains and oxbow channels | Regional nursery | 93,375 bareroot shrubs/trees | 140,940 bareroot shrubs/trees | 117,735 bareroot shrubs/trees |
| | Seed new wetland edges | Regional seed company | 5,754 pounds | 6,100 pounds | 5,900 pounds |
| | Seed upland | Regional seed company | 0 pounds | 5,480 pounds | 1,220 pounds |

2.2 PAHCEASE ALTERNATIVE

2.2.1 Physical and Biological Features

2.2.1.1 Overview

The Pahcease Alternative would use the same measures as the Proposed Action to rehabilitate 1,923 acres of wetland and 1,132 acres of woody riparian habitat in the Duchesne River corridor. Table 2-1 in section 2.1.1.1 lists the measures that would be made in each site under the Pahcease Alternative. Maps 1, 2 and 4 located at the end of chapter 2 show the location of the proposed measures. The project would be constructed over an eight-year period with construction proceeding as described for the Proposed Action.

Where feasible, the oxbow systems would be reconnected to the Duchesne River. Oxbow reconnection was identified as feasible if the oxbow would be flooded by the mean annual flood (the flow that occurs on average every 2.3 years). Because the river has narrowed by up to 40 percent, been downcut by 2-4 feet and has had its flow reduced by diversions, reconnection of all oxbows to the river is no longer feasible without either increased flows or river reconstruction.

Reconnection of oxbows to the Duchesne River is feasible in the Flume, where the connection would occur via an existing perennial secondary channel. The connection would require excavation of a 440-foot long channel, which would allow gravity flow of water from the secondary channel to the oxbows during the spring on an annual basis.

The Riverdell North oxbow would be connected to the river by excavating a 600-foot to 800-foot long channel that would allow flow

of water from the Duchesne River on a mean annual flood basis (e.g., approximately once every 2.3 years).

Connection of the Flume oxbows would occur using the same methods as described for the oxbow connections in the Proposed Action. All connections to the Duchesne River would occur on project lands. Connections to the Duchesne River constructed by the LDWP, would be stabilized by the immediate planting of riparian shrubs and/or herbaceous species along the channel banks.

2.2.1.2 Oxbow Restoration

The sites included in the Pahcease Alternative contain two oxbow systems that historically formed annually flooded, continuous side channels of the Duchesne River and the Riverdell North oxbow that is a remnant of the 1964 Duchesne River channel. The Pahcease Alternative would connect the Flume and Riverdell South oxbow systems into continuous backwater channels and expand the oxbow width where ditched. Four connections would be necessary in both the Flume and Riverdell South oxbow systems. The alternative would also connect the Riverdell North and Flume oxbows to the Duchesne River.

Connections between oxbows, expansion of oxbow width and river reconnection would be as described for the Proposed Action in section 2.1.1.2.

2.2.1.3 Large Marsh Complex Restoration

Large marsh complex restoration would proceed as described for the Proposed Action in section 2.1.1.3, with the exception that two additional berms (500 to 1,000 feet in length)

would be added north of County Road 8000 South at the head of the Uresk Drain.

2.2.1.4 Isolated Marsh Complexes

Isolated wetlands to be created or enhanced as part of the Pahcease Alternative include the Full Connector and Pit Wetlands, which are located in the Flume site south of Highway 40. The proposed Full Connector wetland consists of 190 acres of grassland that was a wet meadow-marsh complex in 1997 when it was being irrigated for grazing. The wetland dried when irrigation ceased. This area would be restored to shallow marsh/wet meadow complex by rewatering the former pasture. No excavation or addition of water control structures would be necessary to restore the wetland.

The Pit Wetland would connect three separate smaller wetlands that developed in highway borrow pits into a single 86-acre wetland complex consisting of a mix of shallow marsh, deep marsh and shallow open water habitats. The connection would require excavation of an approximately 3-foot deep, 500-foot long channel, which would be revegetated with a mix of wetland grasses and sedges.

2.2.1.5 Riparian Restoration

Riparian restoration would be as described for the Proposed Action in section 2.1.1.5, with slight increases in treatment acres to reflect the inclusion of the Flume and Riverdell North sites as listed in Table 2-1.

2.2.1.6 Biological Features Common to All Sites

Biological features would be as described for the Proposed Action in section 2.1.1.6.

2.2.1.7 Management Changes

Management changes for the Uresk Drain and Riverdell South sites would be as described for the Proposed Action in section 2.1.1.7.

As described for the Proposed Action, all grasslands would be managed for wildlife purposes. These grasslands are located primarily adjacent to the Uresk Drain marsh complex and between the Uresk Drain wetlands and the Flume oxbows.

All existing rotation cropland within the immediate vicinity of the proposed wetlands would be retained as cropland under conservation easement purchase.

Approximately 469 acres of former cropland on the Riverdell North/South property would be replanted to native vegetation and/or cropland to provide wildlife food and cover. Newly planted cropland would be managed entirely for wildlife; there would be no harvest for human or domestic animal consumption.

Desert shrub habitats on the Flume and Riverdell North sites would be managed as described for the Proposed Action, with changes in treatment acres as listed in Table 2-1. Additionally, approximately 200 acres of desert shrub on the Riverdell North site would be maintained as sensitive plant habitat.

2.2.1.8 Water Management

Water management for each site included in the Pahcease Alternative would be as described for the Proposed Action in section 2.1.1.8.

2.2.2 Construction Procedures

2.2.2.1 Typical Construction Procedures

All construction procedures would be as described for the Proposed Action in section 2.1.2.1.

2.2.2.2 Typical Equipment and Specifications

All equipment that could be used to construct the Pahcease Alternative would be as described for the Proposed Action in section 2.1.2.2.

2.2.2.3 Temporary Construction Access

Temporary construction access for the eastern portion of the Uresk Drain site would be as described for the Proposed Action in section 2.1.2.3.

The location of temporary construction access roads on the Flume, Riverdell North/South and the western portion of the Uresk Drain sites would be determined during final design, but it is anticipated that at each site from one-half to one acre of temporary access roads would be constructed.

At the Flume, a permanent access road to the oxbow-river reconnection point would be constructed. The road would be created by extending an existing road approximately 1,200 feet to the west. The exact location of the access road would be determined during final design.

Road construction methods would be as described for the Proposed Action in section 2.1.2.3.

2.2.3 Land Ownership, Land Acquisition and Land Use

2.2.3.1 Land Ownership

Existing land ownership within the Pahcease Alternative is listed in Table 2-3 and depicted on Map 7. Land ownership types are described in section 2.1.3.1. As described for the Proposed Action, there is no state owned land within the project area, but the federally owned Riverdell North property is included in the Pahcease Alternative. The Mallard Springs property is depicted on the project maps for reference, but is not incorporated into the project area.

Fee lands acquired by the federal government from private landowners would be owned by the United States and managed in perpetuity for fish and wildlife benefits. Tribal Trust lands would be managed for fish and wildlife under leases or easements to be negotiated. All lands would be managed by the Tribe. This would maintain mixed ownership in the project area.

2.2.3.2 Land Acquisition

Land acquisition would generally proceed as described for the Proposed Action with differences in the acreage of Tribal Trust land to be placed under easements or fee land to be acquired as listed in Table 2-3. Additionally, approximately 1,087 acres of land would need to be acquired to replace the Riverdell North property with other land suitable for DRACR mitigation.

Under the Pahcease Alternative, all established cropland and residences within the project area would be acquired under a combination of fee

purchase, purchase of conservation easements and potentially eminent domain.

Purchase of conservation easements, instead of fee purchase, may be used to secure established croplands. The conservation easements would typically require that at least 20 percent of the crop be reserved for wildlife, that cropping schedules be compatible with nesting bird requirements and that native trees and shrubs along hedgerows and ditches be maintained and not cut down or replanted. Conservation easements provide payment for the amount of crop retained for wildlife use, including such items as leaving crops unharvested or changes in harvest timing that may be less profitable. Landowners would continue to both grow their full crop amount and be paid for their full crop. The difference under a conservation easement would be that a certain amount of a crop (typically 80 percent) would be harvested, with compensation to the landowner being provided through the general sale of the crop. However, a certain amount (typically 20 percent) would be reserved for wildlife and not harvested, with compensation to the landowner being provided by the LDWP. Under a conservation easement, landowners would be fully compensated for 100 percent of their crops.

Under the Pahcease Alternative lands acquired in fee in all management units would generally remain in the name of the United States and managed for fish and wildlife mitigation purposes in perpetuity. Tribal Trust land and Allotted lands would be reserved for long-term protection and management for fish and wildlife mitigation purposes under a 10-year lease.

2.2.3.3 Land Use

Most of the land within the area is either used for grazing or is idle (97 percent of the project

area). Table 2-6 provides a summary of existing land use and agricultural production within the Pahcease Alternative project area. Under the Pahcease Alternative, fourteen acres of cropland would be converted to wet meadow through an increase in the adjacent water table to another land use type.

Conservation easements would be purchased on remaining cropland so that a portion of the crop would be reserved for wildlife use as described in section 2.1.3.2. Management of the irrigated pasture and other lands would be changed, as grazing would be restricted.

2.2.3.4 Mineral Rights

As described for the Proposed Action, mineral rights would generally remain with the existing mineral right owner and would generally not be acquired with land purchase, lease or easement.

Table 2-6. Summary of Existing Land Use and Agricultural Production within the Pahcease Alternative Project Area.

| Land Use | Acres by Land Ownership | | | Total Acres | Range of Production Per Acre |
|-------------------|-------------------------|-------|---------|-------------|------------------------------|
| | Tribal ¹ | Fee | Federal | | |
| Cropland | 54 | 185 | 0 | 239 | 4 Tons/Acre |
| Irrigated Pasture | 1,214 | 1,213 | 0 | 2,427 | 2-3 AUMs/Acre |
| Other | 2,623 | 389 | 1,087 | 4,099 | 0-1 AUMs/acre |

Source: Hansen 2001, BIA 2001, Hanberg 2007

¹Includes all Tribal Trust lands.

2.2.4 Operation and Maintenance

2.2.4.1 Management Objectives

Management objectives would be as described for the Proposed Action in section 2.1.4.1.

2.2.4.2 Public Access

Public access would be allowed for uses related to wetland-wildlife resources, as specified in the Management Plan and as described for the Proposed Action in section 2.1.4.2.

Wildlife-related public uses may require walking some distance from parking locations. Access directly to the Duchesne River within less than a half-mile of parking would likely be possible at the following locations:

- Riverdell North property,
- The Reconnection point of the Flume to the Secondary Channel, and
- The Goose Ponds portion of the Uresk Drain.

Other access would be as described for the Proposed Action in section 2.1.4.2.

Hunting and fishing would require the appropriate Tribal permits on all Tribal Trust land placed under easements for the project or held in trust for the Tribe. Hunting and fishing on both fee land purchased by the federal government for the LDWP, and fee land previously purchased by the federal government for DRACR mitigation, would be permitted differently. These lands would remain in federal ownership (non fee status) and would be managed by the Tribe, but hunting and fishing would be regulated by the state for non-Indians and by the Tribe for Indians.

Nonconsumptive recreation, such as wildlife watching, would be allowed as specified in the LDWP Management Plan. Nonconsumptive recreational use by non-Tribal members would require access permission on Tribal lands and federally owned lands managed by the Tribe, but not on the Riverdell North property.

Under the Pahcease Alternative, multiple permits may be required to fish, hunt or recreate along the Duchesne River corridor.

2.2.4.3 Operating Agreements

As described for the Proposed Action, The Tribe would develop Operating Agreement(s) with the Mitigation Commission and DOI and possibly other appropriate entities for technical and management assistance. The Operating Agreements developed under the Pahcease Alternative would be more extensive than for the Proposed Action, as they would establish a framework for the LDWP Management Plan under mixed ownership.

In addition to the items listed in section 2.1.4.3 for the Proposed Action, the Operating Agreement and Management Plan for the Pahcease Alternative would also address, but would not necessarily be limited to, the following:

- Jurisdictional responsibility,
- Routine maintenance of fences (both external and internal), water control structures and other facilities,
- Fish and wildlife law enforcement,
- Traffic laws,
- Peace keeping,
- Public access and use on mixed ownership lands, and
- Trespass on private or Tribal Trust lands.

2.2.4.4 Operation and Maintenance Procedures

Operation and maintenance procedures would be as described for the Proposed Action.

2.2.4.5 Mosquito Control

Mosquito control would be as described for the Proposed Action in section 2.1.4.5.

2.2.5 Summary of Other Characteristics

2.2.5.1 Construction Schedule

The Pahcease Alternative would be constructed over an eight-year period with work progressing on a site-by-site basis. Construction would be implemented as described for the Proposed Action. Figure 2-8 depicts the construction schedule for the Pahcease Alternative.

2.2.5.2 Number of Workers and Employment Opportunities

The Pahcease Alternative would use the same number of workers as described for the Proposed Action in section 2.1.5.2.

2.2.5.3 Material Used During Construction

Table 2-5 lists material requirements for the Pahcease Alternative.

2.3 TOPANOTES ALTERNATIVE

2.3.1 Physical and Biological Features

2.3.1.1 Overview

The Topanotes Alternative would use the same measures as the Proposed Action to rehabilitate 1,938 acres of wetland and 1,237 acres of woody riparian habitat in the Duchesne River corridor. Table 2-1 in section 2.1.1.1 lists the measures that would be made in each site under the Topanotes Alternative. Maps 1, 2 and 5 located at the end of chapter 2 show the location of the proposed measures. The project would be constructed over a six to eight-year period with construction on a site-by-site basis as described for the Proposed Action.

2.3.1.2 Oxbow Restoration

The sites included in the Topanotes Alternative contain three oxbow systems that historically formed annually flooded, continuous side channels of the Duchesne River. The Topanotes Alternative would connect the three oxbow systems into a continuous backwater channel and expand the oxbow width where ditched. Currently isolated oxbows would be connected in the Flume and Ted's Flat sites to form continuous oxbow systems. Connections between oxbows, expansion of oxbow width and river reconnection for the Ted's Flat oxbows would be as described for the Proposed Action in section 2.1.1.2 and as described for the Flume oxbows in section 2.2.1.2.

2.3.1.3 Large Marsh Complex Restoration

Large marsh complex restoration would proceed as described for the Proposed Action in section 2.1.1.3 with the exception that two additional berms (500 to 1000 feet in length) would be added north of County Road 8000 South at the head of the Uresk Drain.

2.3.1.4 Isolated Marsh Complexes

Isolated wetlands to be created or enhanced as part of the Topanotes Alternative include the Full Connector and Pit Wetlands, which are located in the Flume site south of Highway 40, and the Swamp, which is located in the Ted's Flat site. These wetlands would be expanded, created or enhanced as described for the Proposed Action in section 2.1.1.4 and for the Pahcease Alternative in section 2.2.1.4.

2.3.1.5 Riparian Restoration

Riparian restoration would be as described for the Proposed Action in section 2.1.1.5, with increases in treatment acres for the Flume site as listed in Table 2-1.

2.3.1.6 Biological Features Common to All Sites

Biological features would be as described for the Proposed Action in section 2.1.1.6.

2.3.1.7 Management Changes

Management changes would be as described for the Proposed Action in section 2.1.1.7 for the Uresk Drain and Ted's Flat sites.

As described for the Proposed Action, all grasslands would be managed for wildlife

purposes. These grasslands are located primarily adjacent to the Uresk Drain marsh complex and between the Uresk Drain wetlands and the Flume oxbows.

All existing rotation cropland within the immediate vicinity of the proposed wetlands would be retained as cropland under conservation easement purchase.

Desert shrub habitats would be managed as described for the Proposed Action, with changes in treatment acres as listed in Table 2-1.

2.3.1.8 Water Management

Water management for each site included in the Topanotes Alternative would be as described for the Proposed Action in section 2.1.1.8.

2.3.2 Construction Procedures

All construction procedures would be as described for the Proposed Action in sections 2.1.2.1 and 2.1.2.2.

Temporary construction access for the eastern portion of the Uresk Drain site would be as described for the Proposed Action in section 2.1.2.3.

The location of temporary construction access roads on the Flume, Ted's Flat and the western portion of the Uresk Drain sites would be determined during final design, but it is anticipated that at each site from one-half to one acre of temporary access roads would be constructed.

At the Flume, a permanent access road to the oxbow-river reconnection point would be

constructed. The road would be created by extending an existing road approximately 1,200 feet to the west. The exact location of the access road would be determined during final design.

Road construction methods would be as described for the Proposed Action in section 2.1.2.3.

2.3.3 Land Ownership, Land Acquisition and Land Use

2.3.3.1 Land Ownership

Existing land ownership within the Topanotes Alternative is listed in Table 2-3 and depicted on Map 8. Land ownership types are described in section 2.1.3.1. As described for the Proposed Action, there is no state or federally owned land within the project area. The Mallard Springs property is depicted on the project maps for reference, but is not incorporated into the project area.

Fee lands acquired by the federal government from private landowners would be owned by the United States and managed in perpetuity for fish and wildlife benefits. Tribal Trust lands would be managed for fish and wildlife under leases or easements to be negotiated. All lands would be managed by the Tribe. This would maintain mixed ownership in the project area.

2.3.3.2 Land Acquisition

Land acquisition would proceed as described for the Proposed Action with differences only in the acreage of Tribal Trust land to be placed under easements or fee land to be acquired as listed in Table 2-3.

Under the Topanotes Alternative, all established cropland and residences within the project area would be acquired under a combination of fee purchase, purchase of conservation easements and potentially eminent domain.

Under the Topanotes Alternative, lands acquired in fee in all management units would remain in the name of the United States and managed for fish and wildlife mitigation purposes in perpetuity. Tribal Trust land and Allotted lands would be reserved for long-term protection and management for fish and wildlife mitigation purposes under a 10-year lease.

2.3.3.3 Land Use

Most of the land within the area is used either for grazing or is idle (94 percent of the project area). Table 2-7 provides a summary of

existing land use and agricultural production within the Topanotes Alternative project area. Under the Topanotes Alternative, fourteen acres of cropland would be converted to wet meadow through an increase in the adjacent water table to another land use type. Conservation easements would be purchased on remaining cropland so that a portion of the crop would be reserved for wildlife use as described for the Pahcease Alternative in section 2.2.3.3. Management of the irrigated pasture and other lands would be changed, as grazing would be restricted.

2.3.3.4 Mineral Rights

As described for the Proposed Action, mineral rights would generally remain with the existing mineral right owner and would generally not be acquired with land purchase, lease or easement.

Table 2-7. Summary of Existing Land Use and Agricultural Production within the Topanotes Alternative Project Area.

| Land Use | Acres by Land Ownership | | | Total Acres | Average Production Per Acre |
|-------------------|-------------------------|-------|---------|-------------|-----------------------------|
| | Tribal ¹ | Fee | Federal | | |
| Cropland | 45 | 311 | 0 | 356 | 4 Tons/Acre |
| Irrigated Pasture | 1,197 | 1,024 | 0 | 2,221 | 2-3 AUMs/Acre |
| Other | 3,235 | 836 | 0 | 4,071 | 0-2 AUMs/acre |

Source: Hansen 2001, BIA 200, Hanberg 2007 ¹Includes all Tribal Trust lands.

2.3.4 Operation and Maintenance

Operation and Maintenance would be as described for the Pahcease Alternative in section 2.2.4.

2.3.5 Summary of Other Characteristics

2.3.5.1 Construction Schedule

The Topanotes Alternative would be constructed over a six to eight-year period with work progressing on a site-by-site basis. Figure 2-9 depicts the construction schedule for the Topanotes Alternative.

2.3.5.2 Number of Workers and Employment Opportunities

The Topanotes Alternative would use the same number of workers as described for the Proposed Action in section 2.1.5.2.

2.3.5.3 Material Used During Construction

Table 2-5 lists material requirements for the Topanotes Alternative.

2.4 NO ACTION ALTERNATIVE

Under the No Action Alternative, no actions would be taken to fulfill the project purpose and need. No actions would be taken under this program to provide compensation to the Tribe for loss of wetlands on Tribal Trust land and for lost Tribal natural resources as a result of the CUP.

Implementation of the No Action Alternative would not provide mitigation for the loss of wetland and riparian habitat as a result of the SACS operation. Existing wetlands within the Duchesne River corridor would remain isolated and scattered in the former continuous river side channels. Wetland habitat diversity would remain low, consisting primarily of a single habitat type with no habitat interspersion. Upland habitats adjacent to wetlands would continue to be grazed, providing low quality resting and nesting cover for wetland-

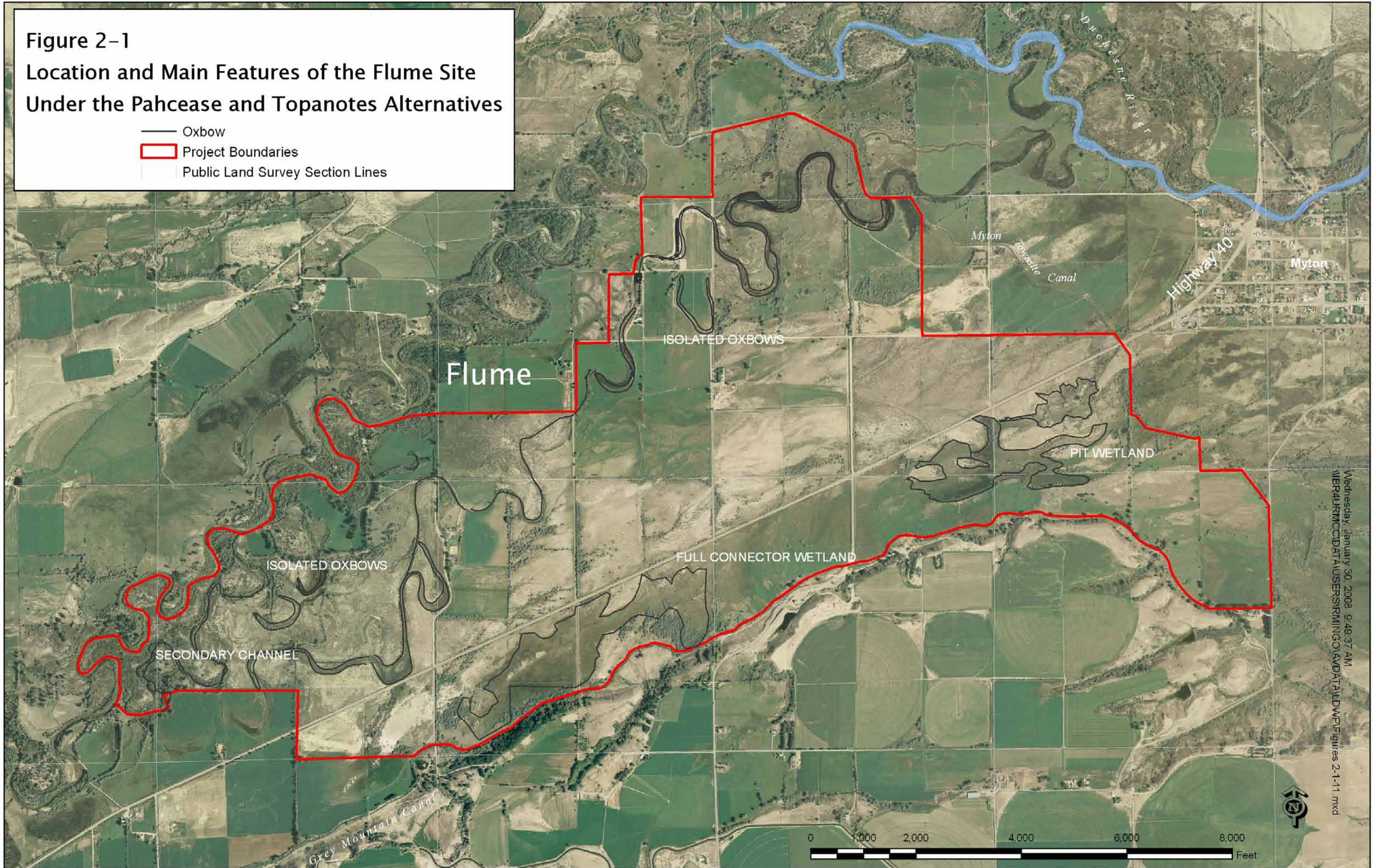
dependent wildlife. Pepperweed would continue to expand along the edges of wetlands receiving return flows and Russian olive would continue to establish in abandoned pasture. TDS levels would remain high in the existing wetlands.

Under the No Action Alternative, cottonwoods and native shrubs would not be reestablished along the Duchesne River and the non-native tamarisk and Russian olive would continue to establish in the river floodplain and low terraces. The existing cottonwood forest would continue to be scattered and consist mostly of older trees with a grazed understory.

The Mitigation Commission would remain obligated to meet both project needs described in section 1.2 of this FEIS. A different plan for wetland protection, creation and enhancement for the benefit of the Tribe would be sought.

Figure 2-1
Location and Main Features of the Flume Site
Under the Pahcease and Topanotes Alternatives

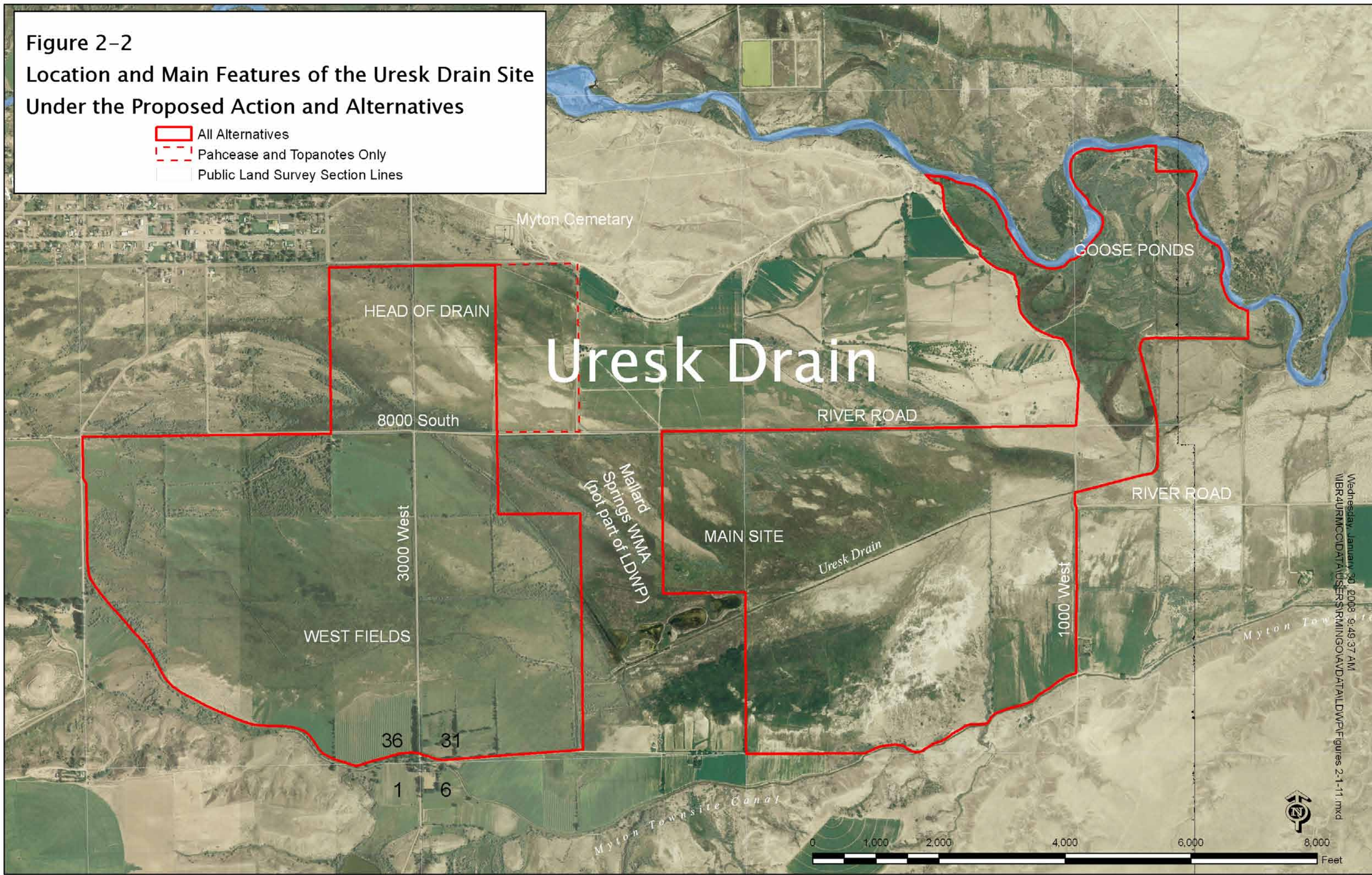
- Oxbow
- ▭ Project Boundaries
- ▭ Public Land Survey Section Lines



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Figure 2-2
Location and Main Features of the Uresk Drain Site
Under the Proposed Action and Alternatives

- All Alternatives
- Pahcease and Topanotes Only
- Public Land Survey Section Lines



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Figure 2-3
Location and Main Features of the Riverdell South Site Under the Proposed Action

-  Proposed Action Alternative
-  Public Land Survey Section Lines

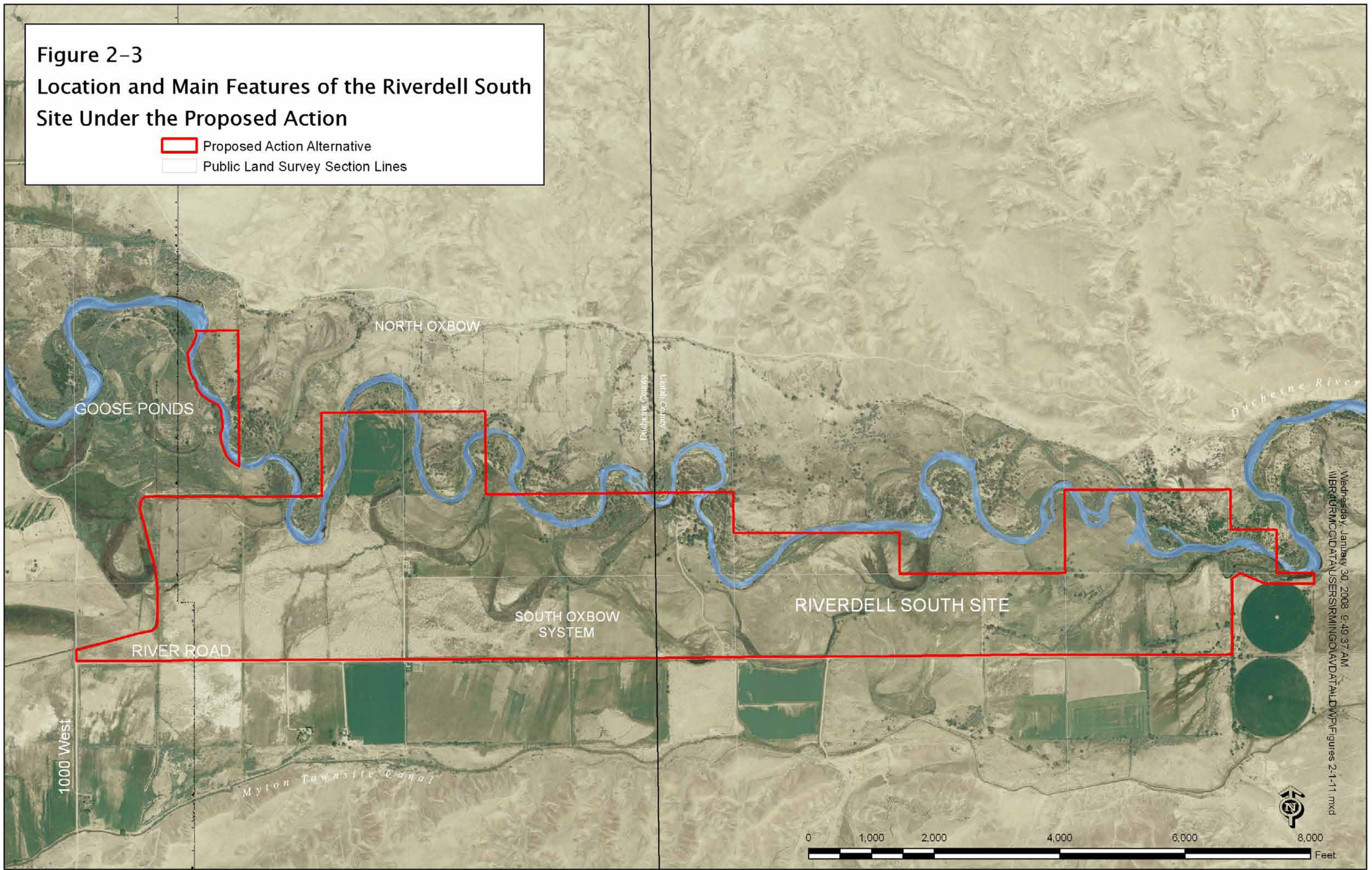






Figure 2-4
Location and Main Features of the Riverdell North
and Riverdell South Sites Under the Pahcease Alternative

-  Oxbow
-  Proposed Action and Pahcease Alternatives
-  Pahcease Alternative Only
-  Public Land Survey Section Lines

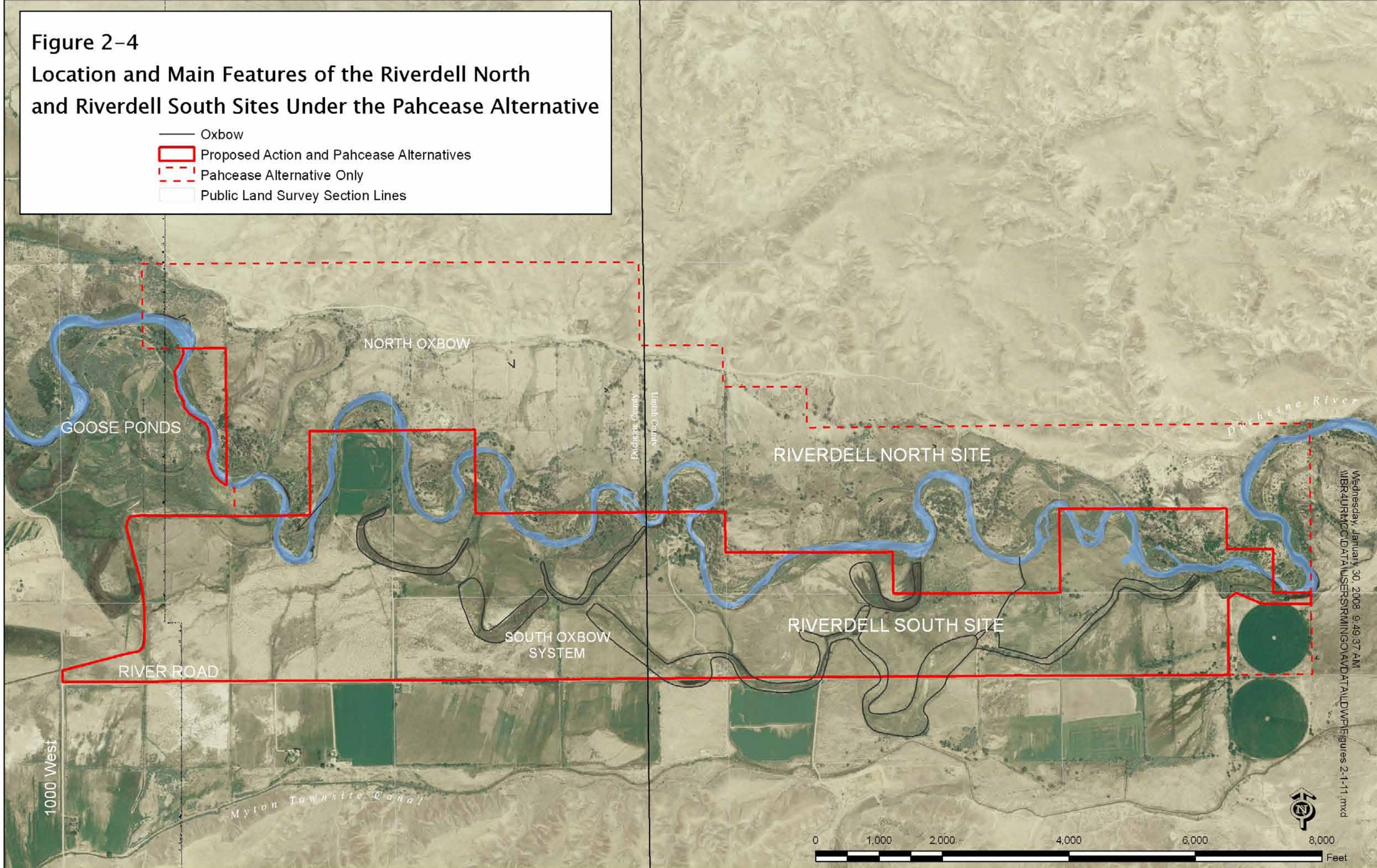
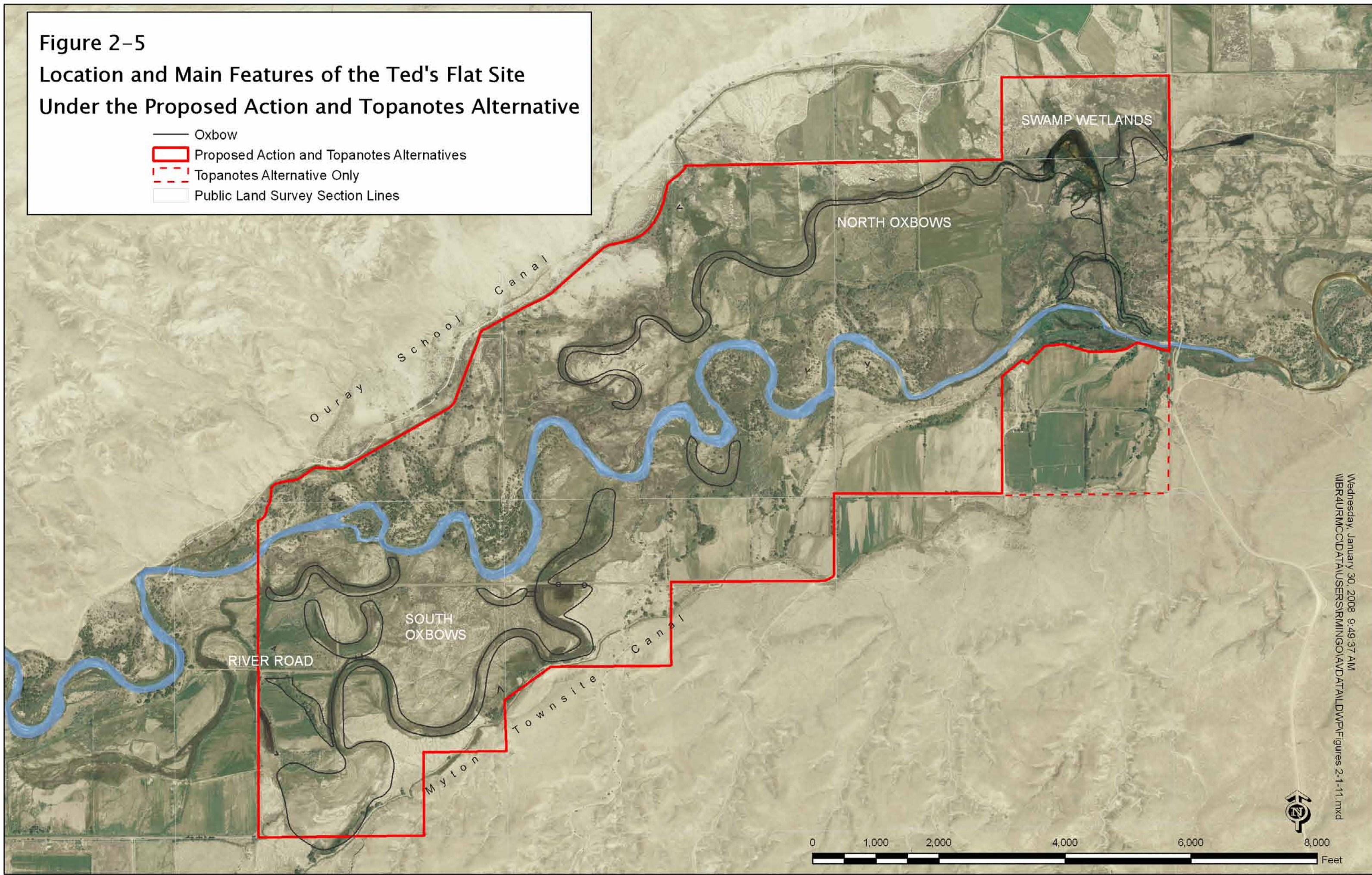


Figure 2-5
Location and Main Features of the Ted's Flat Site
Under the Proposed Action and Topanotes Alternative






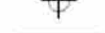

- Oxbow
- Proposed Action and Topanotes Alternatives
- Topanotes Alternative Only
- Public Land Survey Section Lines

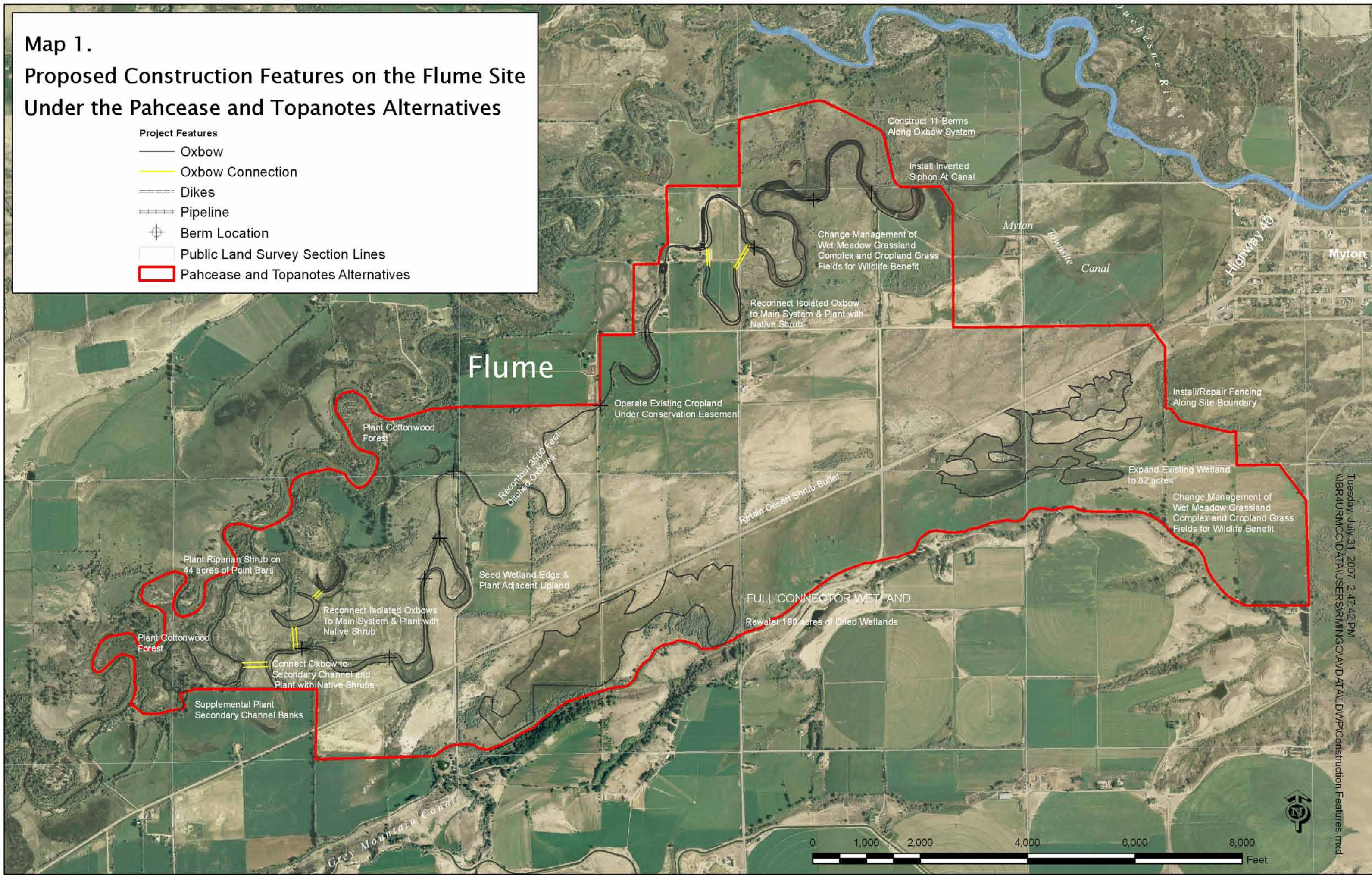


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Map 1. Proposed Construction Features on the Flume Site Under the Pahcease and Topanotes Alternatives

Project Features

-  Oxbow
-  Oxbow Connection
-  Dikes
-  Pipeline
-  Berm Location
-  Public Land Survey Section Lines
-  Pahcease and Topanotes Alternatives



Flume

Construct 11 Berms
Along Oxbow System

Install Inverted
Siphon At Canal

Change Management of
Wet Meadow Grassland
Complex and Cropland Grass
Fields for Wildlife Benefit

Reconnect Isolated Oxbow
to Main System & Plant with
Native Shrub

Operate Existing Cropland
Under Conservation Easement

Install/Repair Fencing
Along Site Boundary

Expand Existing Wetland
to 82 acres

Change Management of
Wet Meadow Grassland
Complex and Cropland Grass
Fields for Wildlife Benefit

FULL CONNECTOR WETLAND

Rewater 190 acres of Dried Wetlands

Recontour 3500 Feet
Ditched Oxbows

Retain Desert Shrub Buffer

Seed Wetland Edge &
Plant Adjacent Upland

Plant Cottonwood
Forest

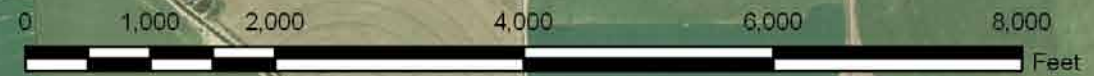
Plant Riparian Shrub on
44 acres of Point Bars

Plant Cottonwood
Forest

Reconnect Isolated Oxbows
To Main System & Plant with
Native Shrub

Connect Oxbow to
Secondary Channel and
Plant with Native Shrubs

Supplemental Plant
Secondary Channel Banks



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Map 2.
Proposed Construction Features on the Uresk Site

Project Features

- ===== Berm
- ==== Pipeline

New Wetland Areas Under Proposed Action

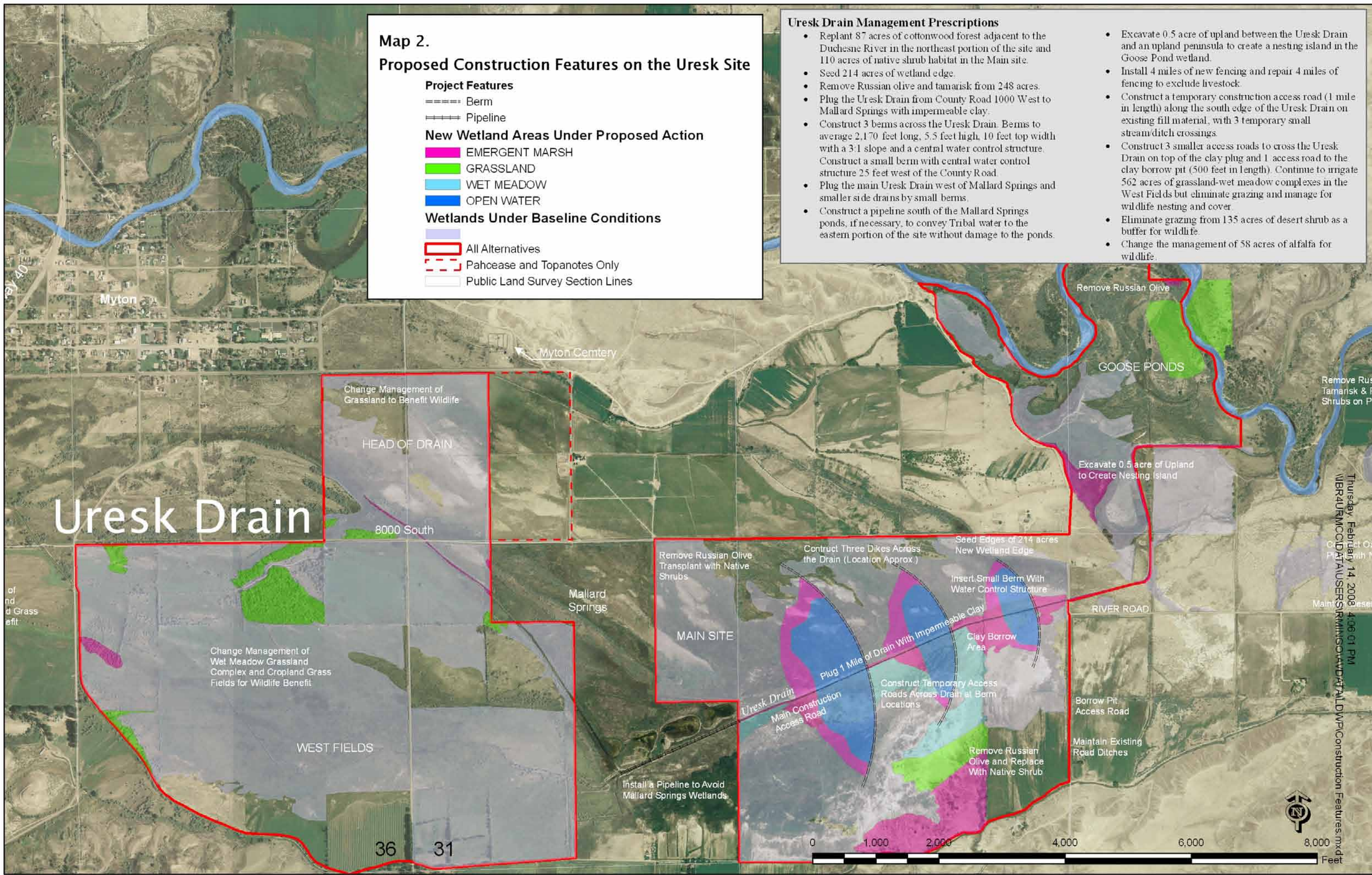
- EMERGENT MARSH
- GRASSLAND
- WET MEADOW
- OPEN WATER

Wetlands Under Baseline Conditions

- All Alternatives
- Pahcease and Topanotes Only
- Public Land Survey Section Lines










Uresk Drain Management Prescriptions

- Replant 87 acres of cottonwood forest adjacent to the Duchesne River in the northeast portion of the site and 110 acres of native shrub habitat in the Main site.
- Seed 214 acres of wetland edge.
- Remove Russian olive and tamarisk from 248 acres.
- Plug the Uresk Drain from County Road 1000 West to Mallard Springs with impermeable clay.
- Construct 3 berms across the Uresk Drain. Berms to average 2,170 feet long, 5.5 feet high, 10 feet top width with a 3:1 slope and a central water control structure. Construct a small berm with central water control structure 25 feet west of the County Road.
- Plug the main Uresk Drain west of Mallard Springs and smaller side drains by small berms.
- Construct a pipeline south of the Mallard Springs ponds, if necessary, to convey Tribal water to the eastern portion of the site without damage to the ponds.
- Excavate 0.5 acre of upland between the Uresk Drain and an upland peninsula to create a nesting island in the Goose Pond wetland.
- Install 4 miles of new fencing and repair 4 miles of fencing to exclude livestock.
- Construct a temporary construction access road (1 mile in length) along the south edge of the Uresk Drain on existing fill material, with 3 temporary small stream/ditch crossings.
- Construct 3 smaller access roads to cross the Uresk Drain on top of the clay plug and 1 access road to the clay borrow pit (500 feet in length). Continue to irrigate 562 acres of grassland-wet meadow complexes in the West Fields but eliminate grazing and manage for wildlife nesting and cover.
- Eliminate grazing from 135 acres of desert shrub as a buffer for wildlife.
- Change the management of 58 acres of alfalfa for wildlife.



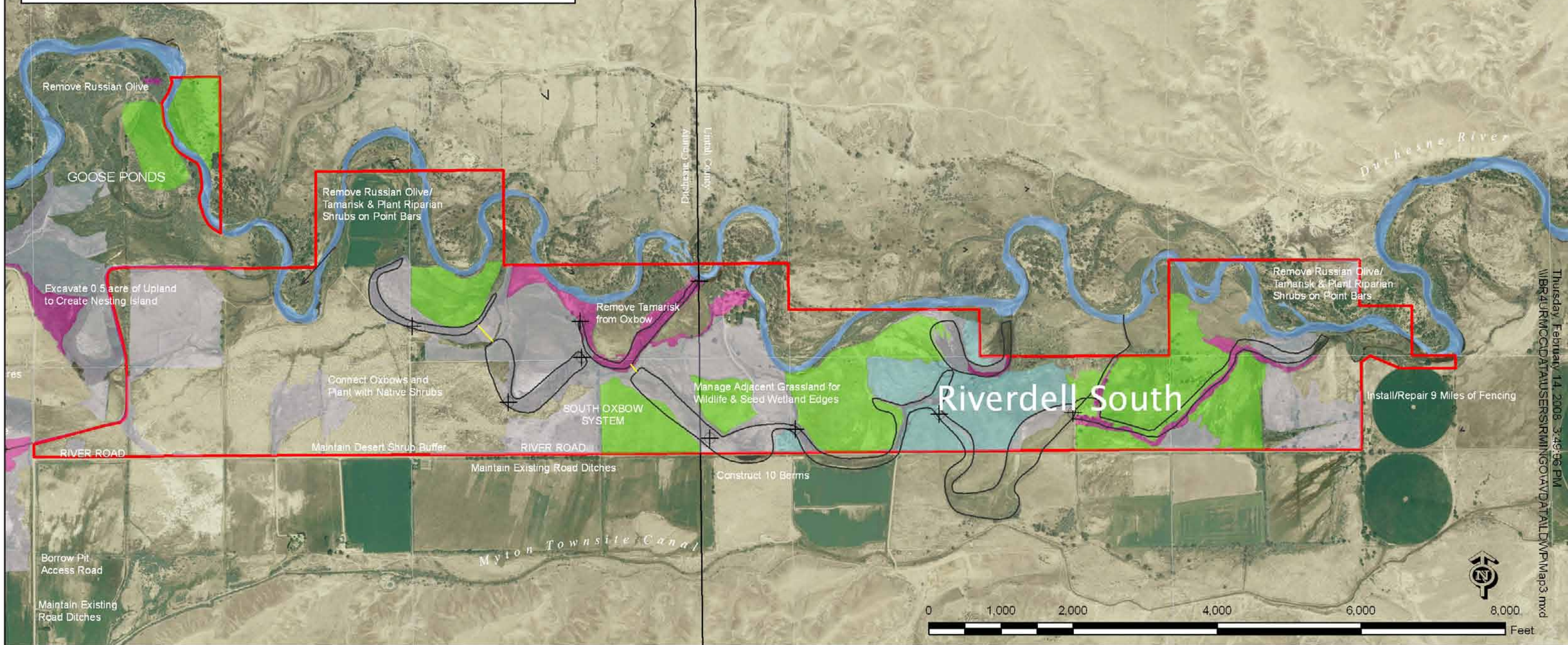
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Map 3. Proposed Construction Features on the Riverdell South Site Under the Proposed Action

-  Berm Location
-  Oxbow
-  Oxbow Connection
- Wetlands Under Baseline Conditions**
- 
- New Wetland Areas Under Proposed Action**
-  EMERGENT MARSH
-  GRASSLAND
-  WET MEADOW
-  Proposed Action and Phase Alternatives
-  Public Land Survey Section Lines

Riverdell South Management Prescriptions

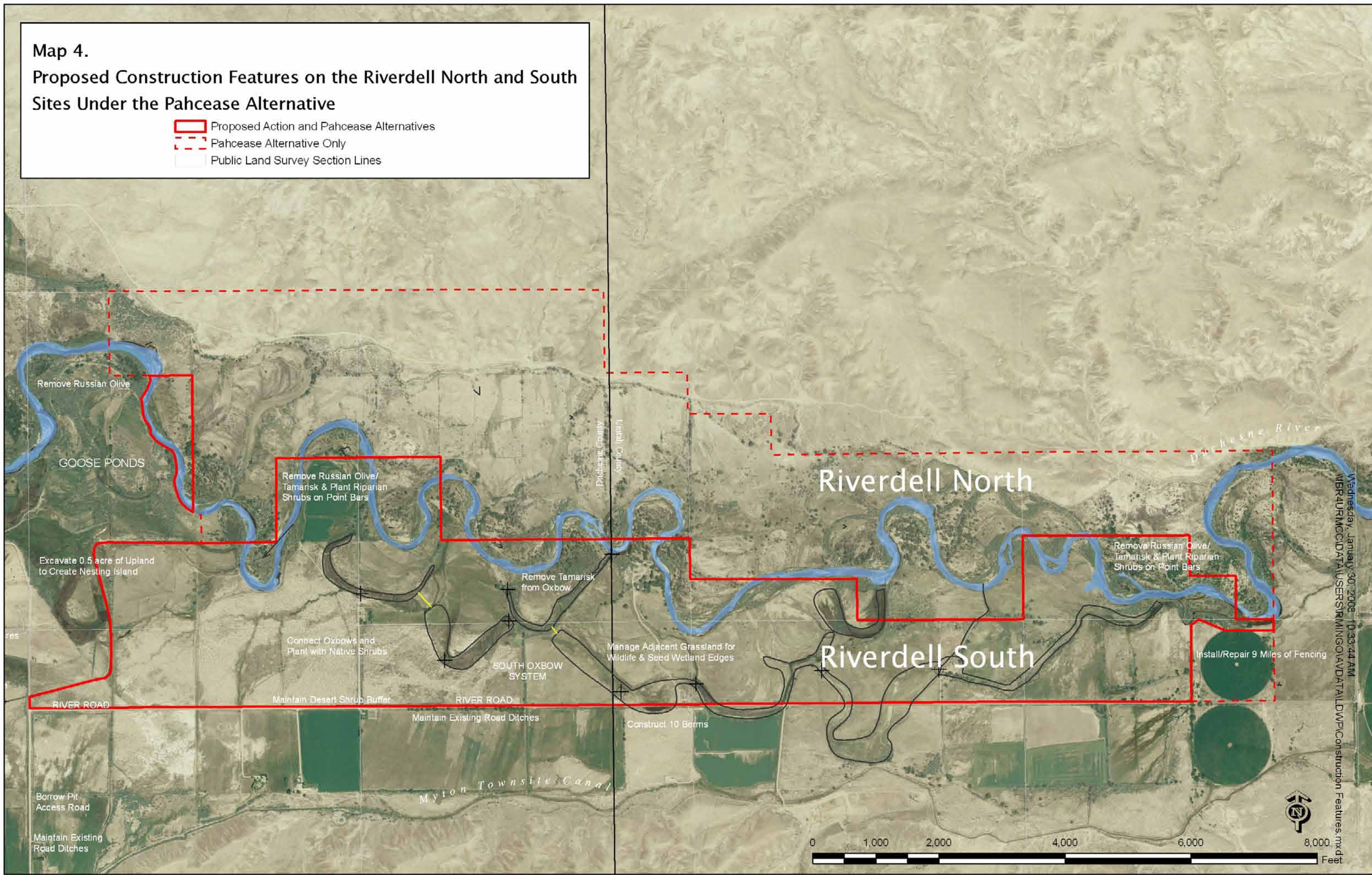
- Replant 163 acres of degraded or cleared cottonwood forest and riparian shrub.
- Seed 227 acres of wetland edges.
- Remove Russian olive and tamarisk from 87 acres.
- Maintain 240 acres of desert shrub as a buffer from River Road.
- Construct 10 berms along the South Oxbow. Berms to average 225 feet long, 4 feet high with 3:1 slopes. Install water control structures in each berm.
- Excavate channels between 4 oxbows to restore a contiguous 7 oxbow system.
- Construct approximately 1 acre of temporary access roads to the berms.
- Install 9 miles of new fencing to exclude livestock. Riverdell North is not included in the Proposed Action.
- Continue to irrigate 223 acres of grassland or fallow grass fields but eliminate grazing and manage for wildlife nesting and cover.



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Map 4.
Proposed Construction Features on the Riverdell North and South Sites Under the Pahcease Alternative

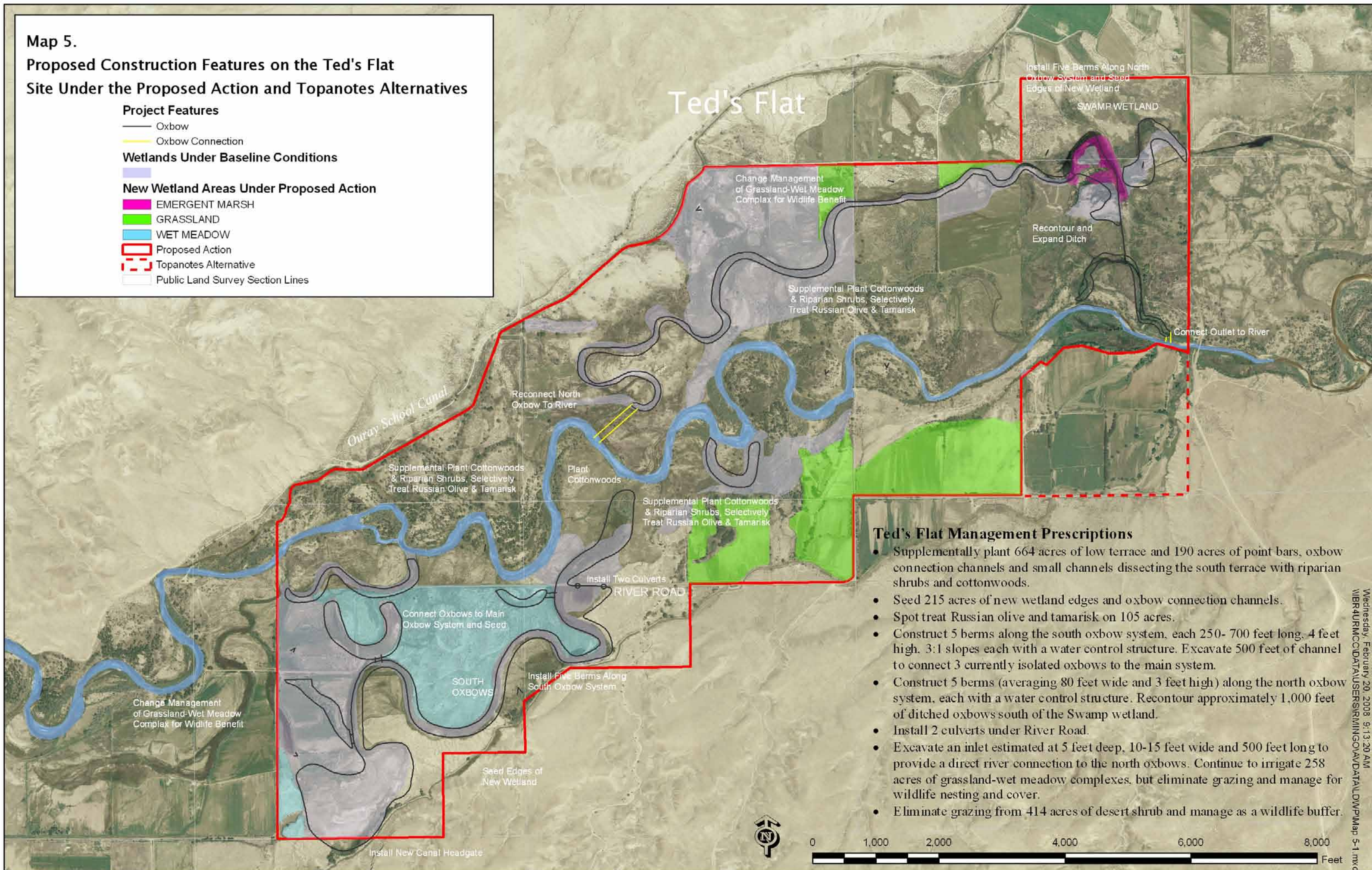
- Proposed Action and Pahcease Alternatives
- Pahcease Alternative Only
- Public Land Survey Section Lines



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Map 5.
Proposed Construction Features on the Ted's Flat
Site Under the Proposed Action and Topanotes Alternatives

- Project Features**
- Oxbow
 - Oxbow Connection
- Wetlands Under Baseline Conditions**
- SWAMP WETLAND
- New Wetland Areas Under Proposed Action**
- EMERGENT MARSH
 - GRASSLAND
 - WET MEADOW
- Proposed Action** (Red solid line)
- Topanotes Alternative** (Red dashed line)
- Public Land Survey Section Lines

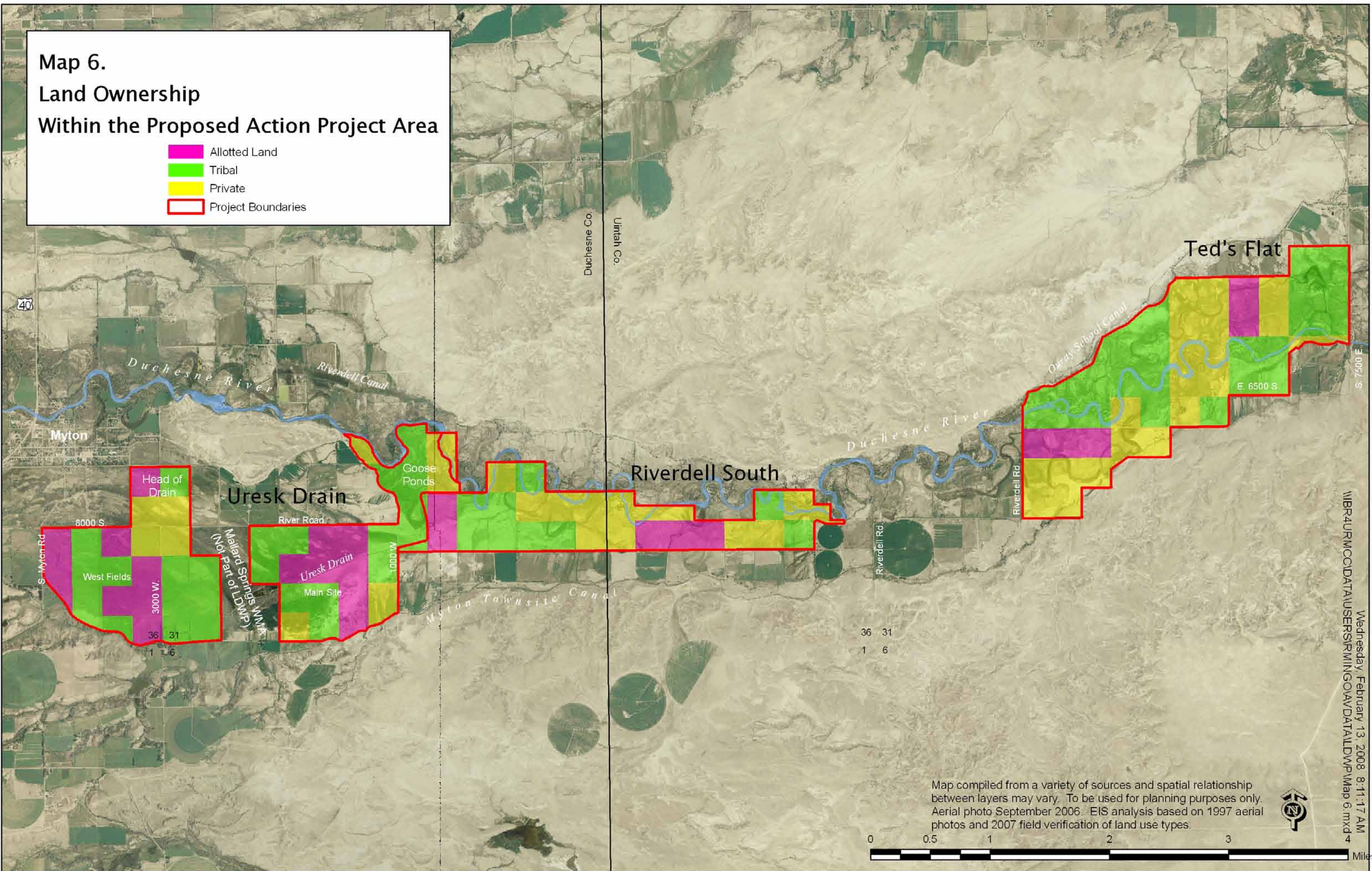


Ted's Flat Management Prescriptions

- Supplementally plant 664 acres of low terrace and 190 acres of point bars, oxbow connection channels and small channels dissecting the south terrace with riparian shrubs and cottonwoods.
- Seed 215 acres of new wetland edges and oxbow connection channels.
- Spot treat Russian olive and tamarisk on 105 acres.
- Construct 5 berms along the south oxbow system, each 250- 700 feet long, 4 feet high, 3:1 slopes each with a water control structure. Excavate 500 feet of channel to connect 3 currently isolated oxbows to the main system.
- Construct 5 berms (averaging 80 feet wide and 3 feet high) along the north oxbow system, each with a water control structure. Recontour approximately 1,000 feet of ditched oxbows south of the Swamp wetland.
- Install 2 culverts under River Road.
- Excavate an inlet estimated at 5 feet deep, 10-15 feet wide and 500 feet long to provide a direct river connection to the north oxbows. Continue to irrigate 258 acres of grassland-wet meadow complexes, but eliminate grazing and manage for wildlife nesting and cover.
- Eliminate grazing from 414 acres of desert shrub and manage as a wildlife buffer.

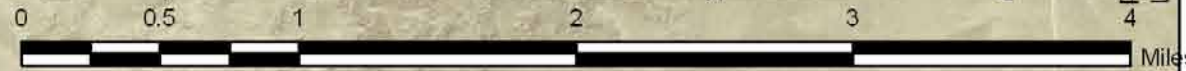
**Map 6.
Land Ownership
Within the Proposed Action Project Area**

- Allotted Land
- Tribal
- Private
- Project Boundaries



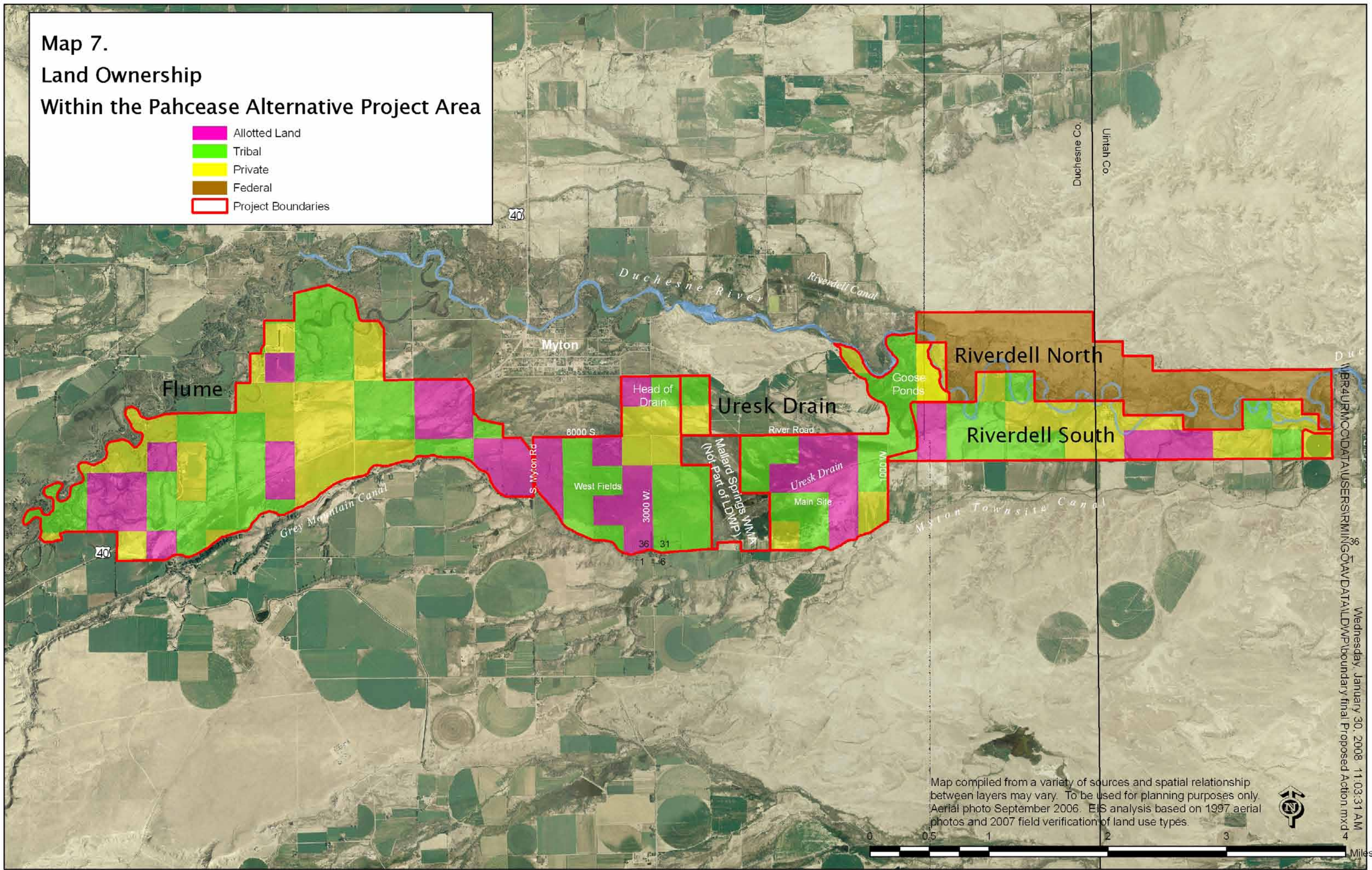
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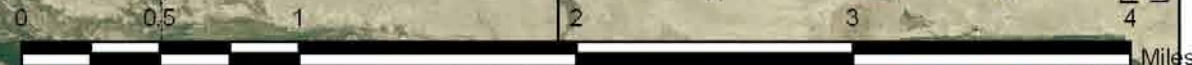


**Map 7.
Land Ownership
Within the Pahcease Alternative Project Area**

- Allotted Land
- Tribal
- Private
- Federal
- Project Boundaries



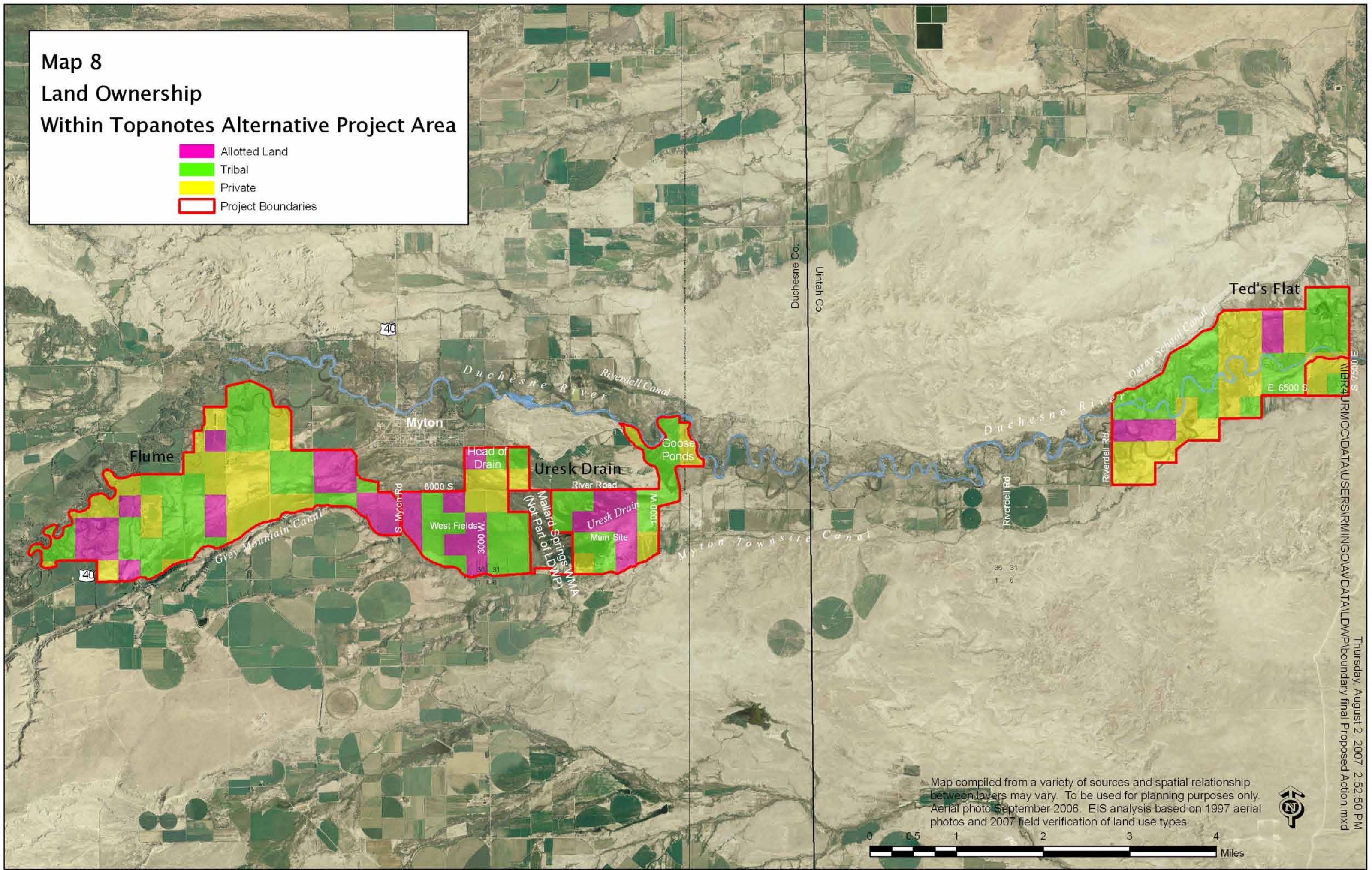
Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2006. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.



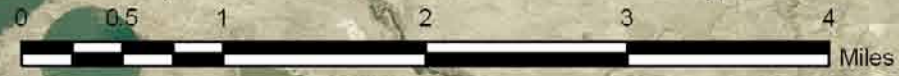
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Map 8 Land Ownership Within Topanotes Alternative Project Area

- Allotted Land
- Tribal
- Private
- Project Boundaries



Map compiled from a variety of sources and spatial relationship between layers may vary. To be used for planning purposes only. Aerial photo September 2006. EIS analysis based on 1997 aerial photos and 2007 field verification of land use types.



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**Lower Duchesne River
Wetlands Mitigation Project**

Final Environmental Impact Statement

CHAPTER 3

**COMPARATIVE ANALYSIS OF THE PROPOSED
ACTION AND ALTERNATIVES**

CHAPTER 3: COMPARATIVE ANALYSIS OF THE PROPOSED ACTION AND ALTERNATIVES

3.1 INTRODUCTION

This chapter presents a summary of the impacts of the Proposed Action, the Pahcease, Topanotes and No Action Alternatives. Detailed impact analysis is located in Chapter 4. Impacts depicted in this chapter are those that would occur relative to baseline conditions. Information on baseline conditions is presented in each resource section of Chapter 4.

3.2 THE NO ACTION ALTERNATIVE

The No Action Alternative would result in a continuation of baseline conditions. The No Action Alternative would result in the following impacts.

- These two project needs would not be met: (1) acquire, develop and manage wildlife areas incorporating sufficient quality and quantity of wetlands within the Duchesne River corridor to compensate for Tribal wetland-wildlife losses resulting from construction and operation of SACS, and (2) provide additional wetland-wildlife benefits to the Tribe within the Duchesne River corridor as initially committed by the 1965 Deferral Agreement.
- Required environmental improvements, which are for partial mitigation of SACS would still have to be implemented by the Mitigation Commission.

- The beneficial and adverse impacts summarized in section 3.3 would not occur.

3.3 COMPARISON OF IMPACTS

Table 3-1 documents the impacts of the Proposed Action and each alternative (with the exception of the No Action Alternative). Impacts are listed in relation to the significance criteria described in chapter 4. Sections 3.3.1 through 3.3.14 discuss the impacts in Table 3-1.

Table 3-1. Summary of Impacts of the Proposed Action, Pahcease Alternative and Topanotes Alternative. Impacts in this table are defined by comparing each alternative to baseline conditions. Increases (+) and decreases (-) represent the change from baseline conditions.

| Resource Topics | Proposed Action | Pahcease Alternative | Topanotes Alternative |
|---|---|---|---|
| <i>Wetland and Riparian Habitats</i> | | | |
| • Total wetland/riparian acres | 1,548 wetlands 1,133 riparian Total 2,681 wetland/riparian | 1,923 wetlands 1,132 riparian Total 3,055 wetland/riparian | 1,938 wetlands 1,237 riparian Total 3,175 wetland/riparian |
| • Direct Construction Impacts | -7.3 permanent impacts -18.5 temporary impacts | -8.4 permanent impacts -16.8 temporary impacts | -8.5 permanent impacts -20.7 temporary impacts |
| • Net change by habitat type (acres) (after accounting for construction and habitat conversion impacts) | +570 herbaceous wetlands +140 mesic shrub +279 riparian -339 noxious weeds | +960 herbaceous wetlands +146 mesic shrub +947 riparian -801 noxious weeds | +912 herbaceous wetlands +110 mesic shrub +350 riparian -578 noxious weeds |
| • Net change by treatment type (acres) (accounting for construction and habitat conversion impacts) | +1,025 created/restored +1,656 enhanced | +2,125 created/restored + 930 enhanced | +1,461 created/restored +1,714 enhanced |
| • Change in wetland functions | Increase in all functions | Same as the Proposed Action | Same as the Proposed Action |
| <i>Wildlife Resources</i> | | | |
| • General | Habitat improvement for all nine major wildlife species groups evaluated. | Same as the Proposed Action | Same as the Proposed Action |

| Resource Topics | Proposed Action | Pahcease Alternative | Topanotes Alternative |
|--|--|--|--|
| <ul style="list-style-type: none"> Upland wildlife | <p>Temporary impacts to upland songbirds and upland-associated raptors through conversion of 73 acres of grassland, 158 acres of desert shrub and 300 acres of annual weed/fallow habitat to wetland/riparian habitat. The temporary loss would be offset by the enhancement of the remaining upland habitat for nesting and feeding.</p> <p>58 acres cropland managed specifically for wildlife, no cropland managed under conservation easements</p> | <p>Same as Proposed Action with the exception that 111 acres of grassland, 288 acres of desert shrub habitat, and 500 acres of annual weed/ fallow habitat would be converted to wetland/riparian habitat.</p> <p>290 acres cropland managed specifically for wildlife, 225 acres cropland managed under conservation easements.</p> | <p>Same as Proposed Action with the exception that 136 acres of grassland, 14 acres of cropland, 347 acres of desert shrub habitat and 196 acres of annual weed/ fallow habitat would be converted to wetlands.</p> <p>No cropland managed specifically for wildlife, 342 acres cropland managed under conservation easements.</p> |
| <ul style="list-style-type: none"> Effects on important habitats | <p>Increase in value of migratory waterfowl habitat, migratory songbird habitat, deer winter range and fawning habitat.</p> | <p>Same as the Proposed Action</p> | <p>Same as the Proposed Action</p> |
| <i>Threatened and Endangered Species</i> | | | |
| <ul style="list-style-type: none"> Summary | <p>No permanent adverse impacts to threatened, endangered or candidate species; potential temporary displacement of 1 year for bald eagle</p> | <p>Same as the Proposed Action</p> | <p>Same as the Proposed Action</p> |
| <i>Water Resources</i> | | | |
| <ul style="list-style-type: none"> Water requirements (acre-feet) | <p>Total water budget of 8,452 - 10,118</p> | <p>Total water budget of 13,176 - 14,420</p> | <p>Total water budget of 11,286 - 13,328</p> |
| <ul style="list-style-type: none"> Water availability | <p>Water rights available with land.</p> | <p>Same as the Proposed Action</p> | <p>Same as the Proposed Action</p> |
| <ul style="list-style-type: none"> Change in Duchesne River flows | <p>Slight local increase in runoff among sites, but no measurable change in Duchesne River flows at Randlett</p> | <p>Same as the Proposed Action</p> | <p>Same as the Proposed Action</p> |

| Resource Topics | Proposed Action | Pahcease Alternative | Topanotes Alternative |
|--|---|---|--|
| <ul style="list-style-type: none"> Reduction in junior water rights availability in low flow years (acre-feet) | <p>Low flow: 127-162 Very low flow: 718-908</p> | <p>Low flow: 190-256 Very low flow: 1,070-1,439</p> | <p>Low flow: 174-232 Very low flow: 950-1,306</p> |
| <ul style="list-style-type: none"> Groundwater increase outside project area | <p>No increase outside of the Uresk Drain and Ted's Flat site boundaries. Water table increase in 2 oxbow traces south of River Road adjacent to Riverdell South.</p> | <p>Increased water table to the east of the Uresk Drain "Head of Drain" subarea, but no increase to the north. Water table increase in 2 oxbow traces south of River Road adjacent to Riverdell South. Increased water table in 9 acres cropland adjacent to the Flume.</p> | <p>Increased water table to the east of the Uresk Drain "Head of Drain" subarea, but no increase to the north. Increased water table in 9 acres cropland adjacent to the Flume. No increase outside of Ted's Flat boundaries</p> |
| <i>Water Quality</i> | | | |
| <ul style="list-style-type: none"> Exceedance of wildlife guidelines or federal water quality standards in LDWP wetlands | <p>Operation as flow-through system will reduce boron and TDS concentrations and increase dissolved oxygen</p> | <p>Same as the Proposed Action</p> | <p>Same as the Proposed Action</p> |
| <ul style="list-style-type: none"> Change in annual Duchesne River and Colorado River salt loads (tons) | <p>+ 115 to 829 in Duchesne River through seepage No measurable change at Imperial Dam</p> | <p>+579 to 1,275 in Duchesne River through seepage No measurable change at Imperial Dam</p> | <p>+ 429 to 1,125 in Duchesne River through seepage No measurable change at Imperial Dam</p> |
| <ul style="list-style-type: none"> Exceedance of wildlife guidelines or federal water quality standards in Duchesne River | <p>Increased flow through the project area will reduce concentrations of boron and TDS entering the Duchesne River through surface water by 9 percent.</p> | <p>Same as the Proposed Action</p> | <p>Same as the Proposed Action with TDS concentration reduced by 7 percent.</p> |
| <ul style="list-style-type: none"> Net change of both ground and surface water on salts | <p>+161 tons of salt +0.68 ppm TDS near Myton No measurable change at Randlett</p> | <p>+633 tons of salt +2.6 ppm TDS near Myton No measurable change at Randlett</p> | <p>+731 tons of salt +3.0 ppm TDS near Myton +1.7 ppm at Randlett</p> |

| Resource Topics | Proposed Action | Pahcease Alternative | Topanotes Alternative |
|---|---|--|---|
| <i>Soil Resources</i> | | | |
| • Soil erosion and stability | No measurable change | Same as the Proposed Action | Same as the Proposed Action |
| • Soil productivity | Potential loss of productivity for crops on 10 acres Ravola silt loam | Potential loss of productivity for crops on 10 acres Ravola silt loam and 23 acres well drained Green River soils | Potential loss of productivity for crops on 10 acres Ravola silt loam and 23 acres well drained Green River soils |
| <i>Agriculture and Land Use Patterns</i> | | | |
| • Annual production change | | | |
| ◦ Potential AUM | -4,760 | -8,796 | -8,991 |
| ◦ Marketable crop yield (tons) | -232 | -191 | -285 |
| • Changes in agricultural practices | | | |
| ◦ Grazing | Grazing eliminated in project area. | Same as the Proposed Action | Same as the Proposed Action |
| ◦ Conservation easement/Ground water effects on marketable crop | No cropland under a conservation easement. No ground water effects on marketable crops in project area or on cropland outside project boundaries. | 239 acres of cropland under a conservation easement (225 net acres after accounting for 14 acres groundwater impacts). Potential loss of production on 9 acres cropland adjacent to project area. | 356 acres of cropland under a conservation easement (342 net acres after accounting for 14 acres groundwater impacts) Potential loss of production on 9 acres cropland adjacent to project area. |
| • Agricultural practices | No change in agricultural practices outside of project area | Same as the Proposed Action | Same as the Proposed Action |

| Resource Topics | Proposed Action | Pahcease Alternative | Topanotes Alternative |
|---|--|--|---|
| <ul style="list-style-type: none"> Changes in land ownership | 1,592 acres of fee land converted to Tribal fee land; 3,215 acres of Tribal Trust land placed under negotiated easements | 1,787 acres of fee land converted to federal government or Tribal Trust ownership; 3,891 acres of Tribal Trust land placed under negotiated easements | 2,171 acres of fee land converted to federal government or Tribal Trust ownership; 4,477 acres of Tribal Trust land placed under negotiated easements |
| <ul style="list-style-type: none"> Consistency with land use plans and policies | <p>Consistent with Duchesne and Uintah counties “no net loss” of private land policies to the extent lands are acquired on a willing seller basis. Consistent with the counties, policies on rural character, open space and wetland/riparian restoration and enhancement focus. Inconsistent with some private property policies if eminent domain is used.</p> <p>Consistent with federal mitigation mandates.</p> | <p>Inconsistent with Duchesne and Uintah counties “no net loss” of private land policies, but consistent with county policies on rural character, open space and wetland/riparian restoration and enhancement focus. Inconsistent with some private property policies if eminent domain is used.</p> <p>Consistent with federal mitigation mandates.</p> | Same as the Pahcease Alternative. |
| <ul style="list-style-type: none"> Partial landholding acquisition (# parcels affected) | 14 parcels, of which 1 parcel containing cropland would be split | 13 parcels, of which 4 parcels containing cropland would be split | 21 parcels, of which 3 parcels containing cropland would be split |
| <i>Socioeconomics</i> | | | |
| <ul style="list-style-type: none"> Change in maximum potential gross agricultural revenue | | | |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> Grazing | -\$ 71,420 | -\$133,118 | -\$135,945 |
| <ul style="list-style-type: none"> <ul style="list-style-type: none"> Crops | - \$24,360 | - \$20,076 | - \$29,904 |
| <ul style="list-style-type: none"> Change in Uinta Basin economy during construction | | | |

| Resource Topics | Proposed Action | Pahcease Alternative | Topanotes Alternative |
|--|--------------------------|-----------------------------|------------------------------|
| ○ Peak annual output | + \$1,259,642 (+0.1%) | + \$924,729 (+0.1%) | + \$981,945 (+0.1%) |
| ○ Peak annual personal earnings | + \$375,305 (+0.1%) | + \$375,229 (+0.1%) | + \$316,387 (+0.1%) |
| ○ Number of jobs | + 15.1 (+0.1%) | Same as the Proposed Action | + 13.1 (+0.1%) |
| • Change in Uinta Basin economy after construction | | | |
| ○ Peak annual output | + \$335,810 (<0.1%) | Same as the Proposed Action | + \$197,331 (<0.1%) |
| ○ Peak annual personal earnings | + \$159,181 (<0.1%) | Same as the Proposed Action | + \$141,063 (<0.1%) |
| ○ Number of jobs | + 3.2 (<0.1%) | Same as the Proposed Action | + 1.8 (<0.1%) |
| • Change in Tribal employment | | | |
| ○ Number of construction jobs | up to 30 temporary jobs | Same as the Proposed Action | Same as the Proposed Action |
| ○ Number of O&M jobs | +3 | Same as the Proposed Action | Same as the Proposed Action |
| • Change in infrastructure | No change | No change | No change |

| Resource Topics | Proposed Action | Pahcease Alternative | Topanotes Alternative |
|--|---|--|--|
| <ul style="list-style-type: none"> Change in annual county tax revenue through (1) change in land ownership and (2) conversion of some residential parcels to greenbelt | <p>No change associated with fee land status</p> <p>Up to -\$1,632 associated with conversion to greenbelt</p> <p>Total county tax impacts of 0 to -\$1,632</p> | <p>-\$3,808 associated with fee land status change</p> <p>Up to -\$4,110 associated with conversion to greenbelt</p> <p>Total county tax impacts of -\$3,808 to -\$7,918</p> | <p>-\$3,364 associated with fee land status change</p> <p>Up to -\$3,679 associated with conversion to greenbelt</p> <p>Total county tax impacts of -\$3,364 to -\$7,043</p> |
| Public Health and Safety | | | |
| Mosquito habitat | All potential breeding habitats within the project boundaries would be treated in accordance with a Mosquito Control Plan (refer to Appendix G of the FEIS). Under baseline conditions 66 percent of the project area (3,215 acres) is either untreated or only sporadically treated for mosquitoes. Therefore, there are significantly more acres of untreated mosquito habitat under baseline conditions compared to the Proposed Action Alternative. | Similar to the Proposed Action, except there would be a twelve percent increase in potential mosquito-breeding habitat. | Similar to the Proposed Action, except there would be a thirteen percent increase in potential mosquito breeding habitat |
| <ul style="list-style-type: none"> Net change in potential mosquito-producing habitats (acres) | + 497 (271 SP, 226 FW) | + 849 (441 SP, 408 FW) | +776 (442 SP, 334 FW) |
| <ul style="list-style-type: none"> Net change in potential mosquito-producing habitats in Myton vicinity (acres) | + 124 (68 SP, 56 FW) | +688 (330 SP, 358 FW) | Same as Pahcease Alternative |
| <ul style="list-style-type: none"> Percent change potential mosquito habitats within project area | Increase from 42 to 53% (+11%) | Increase from 36 to 49% (+13%) | Increase from 39 to 51% (+12%) |
| <ul style="list-style-type: none"> Percent change potential mosquito habitats in Uinta Basin | 0.4% | 1.0% | 1.0% |

| Resource Topics | Proposed Action | Pahcease Alternative | Topanotes Alternative |
|--|--|---|--|
| <ul style="list-style-type: none"> Change in mosquito control practices | <p>All mosquito-breeding habitat would be treated according to similar protocols used by local MADS, a significant increase over baseline conditions.</p> <p>The Ute Tribe would implement the program, using federal funds, during project construction and continuing through project operation.</p> | Same as the Proposed Action | Same as the Proposed Action |
| Recreation | | | |
| <ul style="list-style-type: none"> Access | Requires Tribal hunting/fishing license, non-consumptive recreation requires Tribal permission. | Requires mix of Tribal and State hunting/fishing licenses, non-consumptive recreation requires Tribal permission, except on the Riverdell North property. | Requires mix of Tribal and State hunting/fishing licenses, non-consumptive recreation requires Tribal permission |
| <ul style="list-style-type: none"> Recreation use | Small increase in wildlife-related recreational use of the area. | Same as the Proposed Action | Same as the Proposed Action |
| Transportation | | | |
| <ul style="list-style-type: none"> Peak increase in traffic during construction (daily vehicle trips) | +50 | Same as the Proposed Action | Same as the Proposed Action |
| <ul style="list-style-type: none"> Change in road levels of service (LOS) | No change | Same as the Proposed Action | Same as the Proposed Action |
| <ul style="list-style-type: none"> Physical damage to paved roads | None | None | None |
| Air Quality | | | |
| <ul style="list-style-type: none"> Maximum vehicle emissions during any 12-month construction period (tons) | | | |
| <ul style="list-style-type: none"> Nitrogen oxides Sulfur oxides Particulates | +23 total | Same as the Proposed Action | Same as the Proposed Action |

| Resource Topics | Proposed Action | Pahcease Alternative | Topanotes Alternative |
|--|--|-----------------------------|------------------------------|
| <ul style="list-style-type: none"> Exceedance of air quality standards | None | None | None |
| <i>Noise</i> | | | |
| <ul style="list-style-type: none"> Exceedance of “clearly unacceptable” noise levels (>88 decibels) near sensitive receptors | None, noise at potentially annoying levels during 2 months of Russian olive removal near residences along River Road | Same as the Proposed Action | Same as the Proposed Action |
| <i>Cultural Resources</i> | | | |
| <ul style="list-style-type: none"> General | No known cultural resources present in project area that are eligible for the National Register of Historic Places would be impacted. No known sites of cultural or religious significance to the Ute Tribe in project area. | Same as the Proposed Action | Same as the Proposed Action |

3.3.1 Wetland and Riparian Habitats

The Proposed Action would temporarily, adversely impact 18.5 acres of wetland and riparian habitat (including 2.5 acres of native wetlands, 2.6 acres of riparian habitat, and 3.4 acres of wetland/riparian weeds) and permanently, adversely impact 7.3 acres of wetlands through construction of project features. There would be some conversion of existing wet meadow and emergent marsh habitats to other habitat types, but these losses would be compensated by lateral expansion of wetlands and development of the same habitats elsewhere on individual sites. There would be 2.6 acres of temporary adverse impacts to the cottonwood forest, but there would be no permanent adverse impacts to this habitat type. The Proposed Action would restore or create a net of 1,025 acres and enhance the value of a net of 1,656 acres of wetland and riparian habitats. Overall there would be a net total of 1,548 acres of wetlands and a net of 1,133 acres of riparian habitat. Wetland and riparian weeds would be removed on 339 acres.

The Pahcease Alternative would temporarily, adversely impact 16.8 acres of wetland and riparian habitat (including 13.4 acres of native wetlands and 3.4 acres of wetland/riparian weeds) and permanently, adversely impact 8.4 acres of wetland through construction of project features. Impacts would be similar to those described for the Proposed Action except no changes would be made in the Ted's Flat site and there would be no adverse riparian impacts. The Pahcease Alternative would restore or create a net of 2,125 acres and enhance the value of a net of 930 acres of wetland and riparian habitats. Overall there would be a net total of 1,923 acres of wetlands and a net total of 1,132 acres of riparian

habitat. Wetland and riparian weeds would be removed on 801 acres.

The Topanotes Alternative would temporarily, adversely impact 20.7 acres of wetland and riparian habitat (including 16.2 acres of native wetlands, 2.6 acres of riparian habitat, and 1.9 acres of wetland/riparian weeds) and permanently, adversely impact 8.2 acres of wetlands through construction of project features. There would be 2.6 acres of temporary adverse impacts to cottonwood forest but there would be no permanent adverse impacts to this habitat type. The Topanotes Alternative would restore or create 1,461 net acres and enhance the value of 1,714 net acres of wetland and riparian habitats. Overall there would be a net total of 1,938 acres of wetlands and a net total of 1,237 acres of riparian habitat. Wetland and riparian weeds would be removed on 578 acres.

Under all alternatives there would be a net increase in wetland functions, particularly hydrologic support, water quality maintenance, sediment stabilization, ground water recharge, wildlife habitat and uniqueness/heritage value.

3.3.2 Wildlife Resources

The Proposed Action would improve habitat for all nine major wildlife species groups evaluated, with the amount of wetland and riparian habitat gained described above in section 3.3.1. There would be some loss of upland habitat (73 acres of grassland, 158 acres of desert shrub and 300 acres of annual weed/fallow habitat), which would represent a temporary impact to some upland songbirds and upland-associated raptors. This temporary loss would be offset by the enhancement of the remaining upland habitat

for nesting and feeding. The temporary loss would be experienced for approximately three to five years as the upland habitat is restored.

The Pahcease Alternative would also improve habitat for all nine major wildlife species groups evaluated, with the amount of wetland and riparian habitat gained described above in section 3.3.1. Uplands lost through conversion to wetland or riparian habitat would include 111 acres of grassland, 288 acres of desert shrub habitat and 500 acres of annual weed/fallow habitat, which would represent a temporary impact to some upland songbirds and upland-associated raptors as described for the Proposed Action.

The Topanotes Alternative would also improve habitat for all nine major wildlife species groups evaluated, with the amount of wetland and riparian habitat gained described above in section 3.3.1. Upland habitat lost through conversion to wetlands would include 136 acres of grassland, 347 acres of desert shrub habitat and 196 acres of annual weed/fallow habitat, which would represent a temporary impact to some upland songbirds and upland-associated raptors as described for the Proposed Action.

The amount of cropland to be managed for wildlife differs among alternatives. Under the Proposed Action, 58 acres of cropland would be managed specifically for wildlife, but there would be no land placed under conservation easements. Wildlife conservation easements would be used in the Pahcease and Topanotes Alternatives. Under the Pahcease Alternative, there would be 290 acres of new cropland established and managed specifically for wildlife, with 225 acres of cropland managed under conservation easements. Under the Topanotes Alternatives, there would be no cropland managed specifically for wildlife

and 342 acres of cropland managed under conservation easements.

All alternatives would improve the value of the following important habitats, both in terms of size and habitat quality: migratory waterfowl habitat, migratory songbird habitat, deer winter range and fawning habitat.

3.3.3 Threatened, Endangered and Candidate Species

Of the sixteen listed species potentially occurring within the LDWP project vicinity, only seven are known to occur or have potential habitat within the project area of influence. These species include two plants (Uinta Basin hookless cactus and Ute ladies'-tresses), two fish (Colorado pikeminnow and razorback sucker) and three wildlife species (bald eagle, mountain plover and western yellow-billed cuckoo). Impacts to these species are similar for all alternatives. The Ute ladies'-tresses would benefit through noxious weed removal on potential habitat, bald eagle through increases in winter roosting and feeding habitat and western yellow-billed cuckoo through increases in riparian habitats. In addition, the Uinta Basin hookless cactus would benefit from restrictions on vehicle use and grazing in occupied habitat under the Pahcease Alternative. There would be neither adverse nor beneficial impacts to the remainder of the species. There is the potential for temporary impacts to the bald eagle during construction but effects would be limited to a one-year period.

3.3.4 Water Resources

The estimated total annual water requirement for the Proposed Action is 8,452 to 10,118 acre-feet, which includes hydrological support of created and restored wetlands, maintenance of hydrologic support for existing irrigation-induced wetlands, maintenance of irrigated grasslands, supplemental water for water quality control and temporary irrigation of planted cottonwoods. The estimated total annual water requirement for the Pahcease Alternative is 13,176 to 14,420 acre-feet. The estimated total annual water requirement for the Topanotes Alternative is 11,286 to 13,328 acre-feet. For all alternatives, there is sufficient water associated with land in the project area to supply project water requirements.

Under all alternatives there may be less natural flow water available to junior water rights holders in the Duchesne River system in below average flow years than there is under baseline conditions. In low flow years, there could be a slight reduction in water available for junior water right holders (127 to 162 acre-feet throughout the entire Duchesne River system). In very low flow years, or years in which the flow at Myton is less than 37,000 acre-feet, there would be a reduction of 718 to 908 acre-feet of natural flow water available for junior water right holders.

Reductions in junior water rights availability under the Pahcease and Topanotes Alternatives in low flow years would be similar, ranging from 174 to 256 acre-feet. In very low flow years, there would be a reduction in junior water right availability between 1,070 to 1,439 acre feet for the Pahcease Alternative and between 950 to 1,306 acre feet for the Topanotes Alternative.

All alternatives would result in a slight local increase in return flows among the sites, but no measurable change in the Duchesne River flow at Randlett.

Under the Proposed Action, there would be no increase in the ground water table outside of the Uresk Drain and Ted's Flat sites. There would be an increase in two oxbows traces south of River Road adjacent to the Riverdell South site. There would be an increased water table to the east of the Uresk Drain, adjacent to the Flume and south of River Road under the Pahcease Alternative. Increased water tables would occur to the east of the Uresk Drain and adjacent to the Flume under the Topanotes Alternative.

3.3.5 Water Quality

The Proposed Action, Pahcease Alternative and Topanotes Alternative would be operated as flow-through systems with a water quality control factor added to each site's wetland water budget to reduce existing concentrations of salts. Under all alternatives, concentrations of boron (an environmental contaminant) and TDS would be reduced, and dissolved oxygen concentrations increased. By increasing the flow through the project area, concentrations of boron and TDS in surface water return flows entering the Duchesne River would be reduced under all alternatives by seven to nine percent.

All alternatives would increase salt loading through groundwater seepage, but the amount of salts entering the Duchesne River through groundwater would not be measurable in the Colorado River at Imperial Dam.

Under the Proposed Action, the net change of both the decreased TDS concentration of surface water runoff and the increased TDS

concentration of ground water seepage would result in an increase of 0.68 ppm in the Duchesne River downstream of Myton, with no measurable change in the TDS concentrations at Randlett. The net increase in the Duchesne River TDS concentrations for the Pahcease and Topanotes Alternatives would be between 2.6 and 3.0 ppm downstream of Myton and up to 1.7 ppm at Randlett.

3.3.6 Soil Resources

Construction activities may cause a slight temporary increase in soil erosion during and immediately after construction, but all alternatives would result in a long-term reduction in soil erosion. Soils would generally retain the same productivity. However, there is some potential for loss of crop productivity on 10 acres of Ravola silt loam in the Uresk Drain. This would occur under all alternatives. In addition, 23 acres of well drained Green River loam in the Flume could be adversely affected under the Pahcease and Topanotes Alternatives.

3.3.7 Agriculture and Land Use

Under the Proposed Action, grazing would be eliminated on 4,807 acres currently grazed or open for grazing, with a potential maximum yield of 4,760 AUMs per year. Fifty-eight acres of cropland would be acquired in fee title and managed for wildlife. These reductions will result in only a slight change in total county-wide production. There would be no effect on agricultural practices or production outside of the project boundaries.

Under the Pahcease and Topanotes Alternatives, grazing would be eliminated on 6,648 to 6,765 acres which are currently being grazed or open for grazing, with a potential

maximum yield of 8,796 to 8,999 AUMs per year. No cropland would be acquired in fee title under these alternatives, but from 239 to 356 acres of cropland would be placed under conservation easements in which the landowner would be paid to retain 20 percent of their crop for wildlife. Portions of these croplands (approximately 14 acres in the Flume site, and potentially up to 10 acres on the Uresk Drain) would be subject to an increased water table which could affect crop production. These areas would be included in the 20 percent conservation easement and therefore would not result in an additional loss of marketable crop production. The reductions in both marketable crop production and AUMs would result in only a slight change in total county wide production. There would be no effect on agricultural practices outside of the project boundaries, but production on 9 acres of cropland adjacent to the Flume site could be affected by an increase in the local groundwater table.

Under all alternatives, from 1,592 to 2,171 acres of fee land would be acquired by the federal government, and from 3,215 to 4,477 acres of Tribal Trust land placed under a negotiated easement. Acquired fee land would be transferred to the Tribe as fee lands under the Proposed Action, but maintained by the federal government under the Pahcease and Topanotes Alternatives. The Proposed Action would be consistent with Duchesne and Uintah Counties' "no net loss" of fee land policies, but the Pahcease and Topanotes Alternatives would not.

There would be the potential for partial landholding acquisitions (acquisitions in which portions of the land holdings fall inside the LDWP boundary and portions fall outside of the boundary) under all alternatives. There would be approximately one instance under

the Proposed Action in which an acquired property would be split, leaving the property owner with a remainder, and three to four such instances under the other alternatives. Under all alternatives, the appraisals and acquisition prices would ensure payment is made for all of what a private landowner may sell to the United States; not only the market value of the interest in the land the United States actually acquires, but also any difference in the before and after market value of the remaining parcel retained by the private landowner.

3.3.8 Socioeconomics

Construction of the Proposed Action, Pahcease Alternative and Topanotes Alternative would increase the net economic output (\$924,729 to \$1,259,642), personal earnings (\$316,387 to \$375,305), and employment (13.1 to 15.1 jobs) in the local economy during construction. The net increase in revenue considers both the actual decrease in agricultural revenue and the multiplier effect of this decrease. Even with the multiplier effect, the net economic output would be considerably larger than the decrease in agricultural revenue during construction, for all alternatives. Project operation would continue to increase revenue in the local economy by \$197,331 (Topanotes Alternative) to \$335,810 (Proposed Action and Pahcease Alternative). As for the construction economic analysis, the O&M period revenue accounts for both the decrease in agricultural output and the multiplier effect of this output. None of the changes in output would account for more than a 0.1 percent change in the Uinta Basin economy.

None of the alternatives would adversely affect any of the local infrastructure, including roads, or local social services. None of the

alternatives would impact the Myton cemetery.

Changes in county tax revenues would vary among alternatives. Tax revenues would be affected by changes in two factors: changes in land ownership and changes in some parcel tax status from residential to greenbelt use. There would be no change in county taxes associated with changes in land ownership under the Proposed Action, as land would generally be maintained in fee status. Land acquired for the Pahcease and Topanotes Alternatives would remain in federal ownership resulting in annual county tax revenue decreases of \$3,808 and \$3,364, respectively.

Changes in tax revenues associated with acquisition of residences and conversion from residential to greenbelt use could result in tax losses of up to \$1,632 for the Proposed Action and from \$3,679 to \$4,110 for the other action alternatives. These represent maximum values as residents would most likely relocate in the same area, so that the tax loss from a residential parcel in one part of a county would likely be compensated for by a tax gain in another part of the county.

Under the Proposed Action, the total tax change within the two-county area could range from none at all (with all residents relocating to similar value homes within the two-county area) to \$1,632. The total property tax loss within the two-county area for the Pahcease Alternative from both the conversion of fee land to federal ownership and the conversion of some parcels from residential to greenbelt use would range from \$3,808 (with all residents relocating to similar value homes within the two-county area) to \$7,918. The total property tax loss under the

Topanotes Alternative would range from \$3,364 to \$7,043.

3.3.9 Public Health and Safety

Under the Proposed Action, there would be a total increase of 497 acres of potential mosquito-breeding habitat, including an increase of 271 acres of semi-permanently flooded (SP) habitat in which the mosquito species that carries the West Nile Virus could breed. There would also be a net increase of 226 acres of floodwater (FW) habitat in which nuisance, but non-disease carrying mosquitoes could breed. These habitats and species already occur in the project area, with potential habitat in 42 percent of the Proposed Action area boundaries. The Proposed Action would result in a 11 percent increase in potential mosquito-producing habitat within the project area (from 42 to 53 percent), and a 0.4 percent increase in potential mosquito-producing habitat within the Uinta Basin.

Under the Pahcease Alternative, there would be a total increase of 849 acres of potential mosquito-breeding habitat, including an increase of 441 acres of SP habitat and 408 acres of FW habitat. These habitats and species already occur in the project area, with potential habitat in 36 percent of the Pahcease Alternative boundaries. The Pahcease Alternative would result in a 13 percent increase in potential mosquito-producing habitat within the project area (from 36 to 49 percent), and a 1 percent increase in potential mosquito-producing habitat within the Uinta Basin.

The Topanotes Alternative would result in a total increase of 776 acres of potential mosquito-breeding habitat, including an increase of 442 acres of SP habitat and 334 acres of FW habitat. These habitats and

species already occur in the project area, with potential habitat in 39 percent of the Topanotes Alternative boundaries. The Topanotes Alternative would result in a 12 percent increase in potential mosquito-producing habitat within the project area (from 39 to 51 percent), and a 1 percent increase in potential mosquito-producing habitat within the Uinta Basin.

Under baseline conditions, 34 percent of the project area (1,592 acres) is treated by the local MADs for mosquitoes on a regular basis, with the remainder (3,215 acres) either untreated or only sporadically treated. With project implementation, all potential breeding habitat within the entire area of 4,807 acres would be treated as specified in Appendix G. Overall, there would be a greater level of mosquito control within the LDWP area under the Proposed Action and other action alternatives than under baseline conditions.

The degree to which the increase in potential mosquito habitat would occur within a 2 mile radius of Myton varies among alternatives. Under the Proposed Action, there would be an increase of 124 acres of potential mosquito-breeding habitat within the vicinity of Myton, or one-quarter of the total increase. Under the Pahcease and Topanotes Alternatives, there would be an increase of 688 acres of potential mosquito-breeding habitat within the vicinity. In these alternatives more than 80 percent of the increased habitat would occur within the Myton vicinity.

The mosquito control plan attached as Appendix G would be implemented under all alternatives.

3.3.10 Recreation

The potential increase in recreation opportunities would be similar among all alternatives, as the improved wetland, riparian, aquatic and upland habitats will attract and support additional wildlife species, which traditionally attracts recreationists, wildlife watchers, hunters and anglers. The increase in use would be limited, however, by the general lack of parking.

Permits and access conditions for hunting, fishing and nonconsumptive recreation would vary among the alternatives. Under the Proposed Action, hunting and fishing would generally require Tribal permits. Nonconsumptive recreation, such as wildlife watching, would be allowed as specified in the LDWP Management Plan. Nonconsumptive recreational use by non-Tribal members would require permission from the landowner (Tribe).

Multiple permits may be required to fish, hunt or recreate along the Duchesne River corridor for the Pahcease and Topanotes Alternatives. Under these alternatives, hunting and fishing would require Tribal permits on all Tribal Trust land placed under easements for the project or held in trust for the Tribe. Hunting and fishing on both fee land purchased by the federal government for the LDWP, and fee land previously purchased by the federal government for DRACR mitigation, would require State permits. Nonconsumptive recreational use by non-Tribal members would require access permission on Tribal lands and federally owned lands managed by the Tribe, but not on the Riverdell North property.

3.3.11 Transportation

During the maximum period of construction for the Proposed Action, Pahcease Alternative and Topanotes Alternative, up to 50 daily vehicle trips would occur. This number of vehicle trips would not change the road Level of Service (LOS) under any alternative. There would be no physical damage to county roads under any alternative.

3.3.12 Air Quality

The maximum amounts of pollutants generated during any 12-month period of construction under all alternatives would be 23 tons per year, of which 20 tons represent nitrogen oxides, 1.7 tons represent sulfur oxides and 1.3 tons represent particulate matter. None of the emissions would be sufficient to cause a violation of National Ambient Air Quality Standards (NAAQS).

3.3.13 Noise

Noise would be generated by vehicles and heavy equipment during construction of the three alternatives. A few private residences (sensitive receptors) are located within the construction area, but are located at a distance much greater than 50 feet from construction activities (ranging from 300-1000 feet). It is unlikely that noise levels would exceed “clearly unacceptable” (above 88 decibels) for residences given the noise attenuation with increased distance from the source of the sound for any of the alternatives. It is possible that noise could occur at potentially annoying levels (between 77-88 decibels) during the removal of Russian olive along River Road. The removal would occur during portions of a 2-month weed control period at the Uresk Drain under all alternatives.

3.3.14 Cultural Resources

None of the alternatives would impact any known cultural resource sites that are eligible for the National Register of Historic Places. The extent and location of any potential impacts would not be known until complete inventories are conducted before construction. There are no known sites of cultural or religious significance to the Ute Tribe in the project area under any alternative. A Programmatic Agreement has been entered into between the Ute Tribe, Utah State Historic Preservation Officer, DOI and the Mitigation Commission regarding the protection of cultural and historical resources (refer to Appendix F).

**Lower Duchesne River
Wetlands Mitigation Project**

Final Environmental Impact Statement

CHAPTER 4

**AFFECTED ENVIRONMENT AND
ENVIRONMENTAL CONSEQUENCES**

CHAPTER 4: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes the environment affected by the Proposed Action and alternatives and the predicted impacts of the Proposed Action and alternatives. The discussion is organized by resource topic. Issues addressed in the impact analysis are discussed first, followed by a description of the present or baseline condition of each resource and a description of the predicted impacts of the Proposed Action, Pahcese, Topanotes and No Action Alternatives. The assumptions and impact analysis methods for each resource are summarized in Appendix D. The last four sections of this chapter describe measures that would be used to mitigate significant impacts, unavoidable adverse impacts, net cumulative impacts and irreversible and irretrievable commitment of resources.

The impact analysis focuses on issues raised in the public scoping and DEIS review processes and on documenting environmental impacts at a level of detail matching the intensity, duration and magnitude of impact. Significant impacts on resources are discussed in detail and resource impacts that are not significant are summarized. The impact analysis incorporates the SOPs described in Appendix A that would be implemented during construction and operation to protect environmental resources.

For the purposes of this analysis, effects (also referred to as impacts), are categorized as one of three types:

- Direct effects are caused by the action and occur at the same time and place as the action,
- Indirect effects are caused by the action but occur later in time, or farther removed in distance, or both. The indirect effects of each alternative were considered for each resource category. If indirect effects are not specifically identified, then the analysis concludes that there are no indirect effects on the resource for the alternative, and
- Cumulative effects are the impact on the environment that results from incremental impacts of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such action. Cumulative effects are addressed in section 4.21.

4.1.1 Common Assumptions and Assessment Guidelines

The following common assumptions and assessment guidelines were followed during preparation of the FEIS:

- The FEIS is intended to satisfy the requirements of NEPA,
- Project features and operational details were designed only to a conceptual or feasibility level that represents

reasonable approximations for assessing potential project impacts, and

- Final designs will be prepared for the selected alternative.

4.1.2 Project Area of Influence

As described in section 1.4.1, both the sites included and the size of the individual sites vary among alternatives. The direct project area of influence that encompasses all sites and areas included in the Proposed Action and alternatives is depicted in Figure 1-2. The sites and the alternative-specific site boundaries are depicted in Figures 2-1 through 2-5. Baseline conditions for all sites included in the three action alternatives, even if not included in the Proposed Action, are discussed in the Affected Environment.

For some resources, the area of influence extends outside of the project area boundaries. Specific areas of influence, including the areas evaluated for both direct and indirect effects, are discussed separately for each resource.

4.1.3 Environmental Impact Issues Eliminated

The impact analysis focuses on issues raised in the public scoping process, during the DEIS public meetings and on documenting environmental impacts at a level of detail matching the intensity, duration and magnitude of impacts. Issues to be analyzed in detail in this FEIS were identified by the project partners and cooperating agencies, public meetings, written comments and questionnaires submitted to members of the Ute Tribe and local community residents.

The impact analysis conducted for the FEIS also considered all resources subject to requirements specified in statutes, regulations and executive orders. Resources not present or not affected by the Proposed Action or alternatives may be eliminated from detailed documentation of impacts. The following environmental impact topics have been determined to be not present or not affected by the Proposed Action or alternatives:

- **Prime and Unique Farmland.** Prime and Unique Farmland is a term developed by the federal government to identify agricultural land that meets specific criteria and which are identified and mapped by the NRCS on a state-wide basis. Based on an analysis of NRCS Utah State Office data, there are no Prime or Unique Farmlands in the project area.
- **Wild and Scenic Rivers.** Wild and Scenic Rivers. The Duchesne River is not protected under the Wild and Scenic Rivers Act of 1968, as amended, nor is there any known proposal to protect the Duchesne River under the act.
- **Wilderness Areas.** The nearest wilderness area, the High Uintas Wilderness, is 30 miles northwest of the project area and is outside of the area of influence for all resources except air quality. Potential wilderness impacts are restricted to a discussion of potential air quality impacts on the High Uintas Wilderness Area.

- **Visual Resources.** Neither the Uintah and Ouray Indian Reservation nor the adjacent counties maintain visual quality objectives with which the project needs to comply. The project would not change the overall character of the landscape or produce an obstruction to a vista as the project area would be maintained in open space and the tallest structures would consist of 5-foot berms scattered throughout a 4,789 to 6,765 acre area. Such berms would not detract from the overall landscape view once the sites have been revegetated.
- **Mineral and Energy Resources.** All current oil and gas development and exploration on the Uintah and Ouray Indian Reservation is located outside the boundaries of the Proposed Action and alternatives. The Ute Tribe has no plans to develop oil and gas in the LDWP project area in the foreseeable future, therefore the project would not impact known oil and gas resources.

4.2 WETLAND AND RIPARIAN HABITATS

4.2.1 Introduction

The wetland and riparian habitat analysis addresses potential impacts from the construction and operation of the project. The information presented in this section is summarized from technical reports prepared for the Tribe (WWS 1998a and 2000), supporting data for the technical reports, functional assessment results presented in Appendix C and digitized habitat maps on file at the Tribal office (see Appendix section D.2 for a full list of data sources). The analysis

addresses both temporary construction impacts and permanent habitat changes resulting from excavation, fill and changes in hydrology. Both beneficial impacts (increases in habitat types) and adverse impacts (loss of habitats) are addressed.

4.2.2 Issues Eliminated from Further Analysis

No issues were eliminated from analysis; all wetland and riparian resource issues raised during public scoping and agency consultation were analyzed.

4.2.3 Issues Addressed in the Impact Analysis

The following wetland and riparian impact topics are addressed in the impact analysis:

- Will there be a change in acres of wetland and riparian habitat types, or a net loss (acres) of any wetland or riparian habitat type in the project area?
- Will the project increase weeds?
- How will the project change wetland and riparian functions?

4.2.4 Area of Influence

The project area of influence for wetland and riparian habitats includes the areas depicted on Figure 1-2 in portions of Duchesne and Uintah counties in northeast Utah.

4.2.5 Affected Environment

4.2.5.1 Habitat Type Description

4.2.5.1.1 Introduction

The 1965 FWS Coordination Act report and subsequent documents did not provide quantitative assessments of the pre-SACS wetland and riparian habitat types along the Duchesne River or in the area inundated by the enlarged Strawberry Reservoir. However, the following historical information can be summarized from pre-CUP aerial photograph analysis, historical geomorphic analysis and descriptive accounts (WWS 1998a, Brink and Schmidt 1995, FWS 1965, SCS 1955 and anecdotal accounts from Tribal members).

- The Duchesne River consisted of multiple river channels with a series of river-connected oxbows,
- Habitats along the oxbows were flooded annually and consisted of a mix of willow thickets, open water and marshes bordered by cottonwoods. Wetlands were primarily supported by the river in contrast to current conditions in which up to 60 percent of wetlands in the corridor are supported by irrigation return flows with high TDS and boron levels,
- Native shrubs and young cottonwoods dominated point bars,
- Riparian forest extended up to 3,300 feet from the Duchesne River and contained multiple age classes of several tree and shrub species,
- The riparian forest understory on higher terraces was more open and less brushy than current conditions,

- The Uresk Drain was a large marsh bordered by native shrubs and young cottonwoods, and
- Wetland functions included high wildlife use, surface water storage and base flow moderation. Other functions likely performed by the wetlands (based on aerial photograph review) include interspersion and connectivity of habitat, high spatial structure of habitat, energy dissipation and water quality improvement.

4.2.5.1.2 Baseline Conditions

Current wetland and riparian habitat types were identified based on 1997 aerial photographic interpretation, 1997-98 field verification and selected additional field verification during 2002 digitization of habitat maps. The 1997-98 conditions are used in this document to represent baseline conditions, except as updated to reflect changes in habitats as a result of changes in agricultural use. Changes in agricultural habitats were based on Hanberg (2007).

Under baseline conditions, there are three general categories of wetland and riparian habitats, each containing one or more habitat types: non-riparian wetlands, riparian habitats and wetland and riparian weeds. Wetland and riparian habitat types are described below by general habitat category. Table 4-1 provides a summary of the acres of wetland and riparian habitats both overall and for each site included within the Proposed Action.

- **Non-riparian wetlands.** Non-riparian wetlands are defined as areas containing a water table within 18 inches of the soil surface for a portion

of the growing season. These wetlands also contain hydric soils and a dominance of hydrophytic plant species. Hydrologic support, however, is not provided by the Duchesne River or its tributaries. Non-riparian wetlands include:

- Emergent marsh,
 - Wet meadow, and
 - Mesic shrub.
- **Riparian habitats.** Riparian habitats are defined as habitats occurring within the Duchesne River floodplain that derive their hydrologic support from the river. Portions of riparian habitats often do not meet technical or legal criteria for wetlands. Riparian habitats that flood on a regular basis are considered wetland habitats. Other riparian habitats, such as cottonwood forest, require a high water table for initial establishment of young cottonwoods. Once young cottonwoods have established, they may not require a water table within 18 inches of the soil surface to persist. These habitats would be considered riparian, but not wetland habitats. Riparian habitats include:
 - Riparian shrub,
 - Degraded cottonwood forest, and
 - Mature cottonwood forest.
 - **Wetland and riparian weeds.** Wetland and riparian weeds include those species listed by the State of Utah and/or Duchesne or Uintah counties as noxious under Section 4-17-3 of the Utah Noxious Weed Act and other species that are both non-native and invasive. The primary wetland and riparian weed species in the LDWP project area are

Russian olive (*Elaeagnus angustifolia*, noxious), tamarisk (*Tamarix ramosissima*, non-native invasive) and perennial pepperweed (*Lepidium latifolium*, noxious). All habitats dominated by more than 30 percent cover of weed species are grouped together under the wetland and riparian weeds habitat category.

The project area also includes a number of upland habitats, some of which would be converted to wetland under the project and some of which would be managed to provide adjacent upland habitat (providing important wildlife needs such as nesting habitat, wildlife feeding areas and buffers) for wetland-dependent species. Upland habitat types include grassland, cropland, annual weed/fallow and desert shrub.

4.2.5.1.3 Non-Riparian Wetlands

Emergent Marsh. A mixture of open water and emergent marsh. Open water is defined as areas with permanent standing water deeper than 3.3 feet. Emergent marsh consists of areas where herbaceous vegetation occurs in, and emerges from, standing water. Water depths in emergent marshes can vary, but the soil is generally shallowly flooded throughout the entire growing season. The emergent marsh represents the remnant of the backwater sloughs referred to in historical accounts of the Duchesne River corridor but differs in structural aspects, such as a lack of river connection, lack of open water and lack of species diversity.

Within the project area the emergent marshes consist primarily of a monospecific stand of hardstem bulrush (*Scirpus acutus*) without open water or shallow marsh areas.

Emergent marsh occupies the lowest portions of old oxbows and meander scars, which currently receive irrigation return flows. Emergent marsh also occurs in the portion of the Uresk Drain with year round groundwater support.

Unvegetated open water is limited in the project area, typically being interspersed with emergent marsh. Locations in which permanent open water greater than 1 acre in size occurs includes: the Flume oxbow system at the junction with the Myton Townsite Canal, the Uresk Drain, Uresk Drain Goose Ponds, the Duchesne River where it traverses the project area, the Ted's Flat South oxbows, and the Ted's Flat Swamp Wetland.

Wet Meadow. A community dominated by grasses, sedges and rushes that occurs where soils are saturated for a portion of the growing season. In the project area, wet meadows are species-poor and dominated by only one or two species. Characteristic species include saltgrass (*Distichlis spicata*), wiregrass (*Juncus arcticus*) and foxtail barley (*Hordeum jubatum*). Wet meadow occurs along the edges of oxbows receiving irrigation return flows and in irrigated pastures. Most of the wet meadows are grazed.

Mesic Shrub. Native wetland shrubs occur in two topographic positions in the project area. Mesic shrubs occur outside of the direct influence of the Duchesne River, whereas the native riparian shrub community described below, occurs within the area directly influenced by the Duchesne River.

The mesic shrub habitat is not common in the project area. It is typically restricted to ditch edges, fence rows and scattered locations along oxbows that are protected from grazing. The cover type consists of dense clumps of

shrubs 6-12 feet in height. Soils are moist to seasonally saturated. This community is best characterized as a wetland edge habitat. The most common native shrub species are silver buffaloberry (*Shepherdia argentea*), oak-leaved sumac (*Rhus aromatica*), red-osier dogwood (*Cornus sericea*), golden currant (*Ribes aureum*), wood's rose (*Rosa woodsii*) and snowberry (*Symphoricarpos albus*).

4.2.5.1.4 Riparian Habitats

Riparian Shrub. The riparian shrub community occurs in the current 2- to 5-year floodplain of the Duchesne River where it is intermixed with unvegetated aquatic habitats, on low terraces and along the Flume secondary channel (WWS 1998a). The native riparian shrub community is not common in the project area as much of the floodplain and secondary channel banks are dominated by non-native species (Russian olive and tamarisk).

Native riparian shrubs within the active floodplain include coyote willow (*Salix exigua*) and young Fremont cottonwoods (*Populus fremontii*). Cottonwoods and willows establish periodically in relation to flood events, requiring a high spring flow, a gradual water level decline and maintenance of a suitable summer baseflow (Scott et al. 1996, Auble et al. 1997). Scouring and sediment deposition during the high spring flow provide the exposed moist surfaces on which seeds can germinate. A gradual water level decline promotes root growth, allowing young seedlings to maintain contact with the water table as it recedes. As a result, cottonwood and willow seedlings do not establish above levels at which they can maintain adequate root

growth rates, which require contact with the declining water table. Seedlings establish but do not often survive below a certain elevation as they are covered by sediment or scoured by floods during subsequent years. Since the 1930s, the timing, duration and magnitude of spring flood flows have decreased (see section 4.5.5.1). The water table decline following the spring floods has also been more rapid. Prior to 1930, spring flood flows of sufficient magnitude for cottonwood or willow establishment occurred in 40 percent of the years. Since 1965, there have been only 4 out of 33 years in which spring flood flows have been suitable for cottonwood or willow seedling establishment (WWS 1998a). As a result, few native riparian species have established along the Duchesne River since the CUP became operational.

Riparian Forest. Riparian forest habitat is characterized by a native tree canopy layer that provides more than 25 percent cover. In the project area, the dominant native riparian tree is Fremont cottonwood. The riparian forest habitat type contains two subtypes:

- Mature cottonwood forest characterized by a dominance of vigorous cottonwood in the canopy with either a native shrub or grass understory, and
- Degraded cottonwood forest. Degraded cottonwood forest is identified by the occurrence of any one of the following three conditions: (1) the canopy is dominated by cottonwood but the understory is dominated by upland species such as sagebrush or non-native species such as tamarisk or Russian olive; (2) cottonwoods previously occurred in the community but mature cottonwoods were killed by recent fires; or (3) cottonwoods on higher terraces or along ditch banks appear to be suffering

from drought stress. Areas formerly dominated by cottonwoods but now dominated by Russian olive and tamarisk are characterized as “wetland and riparian weed” habitat. Areas formerly dominated by cottonwoods that were cleared for agriculture are characterized according to their habitat condition in 1997 (i.e., annual weed/ fallow, grassland or cropland).

The mature cottonwood forest occurs on low terraces, where it can be intermixed with unvegetated riverine habitats, as well as on higher terrace habitats. The degraded cottonwood forest is generally restricted to higher terraces.

4.2.5.1.5 Wetland and Riparian Weeds

The State of Utah lists 18 noxious weed species in the Uinta Basin. Two of the listed noxious weeds, pepperweed and Russian olive are wetland/riparian weeds prevalent in the project area. Tamarisk is not listed as a noxious weed but is a non-native invasive species abundant in the project area. Russian olive and tamarisk dominate the active floodplain of the Duchesne River, often providing more cover than the native riparian shrubs. These two species have also established as understory species in portions of the mature cottonwood forest on higher terraces.

Tamarisk is less abundant than Russian olive outside of the riparian zone but has established along portions of the oxbows that receive irrigation return flows. In contrast to native riparian species, tamarisk has less exacting germination requirements and can germinate any time in the growing season when soils are saturated at or near the surface for a period of several weeks.

Russian olive is quite abundant outside of the riparian zone where it dominates abandoned pastures.

Pepperweed is a herbaceous wetland weed that did not provide enough cover in 1997 to be mapped as a separate habitat type (WWS 1998a). It currently occurs along the edges of all the oxbow systems.

4.2.5.1.6 Upland Habitat Type Description

Upland Grassland. The upland grassland habitat consists primarily of irrigated and grazed pasture. The dominant species are saltgrass, foxtail barley, smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*) and wheatgrasses (*Leymus* and *Elytrigia* spp.). Most of the grasslands are dominated by saltgrass and foxtail barley, with the other species becoming dominant on the less saline soils of the Uresk Drain West Fields area and at the eastern end of the Flume oxbow system.

Cropland. The cropland community type consists of land that was in production of alfalfa, small grains or corn in 2006, as identified by Hanberg (2007). Cropland is not common in the project area, as the project was designed to avoid land in active crop production unless necessary to fulfill project purposes.

Annual Weed/Fallow. The annual weed/fallow community type was identified on land formerly cropped but not tilled in 2006, and which was dominated by annual weeds such as halogeton (*Halogeton glomeratus*), poverty weed (*Iva axillaris*) and annual sunflower (*Helianthus annuus*) or other non-crop species.

Desert Shrub. The desert shrub community consists of a mix of greasewood (*Sarcobatus vermiculatus*), sagebrush (*Artemisia tridentata*) and rabbitbrush (*Chrysothamnus nauseosus*). Greasewood occurs more frequently than the other two species and tends to occur on clay and silty loam soils and on areas farmed in the 1940s, but since abandoned. The greasewood understory is sparse, consisting mostly of saltgrass and scratchgrass (*Muhlenbergia asperifolia*). Sagebrush and rabbitbrush occur on fairly coarse-textured soils and contain a more diverse, but still relatively sparse, understory.

4.2.5.2 Individual Site Descriptions

4.2.5.2.1 The Flume

Non-Riparian Wetlands. There are 137 acres of wet meadow and emergent marsh wetlands along the Flume oxbow system. The wetlands are dominated primarily by monocultures of either saltgrass or hardstem bulrush. Wetlands occur where irrigation return flows enter the oxbow system; an estimated 60 percent of the existing wetlands are supported primarily by irrigation return flows (WWS 2000). Open water is restricted to small areas (less than 1 acre) along the oxbows and an 8-acre pond created at the junction of the Flume oxbow system with the Myton Townsite Canal. The pond contains excellent growth of submerged aquatic plants preferred by waterfowl (such as sago pondweed [*Potamogeton pectinatus*] and smartweeds [*Polygonum* spp.]), and is bordered by a dense fringe of emergent marsh.

The non-riparian wetlands in the Flume oxbow system are bordered primarily by grazed desert shrub. Ditched sections of the

oxbow are bordered by upland grassland and alfalfa fields. Mesic shrubs are limited to scattered patches along fence rows.

There are an additional 22 acres of wetland associated with a borrow pit for Highway 40 construction (the Pit Wetland). This wetland consists primarily of open water with little fringing wetland vegetation.

Riparian Habitat. The northwest corner of the Flume site borders the Duchesne River and the secondary channel. There are 86 acres of degraded cottonwood forest and 23 acres of degraded riparian shrub habitat along the secondary channel.

Wetland and Riparian Weeds. Russian olive and tamarisk are the primary weeds of concern on the Flume site, although pepperweed is beginning to establish and expand along the oxbows receiving irrigation return flows. Tamarisk is most abundant adjacent to the secondary channel and the Duchesne River. Russian olive is most abundant on irrigated grasslands, where it is rapidly expanding.

4.2.5.2.2 Uresk Drain

Non-Riparian Wetlands. The Uresk Drain contains more wetlands than any of the other sites. There are 567 acres of non-riparian wetlands in the Uresk Drain, with wetland distribution reflecting both the drainage of excess water from the site through the Drain and the irrigation of adjacent lands for pasture. Under baseline conditions (which include a fully operational Drain), 60 percent of the existing wetlands are primarily supported by irrigation. Most of the wetlands (500 acres) occur in the area bisected by the Drain and are a mix of emergent marsh and wet meadow. Open water is restricted to the

Drain itself (8 acres), with 1 acre of open water in the Goose Ponds portion of the site. Upland habitats bordering the wetlands include desert shrub and Russian olive, with Russian olive occupying habitats historically dominated by native shrubs.

The remaining 60 acres of non-riparian wetlands occur in the West Fields area of the Uresk Drain. The West Fields area consists of a mosaic of irrigated grassland and irrigation-influenced wet meadow, with Russian olive encroaching along the edges.

Riparian Habitat. The northeast corner of the Uresk Drain site borders the Duchesne River; this is the only portion of the site currently containing cottonwood forest. The forest is characterized as degraded forest due to its dense tamarisk and Russian olive understory.

Wetland and Riparian Weeds. One hundred and twenty-two acres of the Goose Ponds area are dominated by Russian olive and tamarisk. The remaining 130 acres of wetland and riparian weeds consist of Russian olive, which has established in areas dominated by native shrubs in the 1930s and in the grasslands. Tamarisk is a minor component in most of the Uresk Drain main site. Since 1997, pepperweed has established along most of the length of the Drain.

4.2.5.2.3 Riverdell North

Non-Riparian Wetlands. In 1982, the FWS identified 100 acres of wetlands on the Riverdell North site. These wetlands dried with the cessation of irrigation and there are no wetlands currently on the site.

Riparian Habitat. The Riverdell North site contains substantial areas of both existing cottonwood forest and native riparian shrub habitat (105 acres) and areas cleared for agriculture or otherwise degraded that are suitable for restoration of cottonwood forest (250 acres).

Wetland and Riparian Weeds. Russian olive and tamarisk provide high cover along the Duchesne River and dominate 101 acres of former cropland on the Riverdell North property. As on other sites, pepperweed has dramatically expanded cover since 1997 and is now a major weed species on the Riverdell North site.

4.2.5.2.4 Riverdell South

Non-Riparian Wetlands. There are 87 acres of non-riparian wetlands in the Riverdell South site, all of which are located along the south oxbow system. The wetlands are a mix of wet meadow and emergent marsh and are dominated primarily by monocultures of either saltgrass or hardstem bulrush. Approximately 30 percent of the existing wetlands are supported by irrigation return flows. Uplands along the south oxbow system are mostly grazed grassland.

Mesic shrubs are limited to scattered patches along fence rows.

Riparian Habitat. There are 57 acres of existing cottonwood forest and native riparian

shrub habitat on the Riverdell South property.

Wetland and Riparian Weeds. Russian olive and tamarisk dominate 87 acres on the Riverdell South property. Pepperweed has also established along the oxbows.

4.2.5.2.5 Ted's Flat

Non-Riparian Wetlands. In Ted's Flat, extensive wetlands were visible along the oxbows, both north and south of the river in 1939. In the Ted's Flat south oxbow system, wetlands south of the county road generally occur in the same position as visible in 1939 aerial photographs. As for other wetlands along old oxbows, habitats are dominated by monocultures of hardstem bulrush with little adjacent wet meadow or other wetland vegetation. Five acres of shallow open water occur adjacent to River Road. In contrast to open water areas in the Flume and Uresk Drain, there is no submerged aquatic vegetation in the open water areas of Ted's Flat. Adjacent uplands are primarily desert shrub.

Wetlands were visible along the entire north oxbow system in 1939, but are now only associated with water backed-up by the Swamp, a created irrigation reservoir that did not exist in 1939. There are approximately 60 acres of open water, emergent marsh and native shrub habitat associated with the Swamp wetland. The remainder of the north oxbow system contains few wetlands.

Table 4-1. Wetland and Riparian Habitats in the Proposed Action Project Area under Baseline Conditions.

| Habitat | Acres By Site | | | Total Acres |
|--|---------------|-----------------|------------|--------------|
| | Uresk Drain | Riverdell South | Ted's Flat | |
| Non-Riparian Wetlands | | | | |
| Emergent marsh | 313 | 18 | 90 | 421 |
| Wet meadow | 254 | 54 | 74 | 382 |
| Mesic shrub | 0 | 15 | 20 | 35 |
| Total Non-Riparian Wetlands | | | | 838 |
| Native Riparian Habitat¹ | | | | |
| Riparian shrub | 0 | 5 | 144 | 149 |
| Mature cottonwood forest | 0 | 52 | 653 | 705 |
| Degraded cottonwood forest | 23 | 116 | 0 | 139 |
| Total Native Riparian Habitat | | | | 993 |
| SUBTOTAL NATIVE WETLAND/RIPARIAN HABITATS | | | | 1,831 |
| Riparian/Wetland Weed | | | | |
| Russian olive/tamarisk | 252 | 87 | 0 | 339 |
| TOTAL ALL WETLAND/RIPARIAN HABITATS | | | | 2,170 |
| ¹ Includes vegetated habitat within the current or former Duchesne River floodplain, but not unvegetated aquatic, channel bed or other riverine habitats. | | | | |

Riparian Habitat. The Ted's Flat site encompasses both sides of the Duchesne River and is unique in that the site contains 653 acres of existing cottonwood forest and 144 acres of native riparian shrub habitat. The cottonwood forest consists of a mix of mature forest with a native shrub understory and mature cottonwood forest lacking a native shrub understory.

Wetland and Riparian Weeds. Russian olive and tamarisk are restricted to the native shrub habitat along point bars and provide relatively low cover in comparison to the other sites. No habitats are dominated solely by Russian olive and tamarisk but these species have established in approximately 105 acres to a level that warrants control to prevent expansion.

4.2.5.3 Wetland Functions and Values

4.2.5.3.1 Non-Riparian Wetlands

The existing wetlands have the potential to provide a variety of functions under baseline conditions. Most of the wetlands (except the Ted's Flat north oxbow wetlands) have the ability to improve or maintain downstream water quality at a moderate level. In general, the wetlands have a low to moderate capability to provide wildlife habitat due to the lack of vegetation diversity and interspersed and the high degree of water level fluctuations associated with variability in irrigation return flow input.

The Goose Pond wetland, Ted's Flat south oxbows and the Swamp wetland all have a moderate to high capability to perform most functions, reflecting their lesser degree of hydrologic alteration and higher degree of existing vegetative diversity and interspersed. Conversely, the other three oxbow systems (Flume, Riverdell South and northern portion of Ted's Flat) and remaining isolated wetlands have a low ability to perform almost all wetland functions except water quality maintenance.

Details of the functional assessment methods and results are provided in Appendix C.

4.2.5.3.2 Riparian Wetlands

The riparian habitats have a relatively low capability to perform hydrologic and biologic functions due to a combination of two factors: (1) hydrologic alteration of the Duchesne River, which has resulted in reduced frequency, depth and duration of overbank flooding and (2) a general low dominance of native riparian vegetation. The exception is the Ted's Flat north terrace, which contains an

existing stand of mature cottonwoods. Under baseline conditions, the Ted's Flat north riparian habitat provides moderate wildlife habitat and a high degree of uniqueness/heritage value as this is one of only a few sites along the Duchesne River containing mature cottonwoods, a keystone species with restricted habitat requirements.

4.2.6 Impact Analysis

4.2.6.1 Significance Criteria

Impacts on wetland and riparian resources would be considered significant if :

- The project would result in a net change (measured in acres) of any existing wetland or riparian habitat type dominated by native species,
- The project would increase wetland and riparian weeds, or
- The project would result in a net change in the ability of an existing wetland or riparian habitat to perform a function at its existing level.

These significance criteria are based on federal laws and the project goal of increasing wetland and riparian wildlife habitat. The Clean Water Act and associated guidelines require a goal of no net loss of wetlands and their functions. Executive Order 11190 requires federal agencies to avoid impacts to wetlands and to take active measures to protect all wetland habitat. Executive Order 11988 requires federal agencies to avoid adverse impacts to floodplain areas. Executive Order 13112 requires federal agencies to control invasive species and provide for restoration of native habitats and species in systems that have been invaded.

Impacts are evaluated in terms of whether they represent an adverse impact (a net decrease in wetland or riparian habitat acres or functions) or a beneficial impact (a net increase in wetland or riparian habitat acres or functions). Both direct and indirect impacts to wetland and riparian habitats are evaluated. Direct adverse impacts are defined as those causing loss of wetland or riparian habitats through fill or vegetation removal during construction. These impacts can be temporary or permanent. An example of a temporary direct impact would be excavation or other soil disturbance adjacent to a berm that is subsequently revegetated with wetland plants. An example of a permanent direct impact would be placement of a permanent feature, such as a berm, over an existing wetland.

Direct beneficial impacts would also occur as a result of construction activities. An example of a direct beneficial impact would be planting of native wetland species or removal of noxious weeds to increase the extent or functional capacity of wetland or riparian habitats.

Indirect impacts would occur when an existing wetland or riparian habitat is affected by construction activities in a different location. An example of an indirect impact would be a change in wetland habitat type from wet meadow to emergent marsh as a result of a berm causing water to be retained for a longer period of time during the growing season.

4.2.6.2 Proposed Action

4.2.6.2.1 Direct Adverse Construction Impacts (Acres)

Under the Proposed Action, 18.5 acres of wetland would be temporarily impacted and

7.3 acres of wetland would be permanently impacted (see Table 4-2). The impacts would be localized and occur primarily where berms cross existing wetlands. Temporary impacts would be created by disturbing soil adjacent to the location of proposed structures; these areas would be subsequently flooded, revegetated or otherwise returned to usable wildlife habitat. Permanent disturbances would occur where structures, such as berms, are installed to create the desired habitat. Section 2.1.2.1 outlines the typical procedures to be followed during construction of the LDWP. Soil excavated during construction of inlets or channels connecting oxbows would be used in berm construction if of a suitable nature. Stockpiled topsoil placed on the top and sides of berms would be seeded with rapidly-growing, mesic and wetland grasses and sedges.

The largest percentage of the acres impacted under the Proposed Action would occur in the Uresk Drain site. Approximately 9 acres of wetland would be temporarily disturbed, with an additional 4.7 acres permanently disturbed. Construction of the three large berms on the eastern portion of the site would cause the majority of the impacts in the Uresk Drain. In Ted's Flat, 4.1 acres of wetlands would be temporarily impacted by construction with 1.2 acres of permanent construction impacts. Berm construction on both the north and south oxbow systems would cause most of the impacts. Additionally, 2.6 acres of cottonwood forest would be temporarily disturbed through recontouring the ditch south of the Swamp wetland and reconnecting the Ted's Flat north oxbow system to the Duchesne River. Following construction, these areas would be replanted with cottonwoods and other native shrubs. There would be 2.9 acres of temporary wetland disturbance from berm construction activities

along the Riverdell South oxbows, with 1.4 acres of permanent wetland disturbance.

4.2.6.2.2 Direct Beneficial Construction Impacts (Acres)

Under the Proposed Action, wetland and riparian habitats would be changed in three ways during construction: (1) restoration of previously existing wetland and riparian habitats where they formerly occurred, (2) creation of new wetland or riparian habitats where they didn't previously occur or (3) enhancement of existing wetland and riparian habitats. Enhancement differs from restoration and creation in that the proposed enhancement measures would not change the size or type of habitat but would be targeted at improving its existing value. Conversely, restoration and creation would result in a change in the number of wetland and riparian habitat acres.

Table 4-3 summarizes the acres of wetland and riparian habitats to be created and restored under the Proposed Action. Exact acres may change with final design and results of detailed topographic surveys and soil permeability analyses. There would be an increase in all native wetland and riparian habitat types through creation and restoration. The largest increase would be in emergent marsh and wet meadow (total of 620 acres). During restoration, 250 acres of degraded cottonwood forest, cleared cottonwood forest and wetland and riparian weeds would be converted to mature cottonwood forest through removal of riparian weeds and planting of young cottonwoods (1-3 years old). The initial construction would only establish a young stand of cottonwoods. Several decades of growth would be necessary before a mature cottonwood forest is established.

In addition to changes in the extent of wetland and riparian habitat in the project area, existing wetland and riparian habitats would be enhanced by a variety of measures including:

- Provision of long-term hydrologic support to wetlands currently subject to drying with changes in irrigation patterns or lining of nearby canals,
- Improvement in water quality,
- Increased cover and habitat interspersions,
- Elimination of grazing (unless needed as a wildlife management tool),
- Supplemental planting of native shrubs in existing riparian habitats, and
- Improved cover on adjacent upland habitats.

These enhancement measures would not change the extent or type of habitat but would improve its wildlife habitat value. Almost all of the riparian enhancement would occur on the Ted's Flat site. Ted's Flat is unique as it is the only site in the Proposed Action in which riparian habitat would be restored on both sides of the Duchesne River. This site contains 653 acres of existing cottonwood forest and 144 acres of riparian shrub habitat that would be enhanced by both supplemental planting and by restoration of wetlands along the north oxbow system, which traverses the cottonwood forest. Other enhancements of the Ted's Flat site would include a substantial improvement in the water quality of the south oxbow system as a result of providing a high quality water source from the Myton Townsite Canal (see section 4.6 for a description of water quality changes).

Most of the wetland enhancement would occur on the Uresk Drain site. The existing herbaceous wetlands (emergent marsh and wet meadow) on the Uresk Drain are primarily supported by irrigation return flows and are therefore subject to loss and/or change in functions with changes in local irrigation practices or canal lining. In addition to creating and restoring 227 acres of new herbaceous wetlands and 109 acres of mesic shrub on the Uresk Drain, the LDWP would enhance an additional 563 acres of wetlands by providing a permanent and continuous water supply, weed control and elimination of grazing.

Beneficial impacts on the Riverdell South property, the smallest site in the Proposed Action, would occur through restoring and enhancing 314 acres of wetlands along the South oxbow and 235 acres of riparian habitat along the Duchesne River.

Table 4-4 provides a summary of the acres of wetland and riparian habitats enhanced by either active measures or changes in management on all sites. The acres of wetland to be enhanced in Table 4-4 differ slightly from the baseline acres in Table 4-1, as Table 4-4 accounts for some conversion of existing wetlands to a different habitat type and also includes permanent construction impacts to wetlands.

4.2.6.2.3 Indirect Impacts (Acres)

Placement of berms in existing wetlands would cause some conversion of wetland habitats from emergent marsh or wet meadow to open water directly behind the berms. This habitat conversion would be offset by lateral expansion of emergent marsh and wet meadow along the edges of the existing wetlands. Overall, there would be a net

increase of 570 acres of wet meadow and emergent marsh over baseline conditions, and a net gain in acres of all native wetland and riparian habitats.

4.2.6.2.4 Wetland and Riparian Weeds

The Proposed Action would remove 339 acres of Russian olive and tamarisk and treat pepperweed while populations are still restricted in size. Ongoing weed control would be an integral part of the LDWP Comprehensive Conservation and Management Plan (see also Appendix B). There would be a net decrease of noxious weeds as a result of the Proposed Action, representing a beneficial impact of the project.

4.2.6.2.5 Changes in Wetland Functions and Values

Non-Riparian Wetlands. Under the Proposed Action, the ability of wetlands to perform a variety of functions would be increased, with most of the wetlands rated as moderate to high for hydrologic support, water quality maintenance, flood flow attenuation, wildlife habitat, aquatic diversity, aesthetics and uniqueness/heritage value. The increases in functional ability would reflect the changes in hydrologic support from return flows to a stable water supply; changes in the size, shape and connectivity of wetlands; increases in duration of soil saturation and increases in the number of vegetation types, interspersions, plant species diversity and plant density. This represents a beneficial impact of the project. There would be no decrease in any of the functions performed by the wetland complexes from baseline conditions.

Riparian Habitats. The value of the riparian shrub wetlands for energy dissipation and sediment stabilization would increase under

the Proposed Action as a result of increased shrub and herb densities and the potential for increased coarse woody debris input by planting cottonwoods on adjacent terraces. The cottonwood forest habitats would continue to remain of generally low value for hydrologic and biogeochemical functions, as they are isolated from the floodplain and the LDWP would not change the Duchesne River hydrology. Wildlife habitat would see the greatest increase in function through planting of cottonwoods and associated shrubs, thereby providing an increase in structural diversity, seral stages and the wildlife food value of vegetation adjacent to the Duchesne River. The increased value of riparian wetlands for energy dissipation, sediment stabilization and wildlife habitat represents a beneficial impact of the project. There would be no decrease in the functional ability of any of the riparian habitats under the Proposed Action.

4.2.6.2.6 Summary of Impacts

The Proposed Action would temporarily adversely impact 18.5 acres and permanently adversely impact 7.3 acres of wetlands through construction of project features. There would be some conversion of existing wet meadow and emergent marsh habitats to other habitat types, but these losses would be compensated by lateral expansion of wetlands and development of the same habitats elsewhere on individual sites.

There would be 2.6 acres of temporary adverse impacts to the cottonwood forest, but there would be no permanent adverse impacts to this habitat type. The Proposed Action would restore or create 1,025 acres and enhance the value of 1,656 acres of wetland and riparian habitats. Overall, the Proposed Action would provide a large beneficial impact to wetland and riparian habitats by increasing the acres of all native habitat types, decreasing the extent of wetland and riparian weeds by 339 acres and improving the functions and values of the existing habitats.

Table 4-2. Summary of Direct Adverse Construction Impacts to Existing Wetland and Riparian Habitat under the Proposed Action.

| Habitat | Acres By Site | | | | | | Total Acres | |
|------------------------------|---------------|-----------|-----------------|-----------|------------|-----------|-------------|-----------|
| | Uresk Drain | | Riverdell South | | Ted's Flat | | | |
| | Temporary | Permanent | Temporary | Permanent | Temporary | Permanent | Temporary | Permanent |
| Non-Riparian Wetlands | | | | | | | | |
| Emergent marsh | 4.4 | 1.6 | 1.2 | 0.6 | 3.5 | 1.0 | 9.1 | 3.2 |
| Wet meadow | 2.6 | 2.0 | 0.2 | 0.2 | 0.6 | 0.2 | 3.4 | 2.4 |
| Mesic shrub | 0 | 0 | 0 | 0 | 0 | <0.1 | 0 | <0.1 |
| Riparian Habitat | | | | | | | | |
| Riparian shrub | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cottonwood forest | 0 | 0 | 0 | 0 | 2.6 | 0 | 2.6 | 0 |
| Riparian/Wetland Weed | | | | | | | | |
| Russian olive/ tamarisk | 1.9 | 1.1 | 1.5 | 0.6 | 0 | 0 | 3.4 | 1.7 |
| Totals | 8.9 | 4.7 | 2.9 | 1.4 | 6.7 | 1.2 | 18.5 | 7.3 |

Table 4-3. Wetland and Riparian Habitats to be Created or Restored under the Proposed Action.

| Habitat | Acres By Site | | | Total Acres |
|--|---------------|-----------------|------------|--------------|
| | Uresk Drain | Riverdell South | Ted's Flat | |
| Non-Riparian Wetlands | | | | |
| Emergent marsh | 69 | 92 | 113 | 274 |
| Wet meadow | 162 | 96 | 88 | 346 |
| Mesic shrub | 109 | 40 | 0 | 149 |
| Total Non-Riparian Wetlands | | | | 769 |
| Native Riparian Habitat¹ | | | | |
| Riparian shrub | 0 | 0 | 6 | 6 |
| Mature cottonwood forest | 87 | 163 | 0 | 250 |
| Degraded cottonwood forest | 0 | 0 | 0 | 0 |
| Total Native Riparian Habitat | | | | 256 |
| SUBTOTAL NATIVE WETLAND/RIPARIAN HABITATS | | | | 1,025 |
| Riparian/Wetland Weed | | | | |
| Russian olive/tamarisk | 0 | 0 | 0 | 0 |
| TOTAL ALL WETLAND/RIPARIAN HABITATS | | | | 1,025 |
| ¹ Includes vegetated habitat within the current or former Duchesne River floodplain, but not unvegetated aquatic, channel bed or other riverine habitats. | | | | |

| Table 4-4. Existing Wetland and Riparian Habitats to be Enhanced by Active Measures or Management Changes (Acres) under the Proposed Action.¹ | | | | |
|--|----------------------|------------------------|-------------------|--------------------|
| Habitat | Acres By Site | | | Total Acres |
| | Uresk Drain | Riverdell South | Ted's Flat | |
| Non-Riparian Wetlands | | | | |
| Emergent marsh | 312 | 17 | 89 | 418 |
| Wet meadow | 251 | 41 | 43 | 335 |
| Mesic shrub | 0 | 6 | 20 | 26 |
| Total Non-Riparian Wetlands | | | | 779 |
| Native Riparian Habitat² | | | | |
| Riparian shrub | 0 | 5 | 144 | 149 |
| Mature cottonwood forest | 0 | 52 | 653 | 705 |
| Degraded cottonwood forest | 23 | 0 | 0 | 23 |
| Total Native Riparian Habitat | | | | 877 |
| SUBTOTAL NATIVE WETLAND/RIPARIAN HABITATS | | | | 1,656 |
| Riparian/Wetland Weed | | | | |
| Russian olive/tamarisk | 0 | 0 | 0 | 0 |
| TOTAL ALL WETLAND/RIPARIAN HABITATS | | | | 1,656 |
| ¹ Numbers represent net changes after accounting for some habitat conversion, particularly of wet meadow to emergent marsh. ² Includes vegetated habitat within the current or former Duchesne River floodplain, but not unvegetated aquatic, channel bed or other riverine habitats. | | | | |

4.2.6.3 *Pahcease Alternative*

4.2.6.3.1 Direct Adverse Construction Impacts (Acres)

Table 4-5 summarizes the acres of wetland and riparian habitats under the baseline conditions for the Pahcease Alternative. Direct construction impacts would result in temporary disturbance to 16.8 acres of wetlands and permanent disturbance to 8.4

acres (see Table 4-6). The areas subject to temporary disturbance would be restored as described for the Proposed Action. The types of impacts for individual sites would be the same as described for the Proposed Action, but acres of impacts within a site and the sites included would differ for the following reasons:

- No construction would occur in the Ted's Flat site and there would not be any disturbance to riparian habitats,
- There would be 2.6 acres of temporary and 0.8 acres of permanent wetland impacts associated with wetland development along the Flume oxbow system, and
- There would be additional berm construction at the Head of the Uresk Drain, resulting in additional wetland impacts of 1.5 to 2.5 acres in the Uresk Drain.

There would be no difference in wetland impacts between those described for Riverdell South under the Proposed Action and those for the combined Riverdell North and South sites under the Pahcease Alternative.

4.2.6.3.2 Direct Beneficial Construction Impacts (Acres)

Table 4-7 summarizes the acres of wetland and riparian habitats that would be created and restored under the Pahcease Alternative. There would be an increase in all native wetland and riparian habitat types through creation and restoration. The largest increases would be in cottonwood forest and herbaceous wetlands (emergent marsh and wet meadow combined). During restoration, 917 acres of degraded cottonwood forest would be converted to mature cottonwood forest through removal of riparian weeds and planting of young cottonwoods (1-3 years old). The initial construction would only establish a young stand of cottonwoods; several decades of growth would be necessary before a mature cottonwood forest is established. Most of the riparian restoration would occur on the Riverdell North and Flume sites. The combination of the Riverdell North with the Riverdell South site would also

provide for riparian restoration on both sides of the Duchesne River. The Pahcease Alternative would also create and/or restore 1,023 acres of emergent marsh and wet meadow habitats, with the largest increase in these wetlands occurring on the Flume.

The enhancement measures described in section 4.2.6.2.2 would not change the extent or type of habitat under the Pahcease Alternative but would improve its wildlife habitat value. Most of the enhancement would occur on the Uresk Drain site as described for the Proposed Action. Table 4-8 provides a summary of the acres of wetland and riparian habitats enhanced by either active measures or changes in management.

4.2.6.3.3 Indirect Impacts (Acres)

Placement of berms in existing wetlands would cause some conversion of non-riparian wetland habitats from emergent marsh or wet meadow to open water directly behind the berms. This conversion of habitat would be offset by lateral expansion of emergent marsh and wet meadow along the edges of the existing wetlands. Overall, there would be a net increase in wet meadow and emergent marsh (517 to 435 acres over baseline conditions, respectively) and a net gain in acres of all native wetland and riparian habitats.

4.2.6.3.4 Wetland and Riparian Weeds

The Pahcease Alternative would remove 801 acres of Russian olive and tamarisk and treat pepperweed while populations are still restricted in size. Ongoing weed control would be an integral part of the LDWP Comprehensive Conservation and Management Plan. There would be a net decrease of noxious weeds as a result of the

Pahcease Alternative, representing a beneficial impact of the project.

4.2.6.3.5 Changes in Wetland Functions and Values

There would be little difference in the key characteristics affecting wetland and riparian functions between the Pahcease Alternative and the Proposed Action; therefore, there would be no difference in the wetland and riparian functional rankings. As for the Proposed Action, the ability of wetlands to perform a variety of functions is increased over baseline conditions, with most of the wetlands rated as moderate to high for hydrologic support, water quality maintenance, flood flow attenuation, wildlife habitat, aquatic diversity, aesthetics and uniqueness/heritage value.

The value of the riparian shrub wetlands for energy dissipation and sediment stabilization would increase over baseline conditions under the Pahcease Alternative. The cottonwood forest habitats would continue to remain of generally low value for hydrologic and biogeochemical functions as they are isolated from the floodplain and the Pahcease Alternative would not change the Duchesne River hydrology. Wildlife habitat would see the greatest increase in function as a result of planting cottonwoods and associated shrubs, thereby providing an increase in structural diversity, seral stages and the wildlife food value of vegetation adjacent to the Duchesne River.

4.2.6.3.6 Summary of Impacts

The Pahcease Alternative would temporarily adversely impact 16.8 acres and permanently adversely impact 8.4 acres of wetlands through construction of project features. There would be no temporary adverse riparian

impacts. There would be an increase in all native wetland and riparian habitat types. The Pahcease Alternative would restore or create 2,125 acres and enhance the value of 930 acres of wetland and riparian habitats. Overall, the Pahcease Alternative would provide a large beneficial impact to wetland and riparian habitats by increasing the acres of all native habitat types, decreasing the extent of wetland and riparian weeds by 801 acres and improving the functions and values of the existing habitats.

Table 4-5. Wetland and Riparian Habitats in the Pahcease Alternative Project Area under Baseline Conditions.

| Habitat | Acres by Site | | | | Total Acres |
|--|---------------|-------------|-----------------|-----------------|--------------|
| | Flume | Uresk Drain | Riverdell North | Riverdell South | |
| Non-Riparian Wetlands | | | | | |
| Emergent marsh | 77 | 312 | 0 | 20 | 409 |
| Wet meadow | 77 | 256 | 0 | 55 | 388 |
| Mesic shrub | 5 | 0 | 0 | 15 | 20 |
| Total Non-Riparian Wetlands | | | | | 817 |
| Riparian Habitat ¹ | | | | | |
| Riparian shrub | 23 | 0 | 3 | 5 | 31 |
| Mature cottonwood forest | 0 | 0 | 102 | 52 | 154 |
| Degraded cottonwood forest | 86 | 27 | 250 | 116 | 479 |
| Total Riparian Habitat | | | | | 664 |
| SUBTOTAL NATIVE WETLAND/RIPARIAN HABITATS | | | | | 1,481 |
| Riparian/Wetland Weed | | | | | |
| Russian olive/tamarisk | 330 | 248 | 136 | 87 | 801 |
| TOTAL ALL WETLAND/RIPARIAN HABITATS | | | | | 2,282 |
| ¹ Includes vegetated habitat within the current or former Duchesne River floodplain, but not unvegetated aquatic, channel bed or other riverine habitats. | | | | | |

Table 4-6. Summary of Direct Construction Impacts to Existing Wetland and Riparian Habitat (Acres) under the Pahcease Alternative.

| Habitat | Acres by Site | | | | | | | | Total Acres | |
|------------------------------|---------------|-----------|-------------|-----------|-----------------|-----------|-----------------|-----------|-------------|-----------|
| | Flume | | Uresk Drain | | Riverdell North | | Riverdell South | | | |
| | Temporary | Permanent | Temporary | Permanent | Temporary | Permanent | Temporary | Permanent | Temporary | Permanent |
| Non-Riparian Wetlands | | | | | | | | | | |
| Emergent marsh | 1.6 | 0.5 | 6.8 | 2.1 | 0 | 0 | 1.2 | 0.6 | 9.6 | 3.2 |
| Wet meadow | 1.0 | 0.3 | 2.6 | 2.0 | 0 | 0 | 0.2 | 0.2 | 3.8 | 2.5 |
| Native shrub | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Riparian Habitat | | | | | | | | | | |
| Riparian shrub | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cottonwood forest | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Riparian/Wetland Weed | | | | | | | | | | |
| Russian olive/tamarisk | 0 | 0 | 1.9 | 2.1 | 0 | 0 | 1.5 | 0.6 | 3.4 | 2.7 |
| Totals | 2.6 | 0.8 | 11.3 | 6.2 | 0 | 0 | 2.9 | 1.4 | 16.8 | 8.4 |

Table 4-7. Wetland and Riparian Habitats (Acres) to be Created or Restored under the Pahcease Alternative.

| Habitat | Acres by Site | | | | Total Acres |
|--|---------------|-------------|-----------------|-----------------|--------------|
| | Flume | Uresk Drain | Riverdell North | Riverdell South | |
| Non-Riparian Wetlands | | | | | |
| Emergent marsh | 226 | 104 | 19 | 92 | 441 |
| Wet meadow | 241 | 205 | 40 | 96 | 582 |
| Mesic shrub | 0 | 110 | 5 | 40 | 155 |
| Total Non-Riparian Wetlands | | | | | 1,178 |
| Riparian Habitat | | | | | |
| Riparian shrub | 30 | 0 | 0 | 0 | 30 |
| Mature cottonwood forest | 237 | 87 | 430 | 163 | 917 |
| Degraded cottonwood forest | 0 | 0 | 0 | 0 | 0 |
| Total Riparian Habitat | | | | | 947 |
| SUBTOTAL NATIVE WETLAND/RIPARIAN HABITATS | | | | | 2,125 |
| Riparian/Wetland Weed | | | | | |
| Russian olive/tamarisk | 0 | 0 | 0 | 0 | 0 |
| TOTAL ALL WETLAND/RIPARIAN HABITATS | | | | | 2,125 |
| ¹ Includes vegetated habitat within the current or former Duchesne River floodplain, but not unvegetated aquatic, channel bed or other riverine habitats. | | | | | |

| Table 4-8. Existing Wetland and Riparian Habitats to be Enhanced by Active Measures or Management Changes (Acres) under the Pahcease Alternative.¹ | | | | | |
|--|----------------------|--------------------|------------------------|------------------------|--------------------|
| Habitat | Acres by Site | | | | Total Acres |
| | Flume | Uresk Drain | Riverdell North | Riverdell South | |
| Non-Riparian Wetlands | | | | | |
| Emergent marsh | 77 | 312 | 0 | 20 | 409 |
| Wet meadow | 62 | 222 | 0 | 41 | 325 |
| Mesic shrub | 5 | 0 | 0 | 6 | 11 |
| Total Non-Riparian Wetlands | | | | | 745 |
| Riparian Habitat ² | | | | | |
| Riparian shrub | 23 | 0 | 3 | 5 | 31 |
| Mature cottonwood forest | 0 | 0 | 102 | 52 | 154 |
| Degraded cottonwood forest | 0 | 0 | 0 | 0 | 0 |
| Total Riparian Habitat | | | | | 185 |
| SUBTOTAL NATIVE WETLAND/RIPARIAN HABITATS | | | | | 930 |
| Riparian/Wetland Weed | | | | | |
| Russian olive/tamarisk | 0 | 0 | 0 | 0 | 0 |
| TOTAL ALL WETLAND/RIPARIAN HABITATS | | | | | 930 |
| ¹ Numbers represent net changes after accounting for some habitat conversion, particularly of wet meadow to emergent marsh. ² Includes vegetated habitat within the current or former Duchesne River floodplain, but not unvegetated aquatic, channel bed or other riverine habitats. | | | | | |

4.2.6.4 Topanotes Alternative

4.2.6.4.1 Direct Adverse Construction Impacts (Acres)

Table 4-9 summarizes the acres of wetland and riparian habitats under the baseline conditions for the Topanotes Alternative. Direct construction impacts would result in temporary adverse disturbance to 20.7 acres of non-riparian wetlands and permanent

adverse disturbance to 8.5 acres (Table 4-10). The areas subject to temporary disturbance would be restored as described for the Proposed Action. The types of impacts would be the same as described for the Proposed Action. Impact acres for the Flume and Uresk Drain would be the same as described for the Pahcease Alternative. Impacts for Ted's Flat would be the same as described for the Proposed Action.

4.2.6.4.2 Direct Beneficial Construction Impacts (Acres)

Table 4-11 summarizes the acres of wetland and riparian habitats that would be created and restored under the Topanotes Alternative. There would be an increase in all native wetland and riparian habitat types through creation and restoration. The largest increase would be in herbaceous wetlands (emergent marsh and wet meadow combined [991 acres]). During restoration, 324 acres of degraded cottonwood forest would be converted to mature cottonwood forest through removal of riparian weeds and planting of young cottonwoods (1-3 years old). The initial construction would only establish a young stand of cottonwoods; several decades of growth would be necessary before a mature cottonwood forest is established.

The enhancement measures would not change the extent or type of habitat but would improve its wildlife habitat value. Most of the enhancement would occur on the Ted's Flat site. Ted's Flat contains 664 acres of existing cottonwood forest and 190 acres of riparian shrub habitat that would be enhanced by both supplemental planting on both sides of the Duchesne River, and by restoration of wetlands along the north oxbow system traversing the cottonwood forest. Other enhancements of the Ted's Flat site would include a substantial improvement in the water quality of the south oxbow system as a result of providing a high quality water source from the Myton Townsite Canal (see section 4.6 for a description of water quality changes). Table 4-12 provides a summary of the acres of wetland and riparian habitats enhanced by either active measures or changes in management on all sites.

4.2.6.4.3 Indirect Impacts (Acres)

Placement of berms in existing wetlands would cause some conversion of wetland habitats from emergent marsh or wet meadow to open water directly behind the berms. This conversion of habitat would be offset by lateral expansion of emergent marsh and wet meadow along the edges of the existing wetlands. Overall, there would be a net increase in wet meadow and emergent marsh (470 and 442 acres over baseline conditions, respectively) and a net gain in acres of all native wetland and riparian habitats.

4.2.6.4.4 Wetland and Riparian Weeds

The Topanotes Alternative would remove 578 acres of Russian olive and tamarisk and treat pepperweed while populations are still restricted in size. Ongoing weed control would be an integral part of the LDWP Comprehensive Conservation and Management Plan. There would be a net decrease of noxious weeds as a result of the Topanotes Alternative, representing a beneficial impact of the project.

4.2.6.4.5 Changes in Wetland Functions and Values

There would be little difference in the key characteristics affecting wetland and riparian functions between the Topanotes Alternative and the Proposed Action; therefore, there would be no difference in the wetland and riparian functional rankings. As for the Proposed Action, the ability of wetlands to perform a variety of functions is increased over baseline conditions, with most of the wetlands rated as moderate to high for hydrologic support, water quality maintenance, flood flow attenuation, wildlife

habitat, aquatic diversity, aesthetics and uniqueness/heritage value.

The value of the riparian shrub wetlands for energy dissipation and sediment stabilization would increase over baseline conditions under the Topanotes Alternative. The cottonwood forest habitats would continue to remain of generally low value for hydrologic and biogeochemical functions, as they are isolated from the floodplain and the Topanotes Alternative would not change the Duchesne River hydrology. Wildlife habitat would see the greatest increase in function as a result of planting cottonwoods and associated shrubs, thereby providing an increase in structural diversity, seral stages and the wildlife food value of vegetation adjacent to the Duchesne River.

4.2.6.4.6 Summary of Impacts

The Topanotes Alternative would temporarily adversely impact 20.7 acres and permanently adversely impact 8.5 acres of wetlands through construction of project features. The types of impacts would be similar to those described for the Proposed Action. There would be 2.6 acres of temporary adverse impacts to cottonwood forest but there would be no permanent adverse impacts to this habitat type. There would be an increase in all native wetland and riparian habitat types. The Topanotes Alternative would restore or create 1,461 acres and enhance the value of 1,714 acres of wetland and riparian habitats. Overall, the Topanotes Alternative would provide a large beneficial impact to wetland and riparian habitats by increasing the acres of all native habitat types, decreasing the extent of wetland and riparian weeds by 578 acres and improving the functions and values of the existing habitats.

Table 4-9. Wetland and Riparian Habitats in the Topanotes Alternative Project Area under Baseline Conditions.

| Habitat | Acres by Site | | | Total Acres |
|--|---------------|-------------|------------|--------------|
| | Flume | Uresk Drain | Ted's Flat | |
| Non-Riparian Wetlands | | | | |
| Emergent marsh | 77 | 312 | 94 | 483 |
| Wet meadow | 77 | 256 | 75 | 408 |
| Mesic shrub | 5 | 0 | 20 | 25 |
| Total Non-Riparian Wetlands | | | | 916 |
| Riparian Habitat | | | | |
| Riparian shrub | 23 | 0 | 190 | 213 |
| Mature cottonwood forest | 0 | 0 | 664 | 664 |
| Degraded cottonwood forest | 86 | 27 | 0 | 113 |
| Total Riparian Habitat | | | | 990 |
| SUBTOTAL NATIVE WETLAND/RIPARIAN HABITATS | | | | 1,906 |
| Riparian/Wetland Weed | | | | |
| Russian olive/tamarisk | 330 | 248 | 0 | 578 |
| TOTAL ALL WETLAND/RIPARIAN HABITATS | | | | 2,484 |
| ¹ Includes vegetated habitat within the current or former Duchesne River floodplain, but not unvegetated aquatic, channel bed or other riverine habitats. | | | | |

Table 4-10. Summary of Direct Construction Impacts to Existing Wetland and Riparian Habitats (Acres) under the Topanotes Alternative.

| Habitat | Acres by Site | | | | | | Total Acres | |
|------------------------------|---------------|-----------|-------------|-----------|------------|-----------|-------------|-----------|
| | Flume | | Uresk Drain | | Ted's Flat | | | |
| | Temporary | Permanent | Temporary | Permanent | Temporary | Permanent | Temporary | Permanent |
| Non-Riparian Wetlands | | | | | | | | |
| Emergent marsh | 1.6 | 0.5 | 6.8 | 2.1 | 3.6 | 1.2 | 12.0 | 3.8 |
| Wet meadow | 1.0 | 0.3 | 2.6 | 2.0 | 0.6 | 0.2 | 4.2 | 2.5 |
| Native shrub | 0 | 0 | 0 | 0 | 0 | <0.1 | 0 | <0.1 |
| Riparian Habitat | | | | | | | | |
| Riparian shrub | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Cottonwood forest | 0 | 0 | 0 | 0 | 2.6 | 0 | 2.6 | 0 |
| Riparian/Wetland Weed | | | | | | | | |
| Russian olive/ tamarisk | 0 | 0 | 1.9 | 2.1 | 0 | 0 | 1.9 | 2.1 |
| Totals | 2.6 | 0.8 | 11.3 | 6.2 | 6.8 | 1.5 | 20.7 | 8.5 |

Table 4-11. Wetland and Riparian Habitats (Acres) to be Created or Restored under the Topanotes Alternative.

| Habitat | Acres by Site | | | Total Acres |
|--|---------------|-------------|------------|--------------|
| | Flume | Uresk Drain | Ted's Flat | |
| Non-Riparian Wetlands | | | | |
| Emergent marsh | 226 | 104 | 112 | 442 |
| Wet meadow | 241 | 205 | 103 | 549 |
| Mesic shrub | 0 | 110 | 0 | 110 |
| Total Non-Riparian Wetlands | | | | 1,101 |
| Riparian Habitat | | | | |
| Riparian shrub | 30 | 0 | 6 | 36 |
| Mature cottonwood forest | 237 | 87 | 0 | 324 |
| Degraded cottonwood forest | 0 | 0 | 0 | 0 |
| Total Riparian Habitat | | | | 360 |
| SUBTOTAL NATIVE WETLAND/RIPARIAN HABITATS | | | | 1,461 |
| Riparian/Wetland Weed | | | | |
| Russian olive/tamarisk | 0 | 0 | 0 | 0 |
| TOTAL ALL WETLAND/RIPARIAN HABITATS | | | | 1,461 |
| ¹ Includes vegetated habitat within the current or former Duchesne River floodplain, but not unvegetated aquatic, channel bed or other riverine habitats. | | | | |

| Table 4-12. Existing Wetland and Riparian Habitats to be Enhanced by Active Measures or Management Changes (Acres) under the Topanotes Alternative.¹ | | | | |
|--|----------------------|--------------------|-------------------|--------------------|
| Habitat | Acres by Site | | | Total Acres |
| | Flume | Uresk Drain | Ted's Flat | |
| Non-Riparian Wetlands | | | | |
| Emergent marsh | 77 | 312 | 94 | 483 |
| Wet meadow | 62 | 222 | 45 | 329 |
| Mesic shrub | 5 | 0 | 20 | 25 |
| Total Non-Riparian Wetlands | | | | 837 |
| Riparian Habitat ² | | | | |
| Riparian shrub | 23 | 0 | 190 | 213 |
| Mature cottonwood forest | 0 | 0 | 664 | 664 |
| Degraded cottonwood forest | 0 | 0 | 0 | 0 |
| Total Riparian Habitat | | | | 877 |
| SUBTOTAL NATIVE WETLAND/RIPARIAN HABITATS | | | | 1,714 |
| Riparian/Wetland Weed | | | | |
| Russian olive/tamarisk | 0 | 0 | 0 | 0 |
| TOTAL ALL WETLAND/RIPARIAN HABITATS | | | | 1,714 |
| ¹ Numbers represent net changes after accounting for some habitat conversion, particularly of wet meadow to emergent marsh. | | | | |
| ² Includes vegetated habitat within the current or former Duchesne River floodplain, but not unvegetated aquatic, channel bed or other riverine habitats. | | | | |

4.2.6.5 No Action Alternative

There would be no direct adverse construction impacts to wetland or riparian habitats under the No Action Alternative. Likewise, there would be no beneficial increase in the extent of wetland and riparian habitats. Establishment of native riparian species would continue to be limited by depletion of flows from the Duchesne River, and Russian olive and tamarisk would likely continue to increase in extent in the riparian corridor.

Over time, there would be an increasing loss of riparian habitat as existing cottonwoods die without replacement. Existing wetlands along oxbows would continue to be fragmented and dominated by single species monocultures. Pepperweed, which has established in the Duchesne River corridor since 1997, would likely continue to increase in extent. Both wetlands and adjacent uplands would continue to be grazed and cover for wetland-dependent wildlife species would remain low. Up to 60 percent of existing wetlands would continue

to be supported by irrigation return flows and be subject to loss with changes in irrigation practices. The 290 acres of wetlands that have dried since 1997 because of changes in irrigation would likely remain as uplands.

4.3 WILDLIFE RESOURCES

4.3.1 Introduction

The wildlife resources analysis addresses potential impacts on wildlife species and their habitat from construction and operation of the Proposed Action and alternatives. Most of the impacts would be indirect impacts occurring as a result of habitat changes and not direct mortality of individuals. Construction impacts would be temporary and could cause temporary displacement of some wildlife species. However, since construction of the project would occur one site at a time, wildlife would have adjacent lands on which to find refuge.

The information provided in this section regarding the current status of wildlife species was based on ongoing wildlife surveys initiated by the Tribe and the FWS in 1998, surveys conducted by the CUWCD (1996a) and data summaries provided in WWS 1998a and Ammon 1997. Results from the 1998 and 1999 wildlife surveys are summarized in Koehler (2000). Results from wildlife surveys conducted between 2000 and 2006 are on file at Tribal offices in Fort Duchesne and the FWS Utah Management Assistance Office in Vernal, Utah. Appendix section D.4 provides a summary of the survey methods and timing. The data represent the results of field surveys conducted between 1998 to 2006.

Section 4.2 contains a description of, and pre- and post-construction acre tabulations of, wetland and riparian habitat types for each alternative. Pre- and post-construction acre tabulations for upland habitat types are listed in this Wildlife Resources section. Potential impacts on listed and candidate species are described in section 4.4, Threatened, Endangered and Candidate Species.

4.3.2 Issues Eliminated from Further Analysis

No wildlife issues raised during the public scoping or agency consultation process were eliminated. All were analyzed.

4.3.3 Issues Addressed in the Impact Analysis

The following wildlife resource topics are addressed in the impact analysis:

- Will changes in wetland and riparian habitats and adjacent uplands affect major wildlife groups such as wetland associated species (e.g., shorebirds, waterfowl and furbearers), riparian associated species (e.g., migratory songbirds, some birds of prey [raptors] and big game) and open upland associated species (e.g., upland birds, small mammals and some birds of prey)?
- Will changes in habitats result in permanent removal or expansion of any important habitat (e.g., deer fawning areas, raptor or waterfowl nesting areas, winter range and migratory routes) that could either adversely affect the viability of local populations or increase local populations?

4.3.4 Area of Influence

The project area of influence for wildlife resources includes the areas depicted on Figure 1-2 in portions of Duchesne and Uintah counties in northeast Utah, including the Duchesne River corridor from Bridgeland to the confluence with the Green River at Ouray.

4.3.5 Affected Environment

4.3.5.1 Introduction

As described in section 4.2.6.2, the LDWP would result in a net increase in all native wetland and riparian habitats. Some conversion of habitat types would occur, as well as improvements to the quality of existing habitats. Some upland areas would be converted from annual weed/fallow, grazed grassland and desert shrub to wetlands and riparian habitat. To assess the impacts of the proposed habitat changes (both beneficial and adverse), nine major groups of wildlife were identified as indicators for how the project would potentially affect wetland associated, riparian associated and upland associated species. These species groups include a mix of game and non-game species and are listed below according to their primary habitat.

- Primarily wetland associated: shorebirds, waterfowl and furbearers,
- Primarily riparian associated: migratory songbirds, some birds of prey (raptors) and big game, and
- Primarily upland associated (desert shrub, grassland and cropland): upland birds, small mammals and some birds of prey.

Even though categorized into one primary habitat group, most species require a diversity of habitats to successfully complete feeding, resting, nesting and migrating. Therefore, other important supporting habitats used by these species are described throughout this Affected Environment section. Impacts to both primary and other supporting habitats are described in section 4.3.6.

4.3.5.2 Aquatic Species

Aquatic habitat uses are designated by the State of Utah for all surface water bodies. Associated with the designation are a set of water quality criteria that must be met to maintain the existing aquatic community. The Duchesne River upstream of Myton is rated as 3A, or suitable for cold water fish species such as brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*). Downstream of Myton, the Duchesne River is rated as 3B, or suitable for warm water fish species. Fish species occurring in this reach include channel catfish (*Ictalurus punctatus*), smallmouth bass (*Micropterus dolomieu*), mountain whitefish (*Prosopium williamsonii*), carp (*Cyprinus carpio*), bluehead sucker (*Catostomus discobolus*) and Utah chub (*Gila atraria*) (BOR 2003). Because aquatic use criteria are based on water quality parameters, section 4.6 provides an analysis of how the Proposed Action and alternatives would affect the aquatic habitat criteria; these results are not repeated in this section.

The endangered Colorado pikeminnow (*Ptychocheilus lucius*) and razorback sucker (*Xyrauchen texanus*) also occur in the Duchesne River, downstream of Myton. Impacts to these and other threatened and endangered fish are addressed in section 4.4, Threatened, Endangered and Candidate Species.

Though there have been no studies of reptile or amphibian use of the project area, the following species have been observed in the project area: northern leopard frog (*Rana pipiens*), Great Basin garter snake (*Thamophis ordinoides vagrans*) and the common bull snake (*Pituophis sayi sayi*).

4.3.5.3 Wetland Associated Species

4.3.5.3.1 Shorebirds

Shorebirds use a variety of habitats including emergent wetlands, wet meadows, shores of rivers and lakes, and mudflats where they feed on small fish, amphibians and insects. Shorebirds include wading birds such as the great blue heron (*Ardea herodias*), egrets (*Egretta* spp.), plovers (*Charadrius* spp.) and sandpipers (*Calidris* spp.). Habitat for shorebirds within the project area consists mainly of the shoreline of the Duchesne River, emergent marsh areas of the Flume and Ted's Flat and wet meadows found in the Uresk Drain. The Flume contains an abandoned great blue heron rookery with an active rookery in close proximity. The adults from the active rookery use wetland habitat within the Flume for feeding. Greater yellowlegs (*Tringa flavipes*) occur on Ted's Flat and Wilson's phalarope (*Phalaropus tricolor*) nest on the site. Shorebirds in the Uresk Drain include common snipe (*Gallinago gallinago*), long-billed curlew (*Numenius americanus*), sandhill crane (*Grus canadensis*) and Virginia rail (*Rallus limicola*). Common snipe and long-billed curlew nest on the site (Koehler 2000).

4.3.5.3.2 Waterfowl

Waterfowl in the project area include Canada geese (*Branta canadensis*), diving ducks (e.g.,

redhead [*Aythya americana*]) and dabblers (primarily *Anas* spp.). Many of these species nest on the ground within tall grasses and eat seeds, aquatic vegetation, grain, aquatic invertebrates and insects. Although some waterfowl are year-round residents, most use open water in the project area strictly during fall and spring migration as stop-over habitat for resting, foraging and to allow for scanning for potential predators. However, the Uresk Drain receives warm water (50-55 degrees Fahrenheit) from nearby springs, allowing some ducks to overwinter in the area. Some dabbling ducks, such as mallards, breed in the area.

Migrating waterfowl surveys were conducted once during late fall (1998) and four times during the spring (1999, 2004, 2005 and 2006) between 1998 to 2006. Waterfowl were counted in only a few locations, as open water habitat is limited in the project area. These census points were located as follows:

Flume: a small ponded area near the middle of the Flume site (Mid) and a larger ponded area at the downstream end of the Flume oxbow system at the Myton Townsite Canal (MTC),

Uresk Drain: the Goose Ponds area,

Duchesne River: between the Riverdell North and the Riverdell South sites,

Ted's Flat: the South oxbows (SO) and adjacent portion of the Duchesne River and the Swamp wetland (SW).

There was limited to no waterfowl use observed on the majority of the Flume site, or on either the Riverdell North or South sites outside of the Duchesne River. Because of the limited existing habitat within the LDWP

project area, waterfowl were also counted at two nearby reference wetlands, one between Myton and the Riverdell North property and one at an irrigation pond near the Wissiups Ditch intake. This was to identify the waterfowl species and abundance that might occur with increased waterfowl habitat in the project area.

Overall, a total of 1,833 waterfowl and 17 waterfowl species were counted in the project area (Table 4-13). Waterfowl were most abundant at the Ted's Flat Swamp wetland where 968 individuals and 15 species of waterfowl were counted. Relatively high abundance and species numbers were also observed at the waterfowl reference wetlands (590 individuals and 12 species [2 surveys only] at the Wissiups reference wetland and 483 individuals and 12 species at the Myton reference wetland). These sites share three characteristics: they are ponded wetlands, located in close proximity to the Duchesne River that contain a local abundance of preferred foods such as stems and leafy parts of aquatic plants and adjacent agricultural fields.

Waterfowl were fairly abundant at the Flume wetland near the Myton Townsite Canal and the Duchesne River between the Riverdell North and South sites but low at the other sampling points.

Mallard (*Anas platyrhynchos*), Gadwall (*A. strepera*) green winged teal (*A. crecca*), northern pintail (*A. acuata*) and Canada goose were the most abundant species in the project area. These three species are also among the most common waterfowl species observed at the nearby Ouray National Wildlife Refuge (ONWR) and Pariette Wetlands (Stone 1998, Faircloth 1998; data on file at the Tribal wetlands office). Redhead, coots and other species of teals are also quite abundant at the nearby wildlife management areas, contrasting with the relatively low numbers of these species observed within the LDWP. Redhead and widgeon were the most abundant waterfowl observed at the LDWP waterfowl reference sites.

Dabblers (puddle ducks) made up 85 percent of the total number of waterfowl observed in the LDWP project area and 53 percent of the species observed. Geese made up 10 percent of the total number of waterfowl and 12 percent of the species. Divers made up 5 percent of the total number of waterfowl and 35 percent of the species. There were both higher abundances of diving ducks and lower abundances of geese at the LDWP reference wetlands and the ONWR.

Table 4-13. Total Number of Waterfowl Counted at Existing LDWP Open Water/Marsh Habitat During Waterfowl Migration Surveys Conducted Between 1998 - 2006.¹

| Waterfowl Species and Type ² | Site | | | | | | Total |
|--|------------|------------|----------------|-------------------------|-------------|------------|-------------|
| | Flume | | Duchesne River | Uresk Drain Goose Ponds | Ted's Flat | | |
| | Mid | MTC | | | SO | SW | |
| American Coot (<i>Fulica americana</i>) | 5 | 1 | 5 | 0 | 0 | 38 | 49 |
| Bufflehead (<i>Bucephala albeola</i>) DV | 0 | 0 | 0 | 0 | 0 | 13 | 13 |
| Bluewing Teal (<i>Anas discors</i>) | 0 | 0 | 0 | 0 | 0 | 5 | 5 |
| Canada goose (<i>Branta canadensis</i>) -- | 3 | 12 | 18 | 11 | 4 | 127 | 175 |
| Cinnamon teal (<i>Anas cyanoptera</i>) DD | 25 | 22 | 2 | 0 | 8 | 29 | 86 |
| Common goldeneye (<i>Bucephala clangula</i>) DV | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| Common merganser (<i>Mergus merganser</i>) DV | 0 | 3 | 0 | 0 | 0 | 10 | 13 |
| Gadwall (<i>Anas strepera</i>) DD | 3 | 4 | 0 | 0 | 14 | 118 | 139 |
| Greenwing teal (<i>Anas crecca</i>) DD | 50 | 62 | 2 | 0 | 7 | 59 | 180 |
| Hooded merganser (<i>Lophodytes cucullatus</i>) DV | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| Mallard (<i>Anas platyrhynchos</i>) DD | 6 | 41 | 202 | 13 | 37 | 292 | 591 |
| Northern pintail (<i>Anas acuata</i>) DD | 0 | 12 | 22 | 0 | 3 | 117 | 151 |
| Northern Shoveler (<i>Anas clypeata</i>) | 0 | 4 | 0 | 0 | 0 | 43 | 47 |
| Redhead (<i>Aythya americana</i>) DV | 4 | 4 | 8 | 0 | 0 | 1 | 17 |
| Ring-necked duck (<i>Aythya collaris</i>) DV | 0 | 9 | 7 | 0 | 0 | 32 | 48 |
| Snow Goose (<i>Chen caerulescens</i>) - | 0 | 0 | 0 | 0 | 10 | 0 | 10 |
| Widgeon (<i>Anas americana</i>) DD | 0 | 0 | 0 | 0 | 6 | 83 | 89 |
| Total Sample Point | 96 | 168 | 271 | 24 | 89 | 968 | 1833 |
| Total Site | 264 | | 271 | 24 | 1057 | | 1833 |

¹ Surveys conducted fall 1998, and spring 1999, 2004, 2005 and 2006

² DV=Diving Duck, DD=Dabbling Duck

4.3.5.3.3 Furbearers

Furbearers are a diverse group of mammals that include carnivores and rodents. Many are adaptable species ranging over large geographic areas, but most of the furbearers

that occur on the project sites require wetland habitats for their life cycle. Muskrat (*Ondatra zibethica*) and beaver (*Castor canadensis*) are the two most prevalent furbearing species in the project area, though Koehler (2000)

observed a long-tailed weasel (*Mustela frenata*) on the Riverdell North/South site and a red fox (*Vulpes fulva*) on the Ted's Flat site. On subsequent surveys, two river otter (*Lutra canadensis*) were observed on the Flume site and a mink (*Mustela vison*) was observed near the Riverdell North site (Zeigenfuss et al. 2007).

Muskrat feed on aquatic vegetation, frogs and, on occasion, fish. Muskrat also tend to maintain open water areas within emergent marshes by uprooting and eating the tuber of cattails and bulrushes. Beaver shift from a chiefly woody diet in the winter to an herbaceous diet as new growth appears in the spring. Beaver will utilize grasses, herbs, leaves of woody plants, fruits and aquatic plants during the summer, in addition to their main staple of woody material from willows, aspens and cottonwoods. Beaver will travel from 300 to 2,500 feet from their lodges to forage for food. River otter are social animals often traveling in groups of two or more. They feed on fish, frogs, crayfish and other aquatic invertebrates. Dens are in banks with entrances below the water surface. Mink are opportunist and will feed on small mammals, birds, eggs, frogs, fish and crayfish and often den along stream or lake banks.

4.3.5.4 Riparian Associated Species

4.3.5.4.1 Migratory Songbirds

Songbirds, also known as passerine or perching birds, belong to the order Passeriforme. This order includes neotropical migratory songbirds, which are birds that migrate to North America during the spring and back to the tropics or the southern

hemisphere in the fall. They tend to be insectivorous and include members of the wood warbler family (*Emberizidae*), vireos (*Vireonidae*) and flycatchers (*Tyrannidae*). Migratory songbirds use a variety of habitats but forested areas and areas with high shrub cover tend to have the highest number of species and density. Other passerines include blackbirds, woodpeckers, sparrows and finches.

Sixty bird species, including 50 songbird (passerine) species, were observed in the LDWP project area during spring migrating bird surveys (Table 4-14). Surveys were conducted five times between 1999 and 2006 (spring 1999, 2000, 2001, 2004, 2005, 2006; Koehler 2000, Zeigenfuss et al. 2007). The total number of songbird species observed (30 to 34) was similar among all sites, but songbird abundance was greater at Ted's Flat (60.5 songbirds per sampling point) than at other sites (average of 46 to 51 songbirds observed per sampling point). In general, Koehler (2000) observed more songbird species, along with more riparian obligate species (90 percent of nests or occurrences are in riparian habitat as defined in BLM [1999]) and more riparian dependant species (60 percent of nests or occurrences are in riparian habitat) at sampling points that contained cottonwoods or native shrubs than at other sampling points. Koehler (2000) attributed the higher number of songbird species observed on the Ted's Flat site to the existence of larger stands of mature cottonwood trees with a native shrub understory than observed elsewhere in the project area. Subsequent songbird surveys conducted between 2000-2006 also showed similar results.

Table 4-14. Songbird and Other Bird Species Observed During Late Spring. Bird Surveys Conducted Between 1999 - 2006.¹

| Bird Species | Site | | | |
|---|-------|------------------------------|-------------|------------|
| | Flume | Riverdell North ² | Uresk Drain | Ted's Flat |
| Songbird Species | | | | |
| American goldfinch (<i>Carduelis tristis</i>) | | X | X | X |
| American robin (<i>Turdus migratorius</i>) | X | X | X | X |
| Barn swallow (<i>Hirundo rustica</i>) | | X | | X |
| Belted kingfisher (<i>Ceryle alcyon</i>) | | | | X |
| Bewicks wren (<i>Thryomanes bewickii</i>) | | X | | X |
| Black-billed magpie (<i>Pica pica</i>) | X | X | X | X |
| Black-capped chickadee (<i>Poecile atricapillus</i>) | | X | X | X |
| Black-throated gray warbler (<i>Dendroica nigrescens</i>) | X | | X | |
| Black-headed grosbeak (<i>Pheucticus melanocephalus</i>) | X | X | | X |
| Blue-gray gnatcatcher (<i>Polioptila caerulea</i>) | | X | X | X |
| Brewer's blackbird (<i>Euphagus cyanocephalus</i>) | X | X | X | |
| Brewer's sparrow (<i>Spizella breweri</i>) | | X | X | |
| Brown-headed cowbird (<i>Molothrus ater</i>) | X | | X | X |
| Bullock's oriole (<i>Icterus bullockii</i>) | X | X | X | |
| Cedar waxwing (<i>Bombycilla cedrorum</i>) | | X | | X |
| Cliff swallow (<i>Petrochelidon pyrrhonota</i>) | | | | X |
| Common grackle (<i>Quiscalus quiscula</i>) | X | | | |
| Common nighthawk (<i>Chordeiles minor</i>) | X | | | |
| Common yellowthroat (<i>Geothlypis trichas</i>) | X | | X | X |
| Dark-eyed junco (<i>Junco hyemalis</i>) | | X | | X |
| Eastern kingbird (<i>Tyrannus tyrannus</i>) | X | X | X | X |
| European starling (<i>Sturnus vulgaris</i>) | X | | | |
| Gray catbird (<i>Dumetella carolinensis</i>) | X | | X | X |
| Great Basin willow flycatcher (<i>Empidonax traillii adestus</i>) | | X | | X |
| Green-tailed towhee (<i>Pipilo chlorurus</i>) | X | | X | X |
| House wren (<i>Troglodytes aedon</i>) | X | X | | X |
| Killdeer (<i>Charadrius vociferus</i>) | | X | X | X |
| Lark sparrow (<i>Chondestes grammacus</i>) | X | X | X | |
| Lazuli bunting (<i>Passerina amoena</i>) | | X | | |

| Bird Species | Site | | | |
|--|-------|------------------------------|-------------|------------|
| | Flume | Riverdell North ² | Uresk Drain | Ted's Flat |
| Marsh wren (<i>Cistothorus palustris</i>) | X | X | X | X |
| Mourning dove (<i>Zenaida macroura</i>) | X | X | X | X |
| Northern mockingbird (<i>Mimus polyglottos</i>) | | | X | |
| Red-shafted flicker (<i>Colaptes auratus</i>) | X | X | X | X |
| Red-winged blackbird (<i>Agelaius phoeniceus</i>) | X | X | X | X |
| Rock wren (<i>Salpinctes obsoletus</i>) | X | | | |
| Savannah sparrow (<i>Passerculus sandwichensis</i>) | X | | X | |
| Song sparrow (<i>Melospiza melodia</i>) | X | X | X | X |
| Spotted sandpiper (<i>Actitis macularia</i>) | | X | | |
| Spotted towhee (<i>Pipilo maculatus</i>) | X | X | | X |
| Tree swallow (<i>Tachycineta bicolor</i>) | | X | | |
| Vesper sparrow (<i>Pooecetes gramineus</i>) | X | X | X | |
| Western kingbird (<i>Tyrannus verticalis</i>) | X | X | X | |
| Western meadowlark (<i>Sturnella neglecta</i>) | X | X | X | X |
| Western wood peewee (<i>Contopus sordidulus</i>) | | X | X | X |
| Western tanager (<i>Piranga lucoviciana</i>) | | X | | |
| White-crowned sparrow (<i>Zonotrichia leucophrys</i>) | X | X | X | |
| Wilson's warbler (<i>Wilsonia pusilla</i>) | | | | X |
| Yellow-headed blackbird (<i>Xanthocephalus xanthocephalus</i>) | X | | X | X |
| Yellow warbler (<i>Dendroica petechia</i>) | X | X | X | X |
| Non-Songbird Species | | | | |
| California quail (<i>Callipepla californica</i>) | X | X | X | X |
| Common nighthawk (<i>Chordeiles minor</i>) | X | | | |
| Common snipe (<i>Gallinago gallinago</i>) | | | X | X |
| Osprey (<i>Pandion haliaetus</i>) | X | | | |
| Pied-billed grebe (<i>Podilymbus podiceps</i>) | | | | X |
| Ring-necked pheasant (<i>Phasianus colchicus</i>) | X | X | X | X |
| Spotted sandpiper (<i>Actitis macularia</i>) | | X | | |
| Sandhill crane (<i>Grus canadensis</i>) | | X | | X |
| Turkey (<i>Meleagris gallopavo</i>) | X | | | |
| Wilson's phalarope (<i>Phalaropus tricolor</i>) | | | | X |
| ¹ Surveys conducted spring 1999, 2000, 2001, 2005 and 2006 ² No surveys were conducted on the Riverdell South property | | | | |

A few species are notable for their habitat needs and their frequency of occurrence within the project area. The brown-headed cowbird is a generalist parasite which occurs on all sites except Riverdell North. It lays its eggs in the nests of a wide range of other species, displacing the native eggs with its own. Brown-headed cowbirds pose a threat to the continued survival of bird species, such as various warblers and western meadowlarks. The cowbird range has expanded with the increase of pastures and agricultural lands, such as the grazed areas found on the project site.

The yellow warbler is often used as an indicator species for riparian health by the FWS and was found on all four potential sites. Other riparian obligate species that occur in the project area that indicate good riparian habitat condition include the common yellowthroat (*Geothypis trichas*), which nest in reeds and marshy areas on most of the sites, and Wilson's warbler (*Wilsonia pusilla*), which nests in trees (riparian canopy) and occurs only on the Ted's Flat site.

4.3.5.4.2 Raptors

Nine riparian-associated raptor species were counted during the 1999 to 2006 winter surveys (Koehler 2000, Zeigenfuss et al. 2007; Table 4-15). Surveys were conducted six times during this time period (winter 1999, 2001, 2004, 2005, 2006 and 2007). Bald eagle (*Haliaeetus leucocephalus*) was the most common raptor species. Other frequently observed species included red-tailed hawks (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*) and rough-legged hawk (*Buteo lagopus*). Osprey (*Pandion haliaetus*) were also observed during the spring songbird surveys

(see Table 4-14). Habitat needs of these raptors vary and each of the four sites included in the overall LDWP project area offer a slightly different suite of habitat characteristics to support raptors. Most riparian associated raptors within the project area prefer to nest in trees (except for northern harrier) and feed on rodents, small mammals and insects.

Red-tailed hawks and golden eagles generally forage on rodents in upland habitats and usually nest in or near mature riparian trees. Two red-tailed hawk nests and one golden eagle nest have been observed within the Riverdell North property. Rough-legged hawks will nest in tall trees, if available. They feed on small vertebrates, rodents being their main staple. American kestrels are generally cavity nesters and prefer insects as their main staple. Northern harriers generally nest close to the ground near wetland areas and eat small mammals (mainly rodents). The northern harrier will hunt in marshes but also in agricultural fields and sometimes in sagebrush and shadscale shrublands. The great horned owl nests on ledges, in niches on cliffsides and canyon walls, and in cottonwood trees; it preys upon small mammals.

One measure of raptor density is the average number of raptors observed per mile of survey distance. The Uresk Drain supports 0.3 raptors per mile. Ted's Flat supports 0.6 raptors per mile and the Flume supports 0.5 raptors per mile. The combined Riverdell North and South sites support 0.7 raptors per mile, with the raptors almost entirely associated with the Riverdell North property. The higher density of raptors on Riverdell North likely reflects the availability of cottonwood trees for perching in close proximity to a high small mammal prey base.

Table 4-15. Total Number of Riparian-Associated Raptors Counted at Mitigation Sites During Winter Bird Surveys Conducted Between 1999 - 2006.¹

| Raptor Species | Site | | | | Total |
|--|------------|----------------------------|-------------|------------|------------|
| | Flume | Combined Riverdell N and S | Uresk Drain | Ted's Flat | |
| American kestrel (<i>Falco sparverius</i>) | 5 | 1 | 3 | 3 | 12 |
| Bald eagle (<i>Haliaeetus leucocephalus</i>) | 6 | 16 | 0 | 21 | 43 |
| Golden eagle (<i>Aquila chrysaetos</i>) | 5 | 7 | 0 | 4 | 16 |
| Great horned owl (<i>Bubo virginianus</i>) | 1 | 0 | 2 | 0 | 3 |
| Northern harrier (<i>Circus cyaneus</i>) | 2 | 2 | 1 | 9 | 14 |
| Red-tailed hawk (<i>Buteo jamaicensis</i>) | 10 | 6 | 3 | 7 | 26 |
| Rough-legged hawk (<i>Buteo lagopus</i>) | 8 | 1 | 2 | 1 | 12 |
| Sharp-shinned hawk (<i>Accipiter striatus</i>) | 1 | 0 | 0 | 0 | 1 |
| Swainsons hawk (<i>Buteo swainsoni</i>) | 2 | 0 | 0 | 0 | 2 |
| Total | 40 | 33 | 11 | 45 | 129 |
| Average Raptor Density/Mile | 0.5 | 0.7 | 0.3 | 0.6 | |

¹ Surveys conducted winter 1999, 2001, 2004, 2005, 2006 and 2007

4.3.5.4.3 Big Game Species

Big game species include mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*) and moose (*Alces alces*). Forest and shrub riparian communities provide valuable escape cover for these species in agricultural areas where other cover is lacking, and some browse and thermal cover for mule deer and elk in the winter. The dense cover in larger forest and shrub riparian areas is used for fawning by mule deer. Riparian areas with shrub understories provide excellent thermal cover during winter for big game species.

Big game distribution in the vicinity of the project area was determined through ground and aerial surveys conducted between 1992

and 2000 and habitat mapping by the DWR. The entire project area has been mapped as year-round habitat for deer (BIA 2000a). The only big game species observed during the LDWP wildlife surveys was mule deer (Koehler 2000, Zeigenfuss et al. 2007). Elk and moose were observed during an aerial wildlife survey in 1997 that concentrated on areas just east of the project area (Corts 2002). Moose may visit the project area, but likely only in severe winters to search for readily available forage.

Pronghorn antelope use an area just south of the project area throughout the year (BIA 2000a). Although Koehler (2000) did not directly observe any mountain lions, he did observe evidence of their presence (e.g., tracks and scat) during his surveys.

4.3.5.5 Upland Associated Species

4.3.5.5.1 Upland Birds and Small Mammals

Upland bird species include game species such as turkey, pheasants, grouse and quail, as well as meadowlarks, horned larks and sparrows. Upland birds and small mammals often use edge habitats, areas where one habitat type meets another, usually where a wooded area meets an open area such as a field or marsh. Shrub habitat also has high value for these species. Three common small game species occur within all mitigation sites: cottontail rabbits (*Sylvilagus nuttalli*), ring-necked pheasants (*Phasianus colchicus*) and mourning dove (*Zenaida macroura*). Additionally, California quail (*Callipepla californica*) were observed at the Flume, and a large colony of white tail prairie dogs

(*Cynomys gunnisoni*), a badger skull (*Taxidea taxus*) and a coyote (*Canis latrans*) were observed on the Riverdell North property.

4.3.5.5.2 Raptors

Upland associated raptors counted within the project area during winter surveys include the ferruginous hawk (*Buteo regalis*) and prairie falcon (*Falco mexicans*). Both these species need open upland areas in which to hunt for prey such as rodents and rabbits. The ferruginous hawk prefers to nest in tall trees, but will nest in shrubs and on the ground, and populations are often tightly associated with rising and falling prey populations. The prairie falcon generally nests in high cliff ledges facing open lands and prefers horned larks for food, but will eat small mammals and other birds.

Table 4-16. Total Number of Upland Associated Raptors Counted at Mitigation Sites During Winter Bird Surveys Conducted Between 1999 - 2006.¹

| Raptor Species | Site | | | | Total |
|---|----------|----------------------------|-------------|------------|----------|
| | Flume | Combined Riverdell N and S | Uresk Drain | Ted's Flat | |
| Ferruginous hawk (<i>Buteo regalis</i>) | 0 | 0 | 1 | 1 | 2 |
| Prairie falcon (<i>Falco mexicans</i>) | 0 | 0 | 3 | 1 | 4 |
| Total | 0 | 0 | 4 | 2 | 6 |

¹ Surveys conducted winter 1999, 2001, 2004, 2005, and 2006

4.3.6 Impact Analysis

4.3.6.1 Significance Criteria

Impacts on wildlife resources would be considered significant if:

- The project resulted in permanent expansion or removal of habitat or habitat quality for wetland or riparian-dependent species, or removal or expansion of native upland habitat important for successful life cycles of

these species. Loss or gain of wetland and riparian habitats is included as a significance criteria for wildlife resources because of the extremely high value of these habitat types to wildlife; and,

- The project would result in permanent removal, expansion or change in quality of any important wildlife habitat (e.g., big game winter range or migratory bird resting areas) that could either adversely affect the viability of local populations or increase local populations.

The wildlife significance criteria are based on the project goals of increasing habitat for wetland and riparian-dependent wildlife species, increasing habitat diversity and restoring historical riverine features. Wildlife species use riparian woodlands and shrublands for their high palatability of forage, high productivity, shade, thermal cover during winter and proximity to other habitat needs. Riparian areas are also frequently used as migration corridors because they provide essential food, cover and water for moving between summer and winter ranges.

The significance criteria are also based on baseline data that indicate that certain key habitat areas are located within the project vicinity. Finally, the significance criteria reflect Executive Order 13186, which requires all NEPA assessments to evaluate potential impacts to migratory birds with a particular emphasis on wetland habitat used by migratory birds. Executive Order 13186 was issued to address a general decrease in migratory bird habitat over the last 30 years, even for relatively widespread and abundant species.

4.3.6.2 Proposed Action

4.3.6.2.1 Wetland Associated Species

4.3.6.2.1.1 Shorebirds. Shorebird habitat along the shoreline of the Duchesne River is not expected to change under the Proposed Action as Duchesne River flows would not be measurably changed. Additional shoreline habitat would be created along the rewatered oxbows, with the largest change through creation and restoration of emergent marshes.

The Proposed Action would improve great blue heron nesting habitat as the addition of cottonwood forests would provide increased nesting possibilities. Additionally, enhanced habitat for leopard frogs would provide for a greater food source for both great blue herons and sandhill cranes. Improvement of shorebird habitat would be most notable on the Uresk Drain as shallow water feeding areas would be created at this site. The seeding of wetland edges at Ted's Flat and the Riverdell South property would provide improved feeding grounds for shorebirds. Birds such as willet (*Catoptrophorus semipalmatus*), greater yellowlegs (*Tringa melanoleuca*), white-faced ibis (*Plegadis chihi*) and common snipe (*Gallinago gallinago*) would benefit from newly created marshy areas, benefitting more than shorebirds that concentrate their use on muddy flats and shorelines such as the spotted sandpiper (*Actitis macularia*) and killdeer (*Charadrius vociferus*).

4.3.6.2.1.2 Waterfowl. Waterfowl habitat within the active channel of the Duchesne River is not expected to change as a result of the Proposed Action, as Duchesne River flows would not be measurably changed.

Waterfowl habitat would increase on all sites under the Proposed Action, as a result of the following habitat changes:

- Increased extent of emergent marsh complexes with a more well developed open water component. This change would be most pronounced at the Uresk Drain,
- Improved water quality allowing greater emergent plant development. This change would be most pronounced at the Ted's Flat South Oxbow,
- Management of adjacent areas for food and cover. This would occur at all sites in the Proposed Action, and
- Restoration and enhancement of emergent marsh complexes in close proximity to the Duchesne River. This change would be most pronounced in the Riverdell South oxbows and the Uresk Drain.

The Uresk Drain would create large ponded areas bordered by wet meadows and ungrazed grasslands in the Main Site. In the Goose Ponds area, additional open water habitat would be created by excavating through an upland area to create a central island. These measures would increase waterfowl use dramatically from its present state (24 individuals counted during five migration surveys). Additionally, improvements to nearby grassland areas would provide nesting cover. The existing wintering waterfowl habitat within the Drain would be maintained as the filling would occur only to the depth necessary to seal the clay-cobble contact (typically 1 ½ to 2 ½ feet). Deepwater habitat would be created in the clay borrow pits, and potentially other locations in the clay soils south of the Drain that would be subsequently inundated.

Rewatering of the Riverdell South oxbows would provide waterfowl habitat where little to none currently exists. Additionally, the primary habitat bordering the oxbows would be grassland, which would provide nesting opportunities.

Although already providing waterfowl habitat, waterfowl use of the Ted's Flat South oxbows would increase with water quality improvements. The dissolved oxygen level in the oxbows is extremely low and may be the cause of the lack of aquatic vegetation within the oxbows (see section 4.6, Water Quality, Affected Environment). The main effect of the Proposed Action on the existing South Oxbow waterfowl habitat would be to increase dissolved oxygen in the ponded areas and expand the oxbow width to allow adjacent wet meadow development. The Ted's Flat Swamp wetland would be maintained similar to baseline conditions with habitat expanded slightly along portions of the North oxbow system.

The increase in emergent marsh habitat along the Riverdell South and Ted's Flat oxbows would benefit dabbling ducks more than diving ducks. Both diving ducks and dabbling ducks would benefit from the Uresk Drain wetland restoration measures.

It is anticipated that waterfowl abundance and composition under the Proposed Action would approach that of the reference wetlands.

4.3.6.2.1.3 Furbearers. Furbearers found within the project area would benefit from the Proposed Action. Muskrat would benefit from an increase in emergent wetland habitat and beaver would benefit from an increase in cottonwood forests. The increase in emergent wetland within the project area would also benefit mink (*Mustela vison*) and river otter

(*Lutra canadensis*) due to improved habitat for prey species such as leopard frog.

Muskrat habitat would improve on all sites as more than 68 acres of emergent marsh would be created or restored on all sites. Ted's Flat would provide the largest increase in beaver habitat due to the combined effects of rewatering the Ted's Flat North oxbow system along with supplemental planting of the adjacent cottonwood forest.

4.3.6.2.2 Riparian Associated Species

4.3.6.2.2.1 Migratory Songbirds. Migratory songbirds would be among the biggest benefactors of the Proposed Action as a result of (1) restoring or enhancing 1,133 acres of

riparian habitat and (2) including riparian habitat on both sides of the Duchesne River at one site (Ted's Flat), as many riparian-associated migratory birds require large contiguous tracts of land (Ammon 1997). The increase in cottonwood forest, riparian shrub, emergent marsh and mesic shrub, and improvements of upland grasslands would allow for increases in both the number of species and the density of migratory songbirds within the project area. The majority of the riparian benefits would occur through enhancement of existing cottonwood forests.

Table 4-17 lists the songbird species in the project area that would be affected by the changes in habitat types under the Proposed Action.

Table 4-17. Songbirds Found in the Project Area That Would be Affected by Changes under the Proposed Action.

| Bird species that would benefit from emergent wetlands restoration | Bird species that would benefit from cottonwood forest restoration | Bird species that would benefit from riparian and mesic shrub restoration | Bird species that would neither benefit nor be negatively impacted by the Proposed Action | Bird species that may be temporarily or permanently negatively impacted by the Proposed Action |
|--|---|---|---|--|
| Barn swallow Common yellowthroat Marsh wren Red-winged blackbird Rough-winged swallow Savannah sparrow Song sparrow Tree swallow Yellow-headed blackbird | American robin Black-capped chickadee Black-headed grossbeak Blue-gray gnatcatcher Bullock's oriole Dark-eyed junco House wren Northern mockingbird Red-shafted flicker Spotted towhee | Bewicks wren Blue grossbeak Dark-eyed junco Eastern kingbird Great Basin willow flycatcher Gray catbird House wren Mourning dove Song sparrow Spotted towhee Western tanager Wilson's warbler White-crowned sparrow Yellow warbler | American goldfinch Black-billed magpie Belted kingfisher Cliff swallow Western kingbird | Brewer's blackbird Brown-headed cowbird Cedar waxwing European starling Western meadowlark Brewers sparrow Lark sparrow Green-tailed towhee |

Other migratory songbirds that would benefit from an increase in cottonwood forest habitat include the warbling vireo (*Vireo gilvus*), yellow-rumped warbler (*Dendroica coronata*), woodpeckers (*Picoides* spp.) and nuthatches (*Sitta* spp.). Migratory songbirds that would benefit from the increase in shrub habitat include the yellow-breasted chat (*Icteria virens*), MacGillivray's warbler (*Oporornis tolmiei*), and yellow-rumped warbler (*Dendroica coronata*). These species occur in the area but were not observed during any wildlife surveys.

Some bird species would neither benefit from nor be adversely impacted by the project (see Table 4-17). These species, such as the black-billed magpie, tend to be generalists, utilizing different habitats equally. Other species would temporarily lose suitable habitat as a result of this project. The western

meadowlark and the Brewer's sparrow would temporarily lose grassland and desert shrub habitat, respectively (see Table 4-17). However, the present quality of these habitats within the project area is considered sub-optimal for these species, and establishment of higher quality grasslands and other habitat would offset the temporary loss of habitat. For example, the western meadowlark is declining overall within the western United States, with a key factor being disturbance of nests by grazing and/or mowing (Ryser 1985). The LDWP would eliminate grazing and manage mowing around bird nesting periods. As a result, the LDWP would allow greater nesting success even though the total areas suitable for nesting would decline.

Three bird species often associated with ecological disturbance and grazing are brown-headed cowbird, European starling and

Brewer’s blackbird. Often these species are considered nuisance species and they often pose a threat to other migratory songbirds. As the riparian tree canopy becomes less fragmented and more dense, developing a denser shrub understory under the Proposed Action, the occurrence of these species would become less frequent.

4.3.6.2.2.2 Raptors. All of the raptors observed during the wildlife surveys use open spaces such as fields, prairies and marshes for feeding; however, some species also use other habitats such as wooded areas for nesting and roosting. Under the Proposed Action, all riparian associated raptor species would either benefit or would not be affected by the LDWP. The increase in cottonwood forest would improve habitat for many raptors,

especially red-tailed hawks, by increasing roosting areas adjacent to feeding grounds. Species such as the northern harrier and rough-legged hawk would greatly benefit from the increase in emergent wetland habitats that would be created within the Uresk Drain.

The protection and enhancement of the cottonwood stands within the Ted’s Flat site (with associated upland areas) would benefit both golden and bald eagles. Although the great horned owl would temporarily lose habitat from the loss of Russian olive within portions of each site, this would be offset by the overall increase in cottonwood forest. Table 4-18 illustrates how each riparian associated raptor would be affected by these changes in habitats.

| Raptor species that would benefit from emergent wetlands restoration | Raptor species that would benefit from cottonwood forest restoration | Raptor species that would benefit from riparian and mesic shrub restoration | Raptor species that would not benefit nor be negatively impacted by the Proposed Action |
|---|---|--|--|
| Northern harrier Rough-legged hawk Bald eagle Golden eagle | Red-tailed hawk Bald eagle Golden eagle Great horned owl Sharp shinned hawk | None | American kestrel Swainson’s hawk |

Other raptors that would benefit from the increase in emergent marsh habitat include the short-eared owl (*Asio flammeus*) and osprey (*Pandion haliaetus*). The western screech owl (*Otus kennicotti*) would also benefit from the increase in cottonwood forest. These species were observed in the project area but were not counted during the winter raptor surveys. (Zeigenfuss et al. 2007).

4.3.6.2.2.3 Big Game Species. Big game species would benefit from the increase of cottonwood forest, riparian and mesic shrub habitat and the reduction of grazing proposed under the Proposed Action (see Table 4-19). Although the entire project area has been mapped as year-round habitat for mule deer, a key limiting factor for the species in the area may be the historical loss of winter thermal cover (Nelms 1997). As a result, the largest benefit to mule deer may occur on the

Ted's Flat site where a large block of cottonwood forest and shrubby browse would be restored on both sides of the Duchesne River.

Although moose are not expected to visit the project area on a consistent basis because of the proximity to Myton, this species would benefit from the increase in open water and aquatic vegetation in the Uresk Drain.

Although the total acres of grassland will be reduced under the Proposed Action (Table 4-20), the quality of the remaining grassland is expected to increase since it will be managed specifically for wildlife, and fallow land would be restored to grassland with a concurrent decrease in the existing annual weed component.

Table 4-19. Impacts to Big Game Species under the Proposed Action.

| Big game species that would benefit from cottonwood forest restoration | Big game species that would benefit from riparian and mesic shrub restoration | Big game species that would benefit from different management and increased quality of grassland | Big game species that would not benefit nor be negatively impacted by the Proposed Action | Big game species that may be negatively impacted by the Proposed Action |
|--|---|--|---|---|
| Elk Mule deer | Moose* Mule deer Elk | Elk Mule deer Pronghorn antelope* | None | None |
| * Not known to occur within the project area | | | | |

4.3.6.2.3 Upland Associated Species

All upland habitat types (grassland, cropland, annual weed/fallow and desert shrub) would be affected under the Proposed Action and would be placed under a different and advantageous wildlife management scheme that would eliminate grazing, change the mowing of grasslands to that necessary to

maintain the habitat and to avoid bird nesting periods, and remove weedy species. Under the Proposed Action, there would be a loss of 73 acres of grassland and 158 acres of desert shrub habitat (table 4-20). Fifty eight acres of cropland would remain in production on the Uresk Drain but be managed solely for wildlife use. There would be no other cropland within the Proposed Action area.

Table 4-20. Total Acres of Upland Habitats under the Proposed Action (Net Changes [Acres] Listed in Parentheses).

| Habitat | | | | Total Acres |
|--------------------|-------------|-----------------|------------|-------------|
| | Uresk Drain | Riverdell South | Ted's Flat | |
| Grassland | 629 (-103) | 233 (+44) | 302 (-14) | 1,164 (-73) |
| Cropland | 58 (0) | 0 (-0.5) | 0 (0) | 58 (-0.5) |
| Desert shrub | 134 (- 84) | 282(-14) | 414 (-60) | 830 (-158) |
| Annual weed/fallow | 0 (0) | 0 (-198) | 0 (-102) | 0 (-300) |

4.3.6.2.3.1 Upland Birds and Small Mammals. Upland birds and small mammals would respond similarly to the Proposed Action as big game species since they often utilize the same habitat. Within the Uresk Drain, 187 acres of upland small mammal habitat would be temporarily lost due to the expansion of wetlands. It is possible that some individual animals would be killed during construction or habitat flooding. However, upon habitat restoration, enhancement and improved management within the area, the remaining 821 acres of upland habitat would be of higher quality and

therefore would ultimately benefit small mammal populations.

The 1,222 total acres of managed croplands and grasslands for wildlife would also benefit California quail, ring-necked pheasant, cottontail rabbit and mourning dove (Table 4-20).

Ruffed grouse were not seen during any LDWP wildlife surveys but are found in the area and would benefit from cottonwood forest improvements.

Table 4-21. Impacts to Upland Birds and Small Mammals under the Proposed Action.

| Upland birds and small mammals that would benefit from cottonwood forest restoration | Upland birds and small mammals that would benefit from riparian and mesic shrub restoration | Upland birds and small mammals that would benefit from different management and increased quality of grassland | Upland birds and small mammals that would not benefit nor be negatively impacted by the proposed action | Upland birds and small mammals that may be temporarily negatively impacted by the proposed action |
|--|---|--|---|---|
| Cottontail rabbit Ring-necked pheasant Mourning dove Wild turkey | California quail Cottontail rabbit Ring-necked pheasant Mourning dove | California quail Cottontail rabbit Ring-necked pheasant Mourning dove | None | None |

4.3.6.2.3.2 Raptors. Upland associated raptors such as the prairie falcon and ferruginous hawk use fields and prairies and may be temporarily negatively impacted from the loss of 73 acres of grassland habitat under the Proposed Action. However, this loss of habitat would be offset by a gain of 2,052 acres of improved upland habitat quality within the project area. A temporary negative effect on the ferruginous hawk and prairie falcon may occur as 103 acres of upland grassland would be converted to more mesic habitats within the Uresk Drain; however, this temporary loss would be offset by a gain in quality of the remaining adjacent upland habitat, which would benefit small mammal populations, which would in turn benefit these raptors. The remaining 629 acres of grassland habitat within the Uresk Drain would be improved by the elimination of cattle grazing and removal of invasive Russian olives. Improved habitat quality within the grassland would indirectly benefit the prairie falcon and ferruginous hawk by providing quality habitat for their prey.

4.3.6.2.4 Summary of Impacts

- The Proposed Action would improve habitat for all nine major wildlife species groups evaluated (shorebirds, waterfowl, furbearers, migratory songbirds, riparian associated raptors, big game, upland birds, small mammals and upland raptors),
- The majority of the riparian benefits would occur through enhancement of existing riparian shrub and cottonwood forest,
- There would be some loss of upland habitat (73 acres of grassland, 158 acres of desert shrub), which would represent a temporary impact to some upland

songbirds and upland-associated raptors. This temporary loss would be offset by the enhancement of the remaining upland habitat for nesting and feeding. The temporary loss would be experienced for approximately three to five years as the upland habitat is restored,

- 58 acres of cropland would be managed specifically for wildlife, and
- The value of the following important habitats would be increased, both in terms of size and habitat quality: migratory waterfowl habitat, migratory songbird habitat and deer winter range.

Together, these represent significant beneficial impacts of the Proposed Action. These benefits would accrue through the indirect effects of habitat changes.

It is possible that some individual animals would be killed during construction or habitat flooding, such as burrowing small mammals. These direct impacts would likely only occur during construction, and be minor as most wildlife species would be displaced to other habitats during this time period.

4.3.6.3 Pahcese Alternative

4.3.6.3.1 Wetland Associated Species

4.3.6.3.1.1 Shorebirds. Impacts to shorebirds would be similar to those described for the Proposed Action in section 4.3.6.2.1.1; however, the number of habitat acres and the project configuration would be different. In particular, shorebird habitat would be created along the Flume oxbows, instead of Ted's Flat. Locating restored emergent marshes at the Flume in close

proximity to a large active heron rookery would provide substantial benefits to this species.

4.3.6.3.1.2 Waterfowl. Impacts to waterfowl habitat would be similar to those described for the Proposed Action in section 4.3.6.2.1.2 for the Uresk Drain and Riverdell South property with the following exceptions:

- There would be an increase of 35 acres of emergent marsh at the Head of the Drain, which would be bordered by 80 acres of ungrazed grassland,
- Approximately 304 acres of current annual weed habitat on the Riverdell North property would be converted to a wildlife crop. This would provide a food source adjacent to the Duchesne River and also adjacent to the wetlands on the Uresk Drain and Riverdell South property; and,
- There would be an additional 225 acres of cropland placed under a conservation easement with approximately 20 percent of the crop reserved for wildlife use (resulting in an equivalent of 45 acres of cropland for wildlife use and a total of 349 acres of wildlife crops).

The Swamp wetland, which contained the highest waterfowl abundance and diversity, would not be included in the Pahcease alternative. Therefore, none of the benefits associated with the Swamp wetland or improved habitat along the Ted's Flat South oxbows would be realized. Conversely, the longer Flume oxbow system and Pit wetland would be included. Habitat historically restored for waterfowl on the downstream end of the Flume oxbow system contains disproportionately high concentrations of waterfowl in relation to the rest of the oxbow.

Similar treatments proposed for the remainder of the Flume oxbow system are expected to provide a large increase in waterfowl by providing improved feeding and resting areas. Much of the open water habitat along the Flume oxbows would be surrounded by greasewood, which is not a preferred waterfowl habitat. The Pit wetland would be surrounded by restored grassland and located adjacent to the Uresk Drain wetlands, which would result in a large, contiguous waterfowl complex south of Highway 40 that extends from the eastern half of the Flume through the Uresk Drain and Riverdell South oxbows.

The increase in emergent marsh habitat along the Riverdell South and Flume oxbows would benefit dabbling ducks more than diving ducks. Both diving ducks and dabbling ducks would benefit from the Uresk Drain and Pit Wetland restoration measures.

4.3.6.3.1.3 Furbearers. Impacts to furbearers would be similar to those described for the Proposed Action in section 4.3.6.2.1.3, however, the number of habitat acres and project configuration would be different.

4.3.6.3.2 Riparian Associated Species

Impacts to riparian associated species would be similar to that described for the Proposed Action in section 4.3.6.2.2 as:

- Riparian habitat acres would be similar,
- Both alternatives include one site, or combination of sites, in which riparian habitat would be restored on both sides of the Duchesne River (Ted's Flat for the Proposed Action, the combined Riverdell North and South sites for the Pahcease Alternative; and,

- Large tracts of grassland managed for riparian associated wildlife hunting would be retained.

The majority of riparian benefits would occur through the replanting of former cottonwood forests.

4.3.6.3.3 Upland Associated Species

As described for the Proposed Action, all upland habitat types (grassland, cropland,

annual weed/fallow and desert shrub) would be affected under the Pahcease Alternative and would be placed under a different and advantageous wildlife management scheme. Under the Pahcease Alternative, there would be a loss of 111 acres of grassland and 288 acres of desert shrub habitat. Five hundred acres of annual weed/fallow habitat would be converted to either grassland or cropland. There would be an increase of 290 acres of cropland.

| Habitat | Acres by Site | | | Total Acres |
|--------------------|---------------|-------------|------------------------------------|--------------|
| | Flume | Uresk Drain | Combined Riverdell North and South | |
| Grassland | 813 (+72) | 716 (-91) | 142 (-92) | 1,671 (-111) |
| Cropland | 112 (-14) | 58 (0) | 359 (+304) | 529 (+290) |
| Desert shrub | 770 (-163) | 108 (-110) | 561 (-15) | 1,439 (-288) |
| Annual weed/fallow | 0 (-196) | 0 (0) | 0 (-304) | 0 (-500) |

4.3.6.3.3.1 Upland Birds and Small Mammals. Impacts to upland birds and small mammals within the Uresk Drain would be similar to those described in section 4.3.6.2.3.1. Under the Pahcease Alternative, 2,200 total acres of managed croplands and grasslands for wildlife would benefit the California quail, ring-necked pheasant, cottontail rabbit and mourning dove.

A gain of 922 acres in cottonwood forest and 61 acres of riparian shrub habitat within the Flume, Riverdell North and Riverdell South sites would provide edge areas and shrub habitat which upland birds and small mammals, such as the ring-necked pheasant, wild turkey and California quail often use.

4.3.6.3.3.2 Raptors. Upland associated raptors would realize benefits under the Pahcease Alternative similar to those described in section 4.3.6.2.3.2 within the Uresk Drain and Riverdell South. The Flume would provide 813 acres of grassland for hunting grounds for the prairie falcon and the ferruginous hawk under the Pahcease Alternative.

4.3.6.3.4 Summary of Impacts

- The Pahcease Alternative would improve habitat for all nine major wildlife species groups evaluated,
- The majority of riparian benefits would occur through replanting of former riparian shrub and cottonwood forest,
- There would be some loss of upland habitat (111 acres of grassland, 288 acres of desert shrub habitat, with 500 acres of annual weed/fallow habitat converted to grassland or cropland), which would represent a temporary impact to some upland songbirds and upland associated raptors. This temporary loss would be offset by the enhancement of the remaining upland habitat for nesting and feeding. The temporary loss would be experienced for approximately three to five years as the upland habitat is restored,
- There would be an increase in cropland as wildlife habitat (290 acres) with 225 acres of cropland placed under a conservation easement (total equivalent of 335 acres of wildlife habitat), and
- The value of the following important habitats would be increased, both in terms of size and habitat quality: migratory waterfowl habitat, migratory songbird habitat and deer winter range.

Together, these represent significant beneficial impacts of the Pahcease Alternative. These benefits would accrue through the indirect effects of habitat changes.

It is possible that some individual animals would be killed during construction or habitat flooding, such as burrowing small mammals. These direct impacts would likely only occur during construction, and be minor as most wildlife species would be displaced to other habitats during this time period.

4.3.6.4 Topanotes Alternative

4.3.6.4.1 Wetland and Riparian Associated Species

Impacts to wetland and riparian associated species on the Ted's Flat site would be similar to those described for the Proposed Action in sections 4.3.6.2.1 and 4.3.6.2.2. Impacts on the Flume and Uresk Drain sites would be similar to those in sections 4.3.6.3.1 and 4.3.6.3.2 for the Pahcease Alternative with the following exceptions:

- Large wetlands would include the Flume oxbows, the Pit Wetland, the Uresk Drain complex, the Ted's Flat South oxbows and the Swamp wetland, but there would not be a continuity of wetlands as described for the Pahcease alternative,
- The waterfowl benefits associated with the Swamp wetland would be included,
- No cropland would be managed specifically for wildlife, but 342 acres of cropland would be placed under a conservation easement with approximately 20 percent of the crop reserved for wildlife use (resulting in an equivalent of 65 acres of cropland for wildlife use),

- The final riparian habitat acres would be similar to the Proposed Action, and
- As described for the Proposed Action and Pahcease alternative, riparian habitat would be restored on both sides of the Duchesne River in one site (Ted’s Flat).

The majority of the riparian benefits would occur through enhancement of existing cottonwood forests.

4.3.6.4.2 Upland Associated Species

As described for the Proposed Action, all upland habitat types (grassland, cropland, annual weed and desert shrub) would be affected under the Topanotes Alternative and would be placed under a different and advantageous wildlife management scheme. Under the Topanotes Alternative, there would be a loss of 136 acres of grassland, 14 acres of cropland, 347 acres of desert shrub habitat, with 196 acres of annual weed/fallow habitat converted to grassland.

| Habitat | Acres by Site | | | Total Acres |
|--------------------|---------------|-------------|------------|--------------|
| | Flume | Uresk Drain | Ted’s Flat | |
| Grassland | 813 (+72) | 716 (-91) | 243 (-117) | 1,772 (-136) |
| Cropland | 112 (-14) | 58(0) | 172 (0) | 342 (-14) |
| Desert shrub | 770 (-163) | 108 (-110) | 418 (-74) | 1,296 (-347) |
| Annual weed/fallow | 0 (-196) | 0 (0) | 0(0) | 0 (-196) |

Impacts to upland birds, small mammals and upland associated raptors under the Topanotes Alternative would be similar to those described for the Proposed Action for the Uresk Drain and Ted’s Flat Site (section 4.3.6.2.3) and to that described for the Pahcease Alternative for the Flume (section 4.3.6.3.3).

4.3.6.4.3 Summary of Impacts

- The Topanotes Alternative would improve habitat for all nine major wildlife species groups evaluated,
- The majority of the riparian benefits would occur through enhancement of

existing riparian shrub and cottonwood forest,

- There would be some loss of upland habitat (136 acres of grassland, 14 acres of cropland, 347 acres of desert shrub habitat, with 196 acres of annual weed/fallow habitat converted to grassland), which would represent a temporary impact to some upland songbirds and upland associated raptors. This temporary loss would be offset by the enhancement of the remaining upland habitat for nesting and feeding. The temporary loss would be experienced for approximately

three to five years as the upland habitat is restored,

- No cropland would be managed specifically as wildlife habitat with 342 acres of cropland placed under a conservation easement (total equivalent of 65 acres of wildlife habitat), and
- The value of the following important habitats would be increased, both in terms of size and habitat quality: migratory waterfowl habitat, migratory songbird habitat and deer winter range.

Together, these represent significant beneficial impacts of the Topanotes Alternative. These benefits would accrue through the indirect effects of habitat changes.

It is possible that some individual animals would be killed during construction or habitat flooding, such as burrowing small mammals. These direct impacts would likely only occur during construction, and be minor as most wildlife species would be displaced to other habitats during this time period.

4.3.6.5 No Action Alternative

4.3.6.5.1 Wetland Associated Species

4.3.6.5.1.1 Shorebirds. Shorebird habitat within the project area consists of emergent marsh, wet meadows, and mudflats currently existing on the four mitigation sites and along the shoreline of the Duchesne River. Under the No Action Alternative, no habitat improvements would be made and there would be no change in current shorebird habitat. Pepperweed would likely continue its recent expansion into existing wetlands, reducing habitat value for shorebirds where habitat currently occurs.

4.3.6.5.1.2 Waterfowl. Current waterfowl habitat within the project area consists of the active river channel of the Duchesne River and isolated marshes containing some open water habitat. Under the No Action Alternative, no change in waterfowl habitat would occur. No emergent wetlands would be improved, no change would occur in the amount of wildlife food crops, nor would the management of the currently existing cropland change. Waterfowl use would be restricted to only a few small areas within the corridor.

4.3.6.5.1.3 Furbearers. Under the No Action Alternative, there would be no increases in emergent marsh habitat or cottonwood forest habitat. Cottonwood forests would continue to decline, as would habitat for beaver. There would be no change in emergent marsh habitat for muskrat.

4.3.6.5.2 Riparian Associated Species

4.3.6.5.2.1 Migratory Songbirds. Under the No Action Alternative, native cottonwood forest and native shrub habitats would continue to decline and be replaced by less valuable non-native species such as Russian olive and tamarisk. As a result, nesting habitat and reproductive success would continue to decline for migratory songbirds.

4.3.6.5.2.2 Raptors. Under the No Action Alternative, none of the raptor habitat types would be improved and current management would continue. The continued decline in cottonwood forest would decrease nesting and perching habitat for raptors.

4.3.6.5.2.3 Big Game Species. Under the No Action Alternative, overall big game habitat would continue to decline as native cottonwood forest and shrub habitats die and are replaced by less valuable non-native species such as Russian olive and tamarisk. Current management of croplands would continue without regard to benefits for wildlife.

4.3.6.5.3 Upland Associated Species

4.3.6.5.3.1 Upland Birds and Small Mammals. Under the No Action Alternative no habitat improvements would be conducted and no benefits to upland birds and small mammals would be realized. Native cottonwood forest and native shrub habitats would continue to decline and be replaced by less valuable non-native species such as Russian olive and tamarisk. Current management of croplands would continue without regard to benefits for wildlife.

4.3.6.5.3.2 Raptors. No improvement of habitat for upland associated raptors would occur under the No Action Alternative. Prey species for raptors would decline as non-native species would continue to provide lower quality habitat.

4.3.6.5.4 Summary of Impacts

- The No Action Alternative would not improve habitat for any of the nine major wildlife species groups evaluated,
- Under the No Action Alternative, no areas would be managed for wildlife benefits; there would, therefore, be no continuity among sites. Wetlands would continue to be small and isolated, located within grazed pastures,
- The riparian forested corridor would continue to be limited to widths of a few

hundred feet, much less than the minimum recommended width to protect area-sensitive riparian species. This width would be reduced as older cottonwoods die and are replaced by non-native species. There would be no interconnection of habitats managed for wildlife,

- There would be no increase in the size or habitat quality of migratory waterfowl habitat, migratory songbird habitat or deer winter range, and
- There would be no direct impacts to or displacement of individual animals during construction.

4.4 THREATENED, ENDANGERED AND CANDIDATE SPECIES

4.4.1 Introduction

This section discusses possible impacts to threatened, endangered and candidate species (also referred to as listed species) and critical habitat that may occur in the area of influence of the Proposed Action and alternatives. Appendix E contains official correspondence from the FWS regarding listed species potentially occurring in the project area. Table 4-24 lists these species and identifies their status (endangered [E], threatened [T], proposed threatened [PT], proposed endangered [PE] or candidate [C]). Definitions of each of these terms are provided below.

Endangered Species. Any species that is in danger of extinction throughout all, or a significant portion of, its range.

Threatened Species. Any species that is likely to become an endangered species within the foreseeable future throughout all, or a significant portion of, its range.

Proposed Threatened Species. Any species that has been proposed for listing as threatened on the Federal Register.

Proposed Endangered Species. Any species that has been proposed for listing as endangered on the Federal Register.

Candidate Species. Any species for which substantial biological information exists to support the biological appropriateness of proposing to list the species as endangered or threatened.

Critical Habitat. Specific areas that contain physical or biological features essential for the conservation of a listed species and that may require special management considerations or protection.

The information provided in this section regarding the current status of wildlife species is based on consultation with the FWS Ecological Services - Salt Lake City Office, literature review of the potentially impacted species, wildlife surveys conducted by the Ute Tribe and the FWS (Koehler 2000, Zeigenfuss et al. 2007) and aerial photograph analysis, habitat mapping and habitat surveys conducted during the project feasibility analyses (WWS 1998a, 2000). Readers are also directed to section 4.2, Wetland and Riparian Habitats, for a description of wildlife habitat types and section 4.3, Wildlife

Resources, for an analysis of impacts to other wildlife species.

4.4.2 Issues Eliminated from Further Analysis

No listed species issues raised during the public scoping or agency consultation process were eliminated. All were analyzed.

4.4.3 Issues Addressed in the Impact Analysis

The following issues raised during agency consultation are addressed in this analysis:

- Would the project affect listed species through mortality, disturbance during key life history stages or habitat degradation?
- Would the project affect critical habitat for the Colorado River endangered fish?

4.4.4 Area of Influence

The project area of influence for listed species varies according to species. The area of influence for threatened and endangered plant and wildlife species includes the areas depicted on Figure 1-2 in portions of Duchesne and Uintah counties in northeast Utah. The area of influence for the endangered Colorado River fish species includes the Duchesne River and its active floodplain from the town of Myton to the confluence with the Green River at Ouray.

4.4.5 Affected Environment

4.4.5.1 Introduction

Table 4-24 provides a list of all threatened, endangered and candidate species potentially occurring within Duchesne and Uintah counties. In addition, the bald eagle which was previously listed as threatened is included. The bald eagle was listed as a federally threatened species but a notice of delisting was placed in the Federal Register on July 9, 2007, with the delisting effective August 8, 2007.

The bald eagle status will be monitored under section 4(g)(1) of the Endangered Species Act for at least 5 years. As a result, the bald eagle is discussed in this section of the FEIS instead of section 4.3 (general wildlife).

The habitat requirements and known distribution of each listed species are described below. Species known to occur, or which have potential or critical habitat within the LDWP project area of influence are indicated by an X in the table.

Table 4-24. Threatened, Endangered, Candidate and Proposed Threatened Species Potentially Occurring in Duchesne and Uintah Counties.

| Common Name | Scientific Name | Status ¹ | Potentially within LDWP Area of Influence |
|--|---|---------------------|---|
| Plant Species | | | |
| Barneby ridge-cress | <i>Lepidium barnebyanum</i> | E | |
| White River beardtongue | <i>Penstemon scariosus</i> var. <i>albifluvis</i> | C | |
| Shrubby reed-mustard | <i>Schoenocrambe suffrutescens</i> | E | |
| Clay reed-mustard | <i>Schoenocrambe argillacea</i> | T | |
| Uinta Basin hookless cactus | <i>Sclerocactus glaucus</i> | T | X |
| Ute ladies' -tresses | <i>Spiranthes diluvialis</i> | T | X |
| Fish Species | | | |
| Bonytail | <i>Gila elegans</i> | E | |
| Colorado pikeminnow | <i>Ptychocheilus lucius</i> | E | X |
| Humpback chub | <i>Gila cypha</i> | E | |
| Razorback sucker | <i>Xyrauchen texanus</i> | E | X |
| Wildlife Species | | | |
| Bald eagle | <i>Haliaeetus leucocephalus</i> | FT | X |
| Black-footed ferret | <i>Mustela nigripes</i> | E | |
| Canada lynx | <i>Lynx canadensis</i> | T | |
| Mexican spotted owl | <i>Strix occidentalis lucida</i> | T | |
| Mountain plover | <i>Charadrius montanus</i> | PT ² | X |
| Western yellow-billed cuckoo | <i>Coccyzus americanus occidentalis</i> | C | X |
| ¹ C = candidate, E = endangered, PT = proposed threatened, T = threatened, FT=Formerly threatened, now being monitored under section 4(g)(1) of the Endangered Species Act ² The proposed listing for mountain plover was withdrawn on September 8, 2003. | | | |

4.4.5.2 Listed Plant Species

4.4.5.2.1 Barneby Ridge-cress

Barneby ridge-cress is an endangered species found only in Duchesne County. The species is known from one population along the Indian Creek drainage three miles south of Starvation Reservoir and the town of Duchesne, on the Uintah and Ouray Indian Reservation. The estimated population consists of about 5,000 individuals within a 500-acre area. The species occurs between 6,200 to 6,500 feet in elevation on barren shale ridgelines derived from the Uinta and Green River Formations. There is no suitable habitat for barneby ridge-cress within the project area.

4.4.5.2.2 White River Beardtongue

White River beardtongue is a candidate species found in scattered occurrences along the White and Green Rivers in the vicinity of the Utah/Colorado state line. The total population is estimated at 22,780 plants distributed in discrete occurrences over approximately 200 acres. The habitat is described as semi-barren areas on white or sometimes red soils derived from the Green River Formation. The soils are xeric (very dry), shallow, fine-textured and usually mixed with fragmented shale. The underlying shale is typically rich in kerogen, an oil shale precursor. The beardtongue occurs in sparsely vegetated mixed desert shrub and pinyon-juniper communities at 5,000 to 6,000 feet in elevation. There are no known oil shale/tar sands in the project vicinity. Suitable habitat for this species does not occur within the project area and the nearest known occurrence is 50 miles to the east of the project area.

4.4.5.2.3 Shrubby Reed-Mustard

The shrubby reed-mustard is an endangered species endemic to the Uinta Basin. The species is distributed in the vicinity of Big and Little Pack Mountains within semi-barren white shale layers of the Green River Formation. This species occurs in mixed desert shrub and pinyon-juniper communities at 5,400 to 6,000 feet elevation. There is no suitable habitat for this species within the project area.

4.4.5.2.4 Clay Reed-Mustard

The clay reed-mustard is a threatened species found only in the Uinta Basin. The species occurs on the eastern slope of Big Pack Mountain and to the east across Willow Creek and west slopes of Wild Horse Bench. The species has more recently been located on the west side of the Green River in the canyons adjacent to Rays Bottom. The total population is estimated at 5,200 plants. Suitable habitat consists of steep, usually north facing slopes, on bedrock, scree and fine textured soils weathered from the Green River Formation that are typically rich in gypsum. Clay reed-mustard is often found occurring in a mixed desert shrub community consisting of shadscale, Indian ricegrass (*Achnatherum hymenoides*) and pygmy sagebrush (*Artemisia pygmaea*) at 5,000 to 5,650 feet elevation. Suitable habitat for this species does not occur within the project area.

4.4.5.2.5 Uinta Basin Hookless Cactus

The Uinta Basin hookless cactus is a threatened species that occurs on alluvial terraces near the confluence of the Green, White and Duchesne Rivers in southeastern Duchesne County and in the Myton area. The species is found between elevations of 4,500

to 5,900 feet. It occurs on varying exposures, but is more abundant on south facing exposures and on slopes up to 30 percent grade. It is most abundant at the point where terraces change from a relatively level slope to a steeper side slope. The species generally occurs on coarse, cobble, gravel or rock deposits, rarely occupying either fine-textured alluvial deposits or well-developed upland desert soils. Common associates include saltbush (*Atriplex* spp.), black sage (*Artemisia nova*), rabbitbrush (*Chrysothamnus viscidiflorus*) and Indian rice grass (*Achnatherum hymenoides*).

There are three known populations of the Uinta Basin hookless cactus in the LDWP vicinity: (1) at the Ouray National Wildlife Refuge, where the population extends into the adjacent town of Ouray, Utah and south along the Green River to Sand Wash, (2) the bluffs above the upper Wissiups and (3) on the Riverdell North property (FWS 1990a and 1990b, WWS 1998a). The population on the Riverdell North property is the only population within the LDWP area.

4.4.5.2.6 Ute Ladies'-tresses

Ute ladies'-tresses is a threatened orchid species that occurs in several population centers in the Intermountain West. In the Uinta Basin, Ute ladies'-tresses has been identified along Currant Creek, the upper Duchesne River and all of its major tributaries (Rock Creek, Yellowstone River, Uinta River, Whiterocks River and Lake Fork River), the lower Duchesne River (near the town of Duchesne) and in the upper Green River watershed (WWS 1998b).

The orchid occurs along stream banks, gravel bars, old oxbows and moist to wet meadows along perennial freshwater streams and

springs at elevations ranging from approximately 4,300 to 6,900 feet (FWS 1992). It has also been found in irrigated and sub-irrigated pastures that are mowed or moderately grazed. In general, the orchid occurs in relatively open grass and forb-dominated habitats and is apparently intolerant of dense shade. Common associates include young willows (*Salix* spp.), redtop (*Agrostis stolonifera*), scouring rush (*Equisetum laevigatum*), annual Indian paintbrush (*Castilleja exilis*), sedges (*Carex* spp.), wiregrass (*Juncus articus*) and glaux (*Glaux maritima*). Non-native competitors of Ute ladies'-tresses include Russian olive, tamarisk, thistles (*Cirsium* spp.), yellow and white sweet-clovers (*Melilotus officinalis* and *M. alba*) and pepperweed.

Soils in occupied habitats are usually described as coarse-textured, cobbly loams, loamy sand, alluvial gravelly loam or as a soil layer overlaying cobblestone. Occasionally the species is found in peaty soils but it has not been found in clays. Ute ladies'-tresses is tolerant of flooding and flood disturbance but not prolonged inundation or drought. Once established, it can tolerate slightly drier conditions (Riedel 1992), but still requires moisture within the rooting zone throughout the growing season. As a riparian wetland species, Ute ladies'-tresses is most often found in the 2-year floodplain, although it has been observed in areas inundated less frequently (Gecy and Black 1996).

Ute ladies'-tresses is known to occur along the upper Duchesne River, just east of the town of Duchesne and 20 miles upstream of the project area. Potential habitat for the species occurs along the Duchesne River throughout the project area in small scattered floodplain patches; however, extensive surveys of this section of the river have failed

to locate the species downstream of the town of Duchesne. Ute ladies'-tresses can also occur in non-riparian wet meadows. The potential for non-riparian wet meadows in the LDWP project area to support the species is limited by heavy grazing and the underlying clay soils. Additionally, the species was not observed in these habitats during wetland field assessments conducted during July and August in 1996, 1997 and 1999.

4.4.5.3 Listed Fish Species

4.4.5.3.1 Bonytail

Bonytail is the rarest of the four endangered fish species in the Colorado River system. They occupy pools and eddies within the Green and Colorado Rivers where they feed on terrestrial and aquatic insects. Spawning occurs in large groups over gravel bars in relatively deep water (30 feet deep) in late spring or early summer (Jones and Summer 1954, Wagner 1955). There are no records of bonytail use of the Duchesne River.

4.4.5.3.2 Colorado Pikeminnow

The endangered Colorado pikeminnow is endemic to the Colorado River basin. It inhabits mainstem waters and medium-sized tributaries including the Duchesne River. The Colorado pikeminnow is the largest cyprinid (minnow family) in North America. Historically, adult pikeminnow attained lengths of more than three feet and individuals exceeding 44 pounds were common. Cranny (1994) observed Colorado pikeminnow in the Duchesne River as far upstream as river mile 13.6, which is near the Ted's Flat site. Modde and Haines (2002) caught Colorado pikeminnow near the Highway 40 bridge over the Duchesne River in Myton (the "Myton Bridge") at river mile 33.4. (River miles

indicate the distance along the Duchesne River upstream from its confluence with the Green River.) There is no evidence of Colorado pikeminnow spawning, recruitment or overwintering use of the Duchesne River. Even though the Duchesne River is used by Colorado pikeminnow, it is not designated critical habitat for the species.

4.4.5.3.3 Humpback Chub

Endangered humpback chub populations are concentrated in canyons of the Green and Yampa Rivers. Adult habitat consists of deep pools and shoreline eddies. Young fish occupy warm, quiet habitats such as backwaters and eddies. There are no records of humpback chub use of the Duchesne River and no suitable habitat is believed to exist in the project area.

4.4.5.3.4 Razorback Sucker

The endangered razorback sucker is found in warm water reaches of the Green River and lower portions of major tributaries to the Green River. Razorback sucker primarily occur in flat water sections of the middle Green River between the Duchesne and Yampa Rivers. Adult habitat includes runs, pools, eddies and seasonally flooded lowlands (floodplains).

Cranny (1994) observed razorback sucker in the Duchesne River as far upstream as river mile 12.6, approximately 2 miles downstream from the Ted's Flat site. Modde and Haines (2002) caught one adult razorback sucker near the confluence of the Duchesne and Green Rivers. Researchers believe that razorback sucker primarily use the part of Duchesne River directly influenced by the Green River (i.e., the lower 2.5 miles). This section may be important for staging prior to spawning.

The lower 2.5 miles of the Duchesne River are designated as critical habitat for the species.

4.4.5.4 Listed Wildlife Species

4.4.5.4.1 Bald Eagle

The bald eagle is often found near water, particularly lakes and rivers. Wintering bald eagles have been observed within the project area at all of the potential mitigation sites except the Uresk Drain (Koehler 2000, Zeigenfuss et al. 2007, see Table 4-15 in section 4.3). During the winter of 1999, 10 eagles were observed on the Riverdell North property in the cottonwood trees bordering the Duchesne River. During the same time period, five eagles were observed on the Ted's Flat site and one on the Flume site. Sixteen more eagles were observed on Ted's Flat and six on the Riverdell North property in subsequent surveys (Zeigenfuss et al. 2007). Nesting was not observed and use appears to be restricted to the winter months (December-March). Bald eagles will often perch in large trees, snags or anything that affords a good view of the surrounding area. They often feed on fish but will take small mammals (particularly rabbits), reptiles and waterfowl. Bald eagles will also feed on carrion. Large cottonwoods and other trees located near rivers, lakes, marshes or other wetland areas are often used for nesting, perching and roosting.

4.4.5.4.2 Black-footed Ferret

The endangered black-footed ferret is found in close association with prairie dogs, their main prey species. The only prairie dog community found within the project area is a 60-acre white-tailed prairie dog community on the Riverdell North property, but this colony is

too small to support a self-sustaining population of black-footed ferrets. The nearest population of black-footed ferrets is a relocated, experimental population southeast of Vernal, approximately 50 miles from the project site.

4.4.5.4.3 Canada Lynx

The threatened Canada lynx inhabits forested areas and swamps, preferring coniferous forests in mountainous terrain. They are solitary, nocturnal animals that feed primarily on snowshoe hare. There have been only 10 verified lynx records in Utah since 1916, nearly all from the Uinta Mountains along the Wyoming border. There are no records of Canada lynx within the project area, and no evidence of resident animals anywhere in Utah. The LDWP project area does not contain any boreal forest habitat and the project is located well south of the Uinta Mountains where such habitats might occur.

4.4.5.4.4 Mexican Spotted Owl

Unlike the spotted owl of the Northwest, the threatened Mexican spotted owl is known to nest only in steep walled canyons of the Colorado Plateau (Messmer et al. 1998). Although they nest exclusively in narrow canyons, they will forage on benches covered by pinyon-juniper or other shrubland habitats. Nesting occurs in southern Utah. A single spotted owl was observed as far north as Dinosaur National Monument in eastern Utah, but no nesting sites were found. The primary prey of the owl is woodrats but they will feed on mice, voles, bats, birds and insects such as beetles. No potential habitat is believed to exist in the project area due to the lack of any steep walled canyons.

4.4.5.4.5 Mountain Plover

The mountain plover was a proposed threatened species until September 8, 2003. Although the proposed listing was withdrawn, the species is still identified in FWS correspondence as a species to be considered. Therefore, the mountain plover is still addressed in this document. Unlike other plovers, mountain plovers show no affinity to water, instead preferring arid habitats such as short dry grassland and low desert shrub. They are often associated with prairie dog communities. They prefer open country with vegetation cover less than four inches tall (FWS 2001). Plover feed almost exclusively on insects, mainly grasshoppers, though beetles and crickets make up a large portion of their diet. They feed in loose flocks and will fly a short distance before landing when disturbed. They migrate south and west for winter. Mountain plovers are not found in areas with dense, matted vegetation, grass taller than four inches or wet soils (FWS 2001). There are approximately 60 acres of unoccupied, but potential habitat on the Riverdell North property.

4.4.5.4.6 Western Yellow-billed Cuckoo

The western yellow-billed cuckoo is a candidate species that has experienced severe declines in the western United States, primarily due to the decline in cottonwood forests and wooded river bottom habitats. The yellow-billed cuckoo nests in riverine woodlands with cottonwood forests, with dense understory constituting the bulk of available habitat in western states. It feeds on insects, especially hairy caterpillars, berries and fruit. Occasionally it will eat frogs and lizards. The yellow-billed cuckoo is a migrant, wintering in South America.

Potential habitat within the project area includes cottonwood forest and riparian shrub.

4.4.6 Impact Analysis

4.4.6.1 Significance Criteria

Impacts to listed species would be considered significant if the project were to result in:

- Any adverse effects on listed or candidate species,
- Impacts to a listed or candidate species through “take,” defined by the Endangered Species Act as “harm, hunting, wounding, killing, or harassment.” Harassment includes activities resulting in increased stress during critical life history stages such as nesting, migration or wintering,
- Loss or degradation of designated critical habitat,
- Loss or degradation of occupied or potential listed species’ habitat, or
- Activities precluding or reducing the effectiveness of recovery goals or measures.

These significance criteria are based on the Endangered Species Act (ESA) of 1973 (Public Law 93 - 205, as amended), which provides protection to threatened and endangered species from federally authorized or funded actions that may jeopardize their existence. The ESA also prohibits “take” of endangered species through impacts to individuals or their habitat.

4.4.6.2 Proposed Action

4.4.6.2.1 Introduction

Of the 16 listed species potentially occurring within the LDWP project vicinity, only two plant species, two fish species and three wildlife species are known to occur or have potential habitat within the project area of influence. Potential impacts as a result of the LDWP construction and operation are described below and summarized in Table 4-25 for these seven species only.

4.4.6.2.2 Uinta Basin Hookless Cactus

Desert shrub habitat on the Uresk Drain and Riverdell South sites would be affected by conversion to wetlands. The likelihood of the Uinta Basin hookless cactus occurring in the majority of the desert shrub habitat found on these sites is low due to the predominance of fine-textured soils and the dominance of greasewood, which is not a common associate. Suitable soils could occur on the portion of the Uresk Drain adjacent to the Myton Townsite Canal and the Ted's Flat North site, where more coarse-textured soils dominated by saltbush and sagebrush desert shrub occur. There are no restoration measures other than cattle exclusion proposed in, or near, either of these areas.

There would be no conversion of desert shrub habitat containing, or potentially containing, Uinta Basin hookless cactus to another habitat.

4.4.6.2.3 Ute Ladies'-tresses

The Ute ladies'-tresses orchid has not been observed within the LDWP area. Potential non-riparian wet meadow habitat for the

species is limited by the area's underlying clay soils.

Ute ladies'-tresses occur along the Duchesne River 20 miles upstream from the LDWP area, but it has not been found along the Duchesne River within the LDWP area. A small portion of the active floodplain contains open wet meadows that could provide Ute ladies'-tresses habitat, but the majority of the floodplain is dominated by Russian olive and tamarisk. The Proposed Action would remove 339 acres of Russian olive and tamarisk from the Duchesne River floodplain and replant the 2- to 5-year floodplains with native woody riparian species. Since floodplain habitats dominated by Russian olive and tamarisk have little to no potential for Ute ladies'-tresses, these activities would not have any adverse impact. According to the standard operating procedures (SOPs) listed in Appendix A, open wet meadow habitats would be surveyed for Ute ladies'-tresses prior to planting with woody vegetation and planting would be restricted on any floodplain surfaces containing the species.

4.4.6.2.4 Colorado Pikeminnow

Colorado pikeminnow use the Duchesne River up to the Myton Bridge, where a fish barrier precludes pikeminnow from traveling farther upstream (Cranny 1994, Modde and Haines 2002). Impacts would occur to the Colorado pikeminnow from the Proposed Action, if: (1) Duchesne River flows were altered downstream of Myton, (2) the salinity of the Duchesne River increased downstream of Myton, or (3) adults were trapped in oxbows that were reconnected to the river. The only site where entrapment could occur is potentially the Ted's Flat oxbow system. The possibility of entrapment exists at the Ted's Flat oxbows, though studies have indicated

that most adult fish leave flooded areas when the water starts to recede; therefore, the risk of entrapment is considered minimal (Modde 2002).

The LDWP would not reduce Duchesne River flows or result in a measurable change in TDS concentrations. No impacts to the Colorado pikeminnow are anticipated as a result of the Proposed Action.

4.4.6.2.5 Razorback Sucker

Razorback sucker occur in the Duchesne River as far upstream as the Ted's Flat site, though they most often occur in the lower 2.5 miles of the Duchesne River, which is designated as critical habitat under the Endangered Species Act (Modde and Haines 2002, Archer et al. 1986, Tyus and Saunders 2001). Risk of entrapment in rewatered oxbows is negligible as razorback suckers are very rare above the lower 2.5 miles of the Duchesne River, and the Ted's Flat site is approximately 12 miles upstream of the critical habitat.

The LDWP would not reduce Duchesne River flows or result in a measurable change in TDS concentrations. No impacts to the razorback sucker or its designated critical habitat are anticipated as a result of the Proposed Action.

All of the water to be used for the LDWP is Uintah Indian Irrigation Project water. Potential effects of use of this water on the Colorado River fish have been addressed in the 1998 Biological Opinion on the Duchesne River (FWS 1998). No other water will be used for the project, nor will any new depletions occur.

4.4.6.2.6 Bald Eagle

The bald eagle would benefit from the Proposed Action. The restoration and creation of cottonwood forest would provide roosting, feeding and possibly nesting habitat. The increase in wetland habitats would provide more areas for feeding. There could be some temporary displacement of wintering bald eagles by construction activities in November, December and March on Ted's Flat and on the Riverdell South property (primarily affecting wintering eagles on the adjacent Riverdell North property). The winter construction activities would primarily consist of weed control and planting, but this effect would be limited by scheduling late fall and early spring activities in areas away from key wintering roosts, as much as possible. If weed control would need to occur near key roosts during the winter, the activities would be limited to a single year of short-term disturbance.

4.4.6.2.7 Mountain Plover

No potential suitable habitat for the mountain plover exists in the project area. The closest potential habitat (approximately 60 acres of prairie dog community) exists on the Riverdell North property, outside of the Proposed Action project area.

4.4.6.2.8 Western Yellow-billed Cuckoo

There are currently approximately 705 acres of cottonwood forest in the project area that are considered potential habitat, though no yellow-billed cuckoos were observed in the project area during the wildlife surveys in 1998 through 1999 (Koehler 2000) or subsequent surveys conducted between 1999-2006 (Zeigenfuss et al. 2007). Under the Proposed Action, there would be a temporary

loss of 2.6 acres of cottonwood forest, but a permanent net gain of 250 acres. There is a possibility for temporary displacement during construction, which would last no longer than one year. Vegetation planting to restore a multi-canopy understory will improve the suitability of cottonwood habitat for the yellow-billed cuckoo.

4.4.6.2.9 Summary of Impacts

There would be no long term adverse effects to species listed as threatened or endangered or otherwise protected under the ESA. There would be some potential displacement of the bald eagle during construction. There would be potential long term benefits to the Ute ladies'-tresses, bald eagle, and western yellow-billed cuckoo.

The FWS has concluded that the LDWP may affect, but is not likely to adversely affect, listed threatened or endangered species. This concurrence letter, dated February 6, 2007 can be found in Appendix E.

4.4.6.3 Pahcease Alternative

4.4.6.3.1 Uinta Basin Hookless Cactus

The Riverdell North population of the Uinta Basin hookless cactus is located within the desert shrub habitat north of the Riverdell Canal. The soils in this area are not suitable for wetlands and the only restoration activity occurring in this habitat would be the removal of cattle grazing, which would benefit the species as it is susceptible to trampling by cattle (FWS 1990b). The population would be fenced during construction to ensure that no inadvertent access occurs by construction workers or equipment. Additional protection would be afforded during project operation through the restriction of public use of

motorized vehicles on the Riverdell North site (see section 2.1.4.2).

Impacts to the Uinta Basin hookless cactus on the Uresk Drain would be the same as described for the Proposed Action. The likelihood of the Uinta Basin hookless cactus occurring in the desert shrub habitat found on the Flume is low due to the predominance of fine-textured soils and the dominance of greasewood, which is not a common associate.

4.4.6.3.2 Ute Ladies'-tresses

Impacts to the Ute ladies'-tresses would be the same as described for the Proposed Action.

4.4.6.3.3 Colorado Pikeminnow

The primary sites where entrapment could occur are in the Flume oxbow system and the Riverdell North oxbow. However, the fish barrier above the Myton bridge prevents Colorado pikeminnow from reaching the stretch of the Duchesne River at the Flume site, eliminating any possibility of entrapment in the rewatered oxbows on the Flume site. The possibility of entrapment exists at the Riverdell North oxbow, though studies have indicated that most adult fish leave flooded areas when the water starts to recede; therefore, the risk of entrapment is considered minimal (Modde 2002).

4.4.6.3.4 Razorback Sucker

Impacts to the razorback sucker would be the same as described for the Proposed Action.

4.4.6.3.5 Bald Eagle

Impacts to the bald eagle would be similar as described for the Proposed Action with the exception that there would be no temporary displacement of wintering eagles on the Ted's Flat site. There would be temporary displacement on the Riverdell North property.

4.4.6.3.6 Mountain Plover

A small amount of potential suitable habitat (approximately 60 acres of prairie dog community) exists on the Riverdell North property. There are no records of mountain plovers occupying this habitat and none were observed during any of the LDWP wildlife surveys (Koehler 2000, Zeigenfuss et al. 2007). This habitat would be avoided, as necessary, to prevent direct project impacts to the prairie dog community within the project area. This habitat may revert back naturally to a native desert shrub community.

4.4.6.3.7 Western Yellow-billed Cuckoo

Impacts to the western yellow-billed cuckoo would be the same as described for the Proposed Action.

4.4.6.3.8 Summary of Impacts

There would be no long term adverse effects to species listed as threatened or endangered or otherwise protected under the ESA. There would be some potential displacement of the bald eagle during construction. There would be potential long term benefits to the Uinta

Basin hookless cactus, Ute ladies'-tresses, bald eagle, and western yellow-billed cuckoo.

4.4.6.4 Topanotes Alternative

4.4.6.4.1 Impacts by Species

Impacts to listed species under the Topanotes Alternative would be the same as described for the Proposed Action for the Uresk Drain and Ted's Flat sites and the Pahcease Alternative for the Flume, with the following exceptions:

- There is the potential for temporary displacement of wintering bald eagles on the Flume and Ted's Flat sites. Temporary displacement of wintering bald eagles on the Riverdell North property would not occur as it would under the two other alternatives, and
- There would be no mountain plover habitat within the Topanotes alternative.

4.4.6.4.2 Summary of Impacts

There would be no long term adverse effects to species listed as threatened or endangered or otherwise protected under the ESA. There would be some potential displacement of the bald eagle during construction. There would be potential long term benefits to the Ute ladies'-tresses, bald eagle, and western yellow-billed cuckoo.

4.4.6.5 No Action Alternative

Under the No Action Alternative, there would be no adverse impacts to listed species associated with the construction and operation of the LDWP. Likewise, the beneficial impacts of the project on the Uinta Basin hookless cactus (restriction on vehicular access and grazing in known populations),

Ute ladies'-tresses (potential habitat creation through noxious weed removal), bald eagle (increases in wintering roosting and feeding habitat) and western yellow-billed cuckoo (increases in riparian habitats) would not be realized.

Over the long-term, noxious weeds would increase in wetlands, adversely affecting potential habitat for Ute ladies'-tresses, and mature cottonwoods would die without replacement, adversely affecting the bald eagle and yellow-billed cuckoo.

Table 4-25. Impacts to Species Known to Occur or with Potential Habitat Within the LDWP Project Area under the Proposed Action and Alternatives.

| Species | Occurs in LDWP | Potential habitat in LDWP | Potential Impacts | | | |
|------------------------------|----------------|---------------------------|--|--|----------------------------------|--|
| | | | Proposed Action | Pahcease Alternative | Topanotes Alternative | No Action Alternative |
| Uinta Basin hookless cactus | X | X | No adverse or beneficial impacts. | No adverse effects to occupied or potential habitat. Beneficial impacts through restrictions on vehicle use and grazing. | No adverse or beneficial impacts | No adverse or beneficial impacts |
| Ute ladies'-tresses | | X | No adverse effects. Increase in potential riparian habitat through noxious weed removal. | Same as Proposed Action | Same as Proposed Action | No adverse or beneficial impacts |
| Colorado pikeminnow | X | X | No adverse effects through entrapment in oxbows or measurable changes in Duchesne River water quantity or quality. | Same as Proposed Action | Same as Proposed Action | Same as Proposed Action |
| Razorback sucker | | X | No adverse effects through entrapment in oxbows or measurable changes in Duchesne River water quantity or quality. | Same as Proposed Action | Same as Proposed Action | Same as Proposed Action |
| Bald eagle | X | X | Potential temporary adverse effects through displacement during construction. Long-term benefits through increases in winter roosting and feeding habitat. | Same as Proposed Action | Same as Proposed Action | No short term adverse or beneficial impacts. Long term loss of roosting habitat. |
| Mountain plover | | X | No adverse impacts through the conversion of potential habitat to other habitats. | Same as Proposed Action | No adverse impacts | No adverse impacts |
| Western yellow-billed cuckoo | | X | Long-term benefits through increases in habitats used during migration for feeding and resting. | Same as Proposed Action | Same as Proposed Action | No short-term adverse or beneficial impacts. Long-term loss of potential riparian habitat. |

4.5 WATER RESOURCES

4.5.1 Introduction

This analysis addresses potential impacts on surface and groundwater from the construction and operation of the Proposed Action and alternatives. The following water resource topics are addressed in the impact analysis:

- Changes in Duchesne River flows,
- Changes in water supply patterns that affect the availability of water for existing water rights, and
- Changes in groundwater levels that could increase the water table on adjacent properties.

The surface water hydrologic data used in this analysis is based on mean daily streamflow data for the Duchesne River at Myton. The Flume and Uresk Drain sites are located upstream of the Myton gage, and the Riverdell and Ted's Flat sites are located 2 to 5 miles downstream of the Myton gage. Flow data for the Myton gage was previously summarized and presented in WWS (1998a). Streamflow data for the Myton gage are generally of "fair" accuracy (USGS 1995), indicating that about 95 percent of daily discharges are within 15 percent of the true value. In winter months, during ice conditions at the gage, some historical records have been of "poor" accuracy, indicating that recorded flow data are more than 15 percent from their true value. Flow data from the Randlett gage (USGS gage station #09302000) are also used in this report. Streamflow records for the Randlett gage are poor.

The groundwater analysis is based on data collected from 32 groundwater wells, 50 shallow water table sampling points, surveyed water tables along the Drain and each of the oxbow systems, and water table measurements taken at road crossings and along site boundaries.

4.5.2 Issues Eliminated from Further Analysis

No water resource issues were eliminated from analysis.

4.5.3 Issues Addressed in the Impact Analysis

The following issues raised during public scoping and agency consultation are addressed in this analysis:

- Would Duchesne River flows be affected through changes in the timing or amount of diversions or measurable changes in return flows?
- Would the LDWP change current water supply patterns, reduce water availability to, or interfere with, the water rights of existing users?
- Would the LDWP change groundwater levels on adjacent lands to the extent that it would affect crop production or local infrastructure?

4.5.4 Area of Influence

The area of influence for surface water resources includes the Duchesne River and its historic floodplain between the Flume site, just east of Bridgeland, and the confluence of the Duchesne and Uinta rivers near Randlett (Figure 1-2).

The area of influence for groundwater resources varies by site, depending on site topography and wetland prescriptions and is much larger for the wetland complex proposed for the Uresk Drain site than the rewatering of the oxbow systems proposed for the other sites. Specific details of the area of influence for each site are provided below in section 4.5.5.3.

4.5.5 Affected Environment

4.5.5.1 Duchesne River Flows

Within the project area, the Duchesne River flows eastward from Bridgeland to Randlett. The river flows through an alluvial valley that averages 1-1 ½ miles in width and consists of deposits of clay, silt, sand and gravel that are generally less than 15 feet thick. The valley contains numerous off-channel depressions and oxbow lakes that mark former positions of the Duchesne River. In all but a few cases, these oxbows and off-channel depressions are no longer directly connected to the river but are instead supported primarily by irrigation return flows or local groundwater discharge.

Two major Duchesne River tributaries join the mainstem within the project area. The Lake Fork River joins the Duchesne River near Myton and the Uinta River joins the Duchesne River near Randlett. A few smaller tributary streams enter the Duchesne River from both the north and south within the project corridor. Combined, these smaller streams provide only a very small percentage of the total flow of the Duchesne River. Downstream from Randlett, the Duchesne River flows southeast to its confluence with the Green River.

Flows in the Duchesne River have been successively reduced over time due to both

local and inter-basin diversions. Between 1912 and 1930, most diversions were local, although some trans-basin diversions began as early as 1915 (see section 1.3.3). The largest and most recent diversions occurred as a result of the CUP, with the completion of Starvation and Stillwater reservoirs and the enlargement of Strawberry Reservoir. The most recent change in the magnitude of water diversions has occurred since 1989 following the closure of Stillwater Reservoir on Rock Creek. For this reason, the period of record chosen for the baseline summary of Duchesne River flows is the period from 1989 to 2006. Although only representing an 18-year period of record, streamflows during this period most accurately reflect the current Duchesne River flow regime.

Since 1989, annual discharge of the Duchesne River has averaged 163,160 acre-feet at the Myton gage and 238,290 acre-feet at the Randlett gage. The Myton gage is located 3 miles downstream of the Lake Fork River and 1 mile downstream of the U.S. Highway 40 bridge in Myton. The Randlett gage is located 0.25 miles downstream of the confluence with the Uinta River and 1.2 miles southeast of Randlett. Average streamflow has been 225 cfs at Myton and 348 cfs at Randlett. Annual peak flows have averaged 1,825 cfs at Myton and 2,919 cfs at Randlett. The maximum peak flows have been 5,740 cfs at the Myton gage in June 1995 and 7,570 cfs at the Randlett gage in June 1995. The minimum streamflow recorded at the Myton gage was 3.1 cfs in April 1992 and the minimum recorded streamflow at the Randlett gage was 0.78 cfs in August 2002.

At the Myton gage, 65 percent (105,668 acre-feet) of the annual discharge occurs during the irrigation season of April 1 through October 31 and 45 percent (73,989 acre-feet) of annual

discharge occurs from May 1 through July 31 during spring snowmelt. At Randlett, 68 percent (172,616 acre-feet) of annual discharge occurs during the irrigation season and 52 percent (132,558 acre-feet) occurs during the spring. Since 1989, the average date of the spring discharge peak has been June 7 at both gage sites, and approximately two-thirds of the spring peaks have occurred within two weeks of this date.

The Myton gage records streamflows resulting from flows in the Duchesne River and Lake Fork River plus return flows from lands irrigated by the Duchesne Feeder, Grey Mountain, Myton Townsite, Pahcease, Midview and Dry Gulch canals. Flows on the lower Lake Fork River have not been gaged since 1981. In most years, Lake Fork is mostly dewatered in late summer below the Pahcease Canal inlet and only irrigation return flows enter the Duchesne River during the irrigation season. Flow at the Randlett gage includes irrigation return flows occurring between Myton and Randlett plus inflows from the Uinta River. Mean daily flows for the Uinta River near Randlett are available only for water years (October 1 through September 30) 1977-1981 and 1998-2006. For the available period of record, annual discharge from the Uinta River has averaged 68,265 acre-feet per year. In the analysis that follows, baseline flows for the Uinta River for average, wet and dry years are estimated by taking the difference between gaged flows at Randlett and the estimated flow in the Duchesne River below the Ouray School Canal inlet. Water diversions and resulting streamflows within the project area are described more completely in section 4.5.5.2.

4.5.5.2 Local Irrigation Diversions

4.5.5.2.1 Canal Diversions

There are eight major canal systems originating from the lower Duchesne River that deliver water within the Uinta Basin. Two of these canals, the Grey Mountain Canal and the Duchesne Feeder Canal, have diversion points 3.0 miles and 3.9 miles, respectively, west of the project area boundary. These two canals are responsible for almost 78 percent of local diversions (WWS 1998a), with average annual diversions totaling approximately 109,219 acre-feet during the years 1989 through 2006.

The Grey Mountain Canal traverses the southern boundary of the project area between Bridgeland and Myton. It supplies water mostly to South Myton Bench and Pleasant Valley, both of which are outside of the project area, but the canal also supplies water to land within the Flume. The Grey Mountain Canal diverts an average of 65,833 acre-feet annually, of which approximately 33 percent is diverted for use by the Uintah Indian Irrigation Project (UIIP) within the project area of influence. The remainder of the Grey Mountain Canal diversions are used outside the Duchesne River floodplain. The Duchesne Feeder Canal diverts an average of 43,386 acre-feet of water to the Midview Reservoir and the Moon Lake Canal, which are located outside the project area. A portion of the Duchesne Feeder Canal return flows enter the Duchesne River within the LDWP area.

4.5.5.2.2 Local UIIP Diversions

The UIIP receives an average of 22,021 acre-feet of the total 65,833 acre-feet diverted annually by the Grey Mountain Canal. The remainder of the Grey Mountain Canal

diversions are used outside the Duchesne River floodplain.

Since 1989, an average of 19,151 acre-feet of Duchesne River water have been diverted annually to the Myton Townsite Canal, which services only UIIP lands. These diversions have ranged between 16,454 to 24,672 acre-feet.

During the same period, the Riverdell Canal has diverted an average 140 acre-feet per year (based on gaged diversions) and the Ouray School Canal has diverted an average 10,294 acre-feet per year. The diversion point of the Myton Townsite Canal is located 2 miles west of Myton. The diversion points of the Riverdell and Ouray School Canals are located 2 miles east and 9 miles east, respectively, of the town of Myton. The average diversion amounts for canals within, or adjacent to, the project area is shown in Table 4-26.

Figure 4-1 shows the location of the major canals, gages, major inflow points and their average contribution to the Duchesne River flow.

4.5.5.2.3 Water Availability

There are between 12,403 and 19,611 acre-feet of water rights associated with land in the project area, depending on the alternative. Table 4-27 provides a summary of the water rights associated with the land according to the BIA (2002). Although lands in the project area are of mixed ownership, all of the water rights in the project area (except those for the Riverdell North property) are senior reserved Indian water rights with an 1861 priority date. Indian water rights are the most senior water rights on the Duchesne River. The water rights associated with the Riverdell North property are junior water rights.

Table 4-26. Major Canals Delivering Water within and Adjacent to the LDWP Area and Average Diversion Amounts for the Period of 1989 to 2006 (following the closure of Stillwater Reservoir).

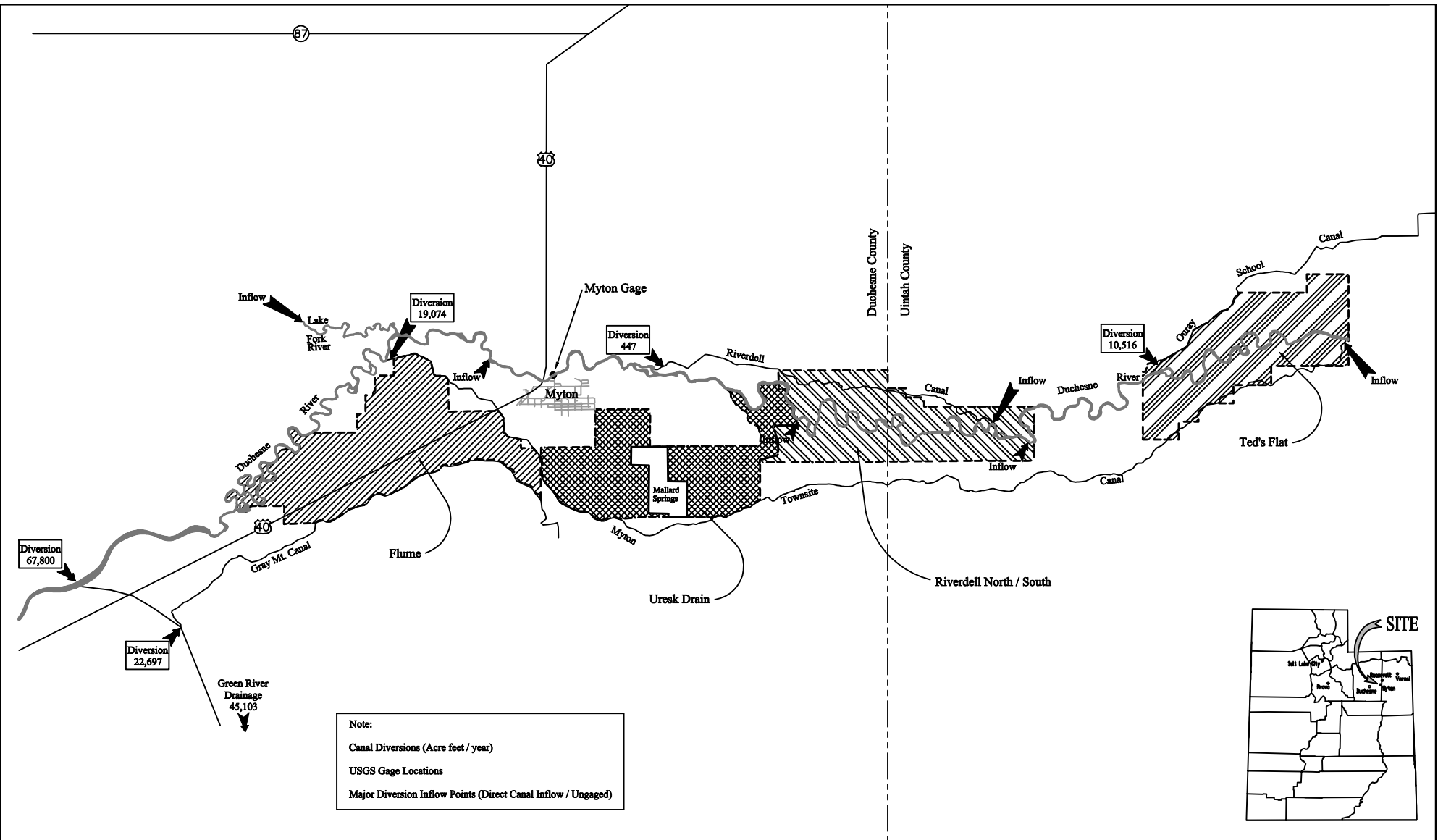
| Canal | Diversion Point | Average Diversion (acre-feet) | Diversion Ranges (acre-feet) |
|---|---|-------------------------------|------------------------------|
| Uintah Indian Irrigation Project | | | |
| Grey Mountain | 2 ½ mi west Bridgeland | 22,021 | 16,939-26,306 |
| Myton Townsite | 2 mi west Myton | 19,151 | 16,454-24,672 |
| Ouray School | 3 ½ mi west Duchesne-Uintah County line | 10,294 | 8,619-12,575 |
| Total Uintah Indian Irrigation Project | | 51,466 | 43,814-56,947 |
| Other Canals | | | |
| Riverdell ¹ | 1 ¼ mi west Duchesne-Uintah County line | 140 | 0-280 |

¹ The Riverdell Canal numbers include years in which the canal gage was not operable; total available water rights for the Riverdell North property are 2,267 acre-feet. The average Riverdell Canal diversion between 1957-1988 was 2,283 acre-feet.

Table 4-27. Water Available with Land (acre-feet) for Each Site under the Proposed Action and Alternatives. ¹

| Water Available with Land | Site | | | | | Total |
|---------------------------|-------|-------------|-----------------|-----------------|------------|--------|
| | Flume | Uresk Drain | Riverdell North | Riverdell South | Ted's Flat | |
| Proposed Action | 0 | 5,740 | 0 | 3,103 | 3,560 | 12,403 |
| Pahcease Alternative | 8,421 | 5,820 | 2,267 | 3,103 | 0 | 19,611 |
| Topanotes Alternative | 8,421 | 5,820 | 0 | 0 | 3,560 | 17,802 |

¹ These numbers represent a diversion of 4 acre-feet per irrigable acre



LEGEND

- - - Site Boundary
- ⊙ Major Roads
- ~ Rivers
- Streams and Canals
- - - County Boundary

Figure 4-1. Location of Major Diversions and Inflow Points within the LDWP Project Area

GRAPHIC SCALE

10000 0 5000 10000

1 INCH = 10000 FEET

N 16°

Table 4-28. Average Year (1996) Changes in Streamflow within the Project Area of Influence Due to Canal Diversions for the Period April 1 - October 31.

| Canal/Site | Inflow/Diversion Amount (acre-feet) | Annual discharge ¹ (acre-feet) | Change in discharge (%) | Cumulative Change in Discharge (%) |
|---|-------------------------------------|---|-------------------------|------------------------------------|
| Duchesne River upstream of Grey Mountain Canal | N/A | 207,154 | N/A | N/A |
| Grey Mountain Canal (includes UIIP and UBIC diversions) | -71,832 | 135,323 | -34.7% | -34.7% |
| Myton Townsite Canal | -20,133 | 115,190 | -14.9% | -44.4% |
| Duchesne River at Myton | N/A | 115,190 | N/A | N/A |
| Riverdell Canal | 0 | 115,190 | 0% | -44.4% |
| Ouray School Canal | -11,103 | 104,086 | -9.6% | -49.8% |
| Uinta River | +120,034 | 224,120 ² | +63.7% | -17.7% |

¹ Discharge upstream/downstream of Myton is calculated by successively adding/subtracting the amount of canal diversions. Discharge is the cumulative total for the period April 1 through October 31. Inflow of the Uinta River is calculated by taking the difference in streamflow at the Ouray School Canal inlet and the recorded flow at the Randlett gage.

² Flow at the Randlett gage.

Table 4-29. High Flow Year (2005) Changes in Streamflow within the Project Area of Influence Due to Canal Diversions for the Period April 1 - October 31.

| Canal/Site | Inflow/Diversion Amount (acre-feet) | Annual discharge ¹ (acre-feet) | Change in discharge (%) | Cumulative Change in Discharge (%) |
|---|-------------------------------------|---|-------------------------|------------------------------------|
| Duchesne River upstream of Grey Mountain Canal | N/A | 409,927 | N/A | N/A |
| Grey Mountain Canal (includes UIIP and UBIC diversions) | -60,355 | 349,572 | -14.7% | -18.1% |
| Myton Townsite Canal | -24,672 | 287,308 | -7.1% | -21.8% |
| Duchesne River at Myton | | 324,900 | | |
| Riverdell Canal | 280 | 324,620 | -0.1% | -21.9% |
| Ouray School Canal | -8,757 | 315,863 | -2.79% | -24.6% |
| Uinta River | +220,680 | 536,543 ² | +69.9% | 43.3% |

¹ Discharge upstream/downstream of Myton is calculated by successively adding/subtracting the amount of canal diversions. Discharge is the cumulative total for the period April 1 through October 31. Inflow of the Uinta River is calculated by taking the difference in streamflow at the Ouray School Canal inlet and the recorded flow at the Randlett gage.

² Flow at the Randlett gage.

Table 4-30. Low Flow Year (2002) Changes in Streamflow within the Project Area of Influence Due to Canal Diversions for the Period April 1 - October 31.

| Canal/Site | Inflow/Diversion Amount (acre-feet) | Annual discharge ¹ (acre-feet) | Change in discharge (%) | Cumulative Change in Discharge (%) |
|---|-------------------------------------|---|-------------------------|------------------------------------|
| Duchesne River upstream of Grey Mountain Canal | N/A | 115,468 | N/A | N/A |
| Grey Mountain Canal (includes UIIP and UBIC diversions) | -62,128 | 53,340 | -53.8% | -53.8% |
| Myton Townsite Canal | -16,971 | 36,369 | -31.8% | -68.5% |
| Duchesne River at Myton | | 36,369 | | |
| Riverdell Canal | 0 | 34,086 | -6.3% | -70.5% |
| Ouray School Canal | -9,214 | 24,872 | -27.0% | -78.5% |
| Uinta River | +10,373 | 35,245 ² | +41.7% | -69.5% |

¹ Discharge upstream/downstream of Myton is calculated by successively adding/subtracting the amount of canal diversions. Discharge is the cumulative total for the period April 1 through October 31. Inflow of the Uinta River is calculated by taking the difference in streamflow at the Ouray School Canal inlet and the recorded flow at the Randlett gage.

² Flow at the Randlett gage.

4.5.5.3 Year to Year Variability in Flow

4.5.5.3.1 Duchesne River flows

The effects of UIIP and Uinta Basin Irrigation Company (UBIC) irrigation diversions on Duchesne River streamflows for average, high flow and low flow are shown in Tables 4-28 through 4-30. Using data for the Duchesne River at Myton for the period 1989-2006, the average annual discharge is 163,160 acre-feet per year with a median discharge of 82,059 acre-feet per year. The upper and lower quartile values of 268,526 acre-feet and 40,994 acre-feet, respectively, define the bounds of “high flow” and “low flow” years (see also Appendix Table D-2). Years in

which runoff is between these two values are considered “average” for purposes of this analysis. For comparison, water year 1996 (total runoff 154,679 acre-feet) was chosen as the representative average year, 2005 (324,900 acre-feet) is representative of high flow conditions, and 2002 (36,369 acre-feet) is representative of low flow conditions.

During the 18-year baseline period, seven years would be classified as average years, six years would be classified as low flow years and five years would be classified as high flow years. The distribution of high flow, average, and low flow years is not comparable to periods before 1988 because, on average, annual streamflow in the Duchesne River has declined continuously since about 1930 in

response to increased diversions from the system(CH2M-Hill 1997).

For the period 1989-2006, water diversions from canals within the project area averaged 51,466 acre-feet per year and ranged from 43,814 to 56,947 acre-feet per year (Table 4-26). For the same period, discharge measured at the Duchesne River at Myton gage averaged 163,160 acre-feet per year and ranged from 30,634 acre-feet in 2004 to 508,147 acre-feet in 1998 (Appendix Table D-2.). Water diversions within the project area have typically varied between -15 percent and +11 percent of average, while streamflow at the Myton gage has ranged from -81 percent to +211 percent of average. Because diversion amounts are relatively constant when compared to the year-to-year variation in streamflow, diversions take a proportionally larger percentage of streamflow in dry years than they do in wet years. However, total water diversions in the project area are similar across all years (average of 52,149 acre-feet) except for the three lowest flow years (2002, 2003, 2004; average of 48,048 acre-feet) in the baseline period. These years are referred to as very low flow years.

4.5.5.3.2 Local Diversions

Water from the Duchesne River is delivered on a priority basis to senior water right holders over junior water right holders. As part of the ongoing basin-wide adjudication of water rights, water users on the Duchesne River, including the BIA on behalf of the UIIP, have agreed on an annual basis to divert their water in accordance with a duty schedule. That schedule is adopted each year by the court pursuant to an interim Order of Distribution, also referred to as the interim duty schedule.

Under the interim duty schedule, the quantity of water diverted into a given canal is based upon the total irrigable acres within the canal service area. Each irrigable acre is entitled to a total of 4.0 acre-feet of water per irrigable acre for the April 1 to October 31 irrigation season. Under baseline conditions, not all parcels served by the UIIP irrigate according to their full water right every year, with some lands (both fee and Tribal Trust) remaining fallow in any given year. As a result, some landowners served by the UIIP may in some years receive water in excess of their legal entitlement.

Under the agreed upon delivery schedule, delivery rates change approximately every two weeks from a low rate at the beginning and end of the irrigation season to a high in June. The interim duty schedule provides for the distribution of water when the flow in the Duchesne River drops to the point that regulation is necessary. In high flow years, the duty schedule may not be invoked until late in the irrigation season, if at all. In average years, all water is delivered to all irrigable acres according to the duty schedule. In low flow years, water is not always delivered to all irrigable acres within the UIIP, especially if a parcel is fallow during that year. In that case, water not called for by senior water rights holders would be available for junior water rights holders elsewhere in the Lower Duchesne River system.

On average, 51,466 acre-feet of water are diverted by the UIIP within the LDWP project area of influence, with an additional 2,267 acre-feet of water rights associated with the Riverdell North property. Total UIIP water diversions have not varied greatly between average, low flow and high years (see Appendix D.5). Total diversions have averaged 52,449, 52,512, and 50,082 acre-feet

per year in high flow, average and low flow years, respectively. Total diversions were 48,048 acre-feet per year in the very low flow years compared to an average of 52,149 acre-feet per year in all other years, and an overall average of 51,466 acre-feet.

Based on the records available, water diversions within the project area appear to be relatively constant except in the lowest streamflow years, in which streamflow is less than about 37,000 acre-feet at the Myton gage. In these years, total diversions within the project area are approximately 3,418 acre-feet lower than the overall baseline average.

4.5.5.4 Groundwater

4.5.5.4.1 Regional Groundwater Patterns

The main geologic formation exposed in the project area is the Uinta Formation, which consists mainly of calcareous shale with some beds of limestone, claystone, siltstone and sandstone. Deposits of the Uinta Formation tend to be coarser near the margins of the basin, east and west of the project area, and finer grained within the project area. The Uinta Formation grades upward into the Duchesne River Formation. Beds of the upper Uinta Formation and the lower Duchesne River Formation form a common aquifer that is one of seven known groundwater aquifers within the Uinta Basin (Hood and Fields 1978). The uppermost aquifer consists of shallow, unconsolidated gravels of Quaternary age adjacent to, and underlying, the major stream valleys. The general direction of flow in this aquifer is to the south and toward the Duchesne River channel. There are three main mechanisms of recharge of this aquifer: direct recharge from surface water during periods of high flow, deep percolation from irrigated fields and deep percolation and

seepage from the canal system within the Uinta Basin.

4.5.5.4.2 Local Groundwater Patterns

The shallow water table within the Uresk Drain Main Site tends to parallel the ground surface except near the Drain. Near the Drain, the water table profiles show a dramatic increase in gradient toward the bottom of the Drain, illustrating the effectiveness of the Drain at lowering the immediate water table. However, the effect of the Drain on the groundwater table is limited to a distance of approximately 600 feet north or south of the Drain (Basin Hydrology 2007). Beyond this area, groundwater tables fluctuate dramatically during the growing season in response to irrigation. The fluctuation is most dramatic on the north side of the Drain where the majority of the wetlands have been classified as irrigation-induced wetlands.

The influence of the Drain on the groundwater table is reduced west of Mallard Springs and is low north of 8000 South where the Drain originates. In the Head of the Drain, wetlands appear to be perched and the flow from the Drain is imperceptible in this area.

Between Myton and the Uresk Drain site, there is a clear west to east groundwater table gradient (Basin Hydrology 2007), indicating that groundwater in this area flows toward the Duchesne River and not south toward the Drain. In other words, the Drain does not serve to drain excess water from Myton; it has an influence on groundwater levels only within portions of the Uresk Drain site.

The Myton cemetery is located more than 2,600 feet north of the proposed Uresk Drain wetlands. The high groundwater table within the cemetery is between 3.9 and 4.9 feet below the ground surface. This indicates that

graves installed at the standard depth of 5 to 6 feet below the ground surface are at least sitting in water under baseline conditions.

Within the other sites, there are no large drainage ditches influencing the local water table that would be filled and the existing ditches providing for drainage along the paved roads and cropland would be maintained.

The water table within the proposed wetland areas generally ranges from 0 to 3 feet below the ground surface. The largest influence on the groundwater levels appears to be irrigation of adjacent properties (Gecy 1999) with an up to 2-foot increase in the water table during the irrigation season.

4.5.6 Impact Analysis

4.5.6.1 Significance Criteria

Impacts to water resources would be considered significant if:

- The LDWP resulted in a substantial change in water supply or water use for existing water right holders.

Because the Duchesne River flows have been substantially depleted over time, any measurable changes in streamflows are also disclosed in this section. The significance of streamflow changes for other resources dependent on Duchesne River flows, such as threatened and endangered fish and wildlife and water quality, are discussed in their respective sections. Likewise, potential changes in groundwater levels are described in this section, but the significance of these changes are discussed in the analyses for other resources such as agriculture/land use and socioeconomics (effects on crop production

and local infrastructure), and transportation (effects on roads).

4.5.6.2 Proposed Action

4.5.6.2.1 Water Requirements

The methods, assumptions and calculations used to arrive at the proposed water budgets are described in Appendix D.5. The proposed water budget includes support for created and restored wetlands, support for existing irrigation-induced wetlands and irrigation water to maintain grasslands. The water budgets for each habitat type include evapotranspiration (ET), soil seepage, water for salinity control (wetlands only) and surface water runoff as described in Appendix D.5.

The degree to which existing wetlands represent natural instead of irrigation-induced wetlands was identified at a feasibility level of analysis, with from 40 to 70 percent of the wetlands estimated as being irrigation-induced. The water source for these wetlands was assumed to be from irrigation of adjacent grasslands. More detailed analyses conducted during final design may identify that lesser acres of wetlands are irrigation-induced. For this reason, a range of numbers is presented for the water budget. The higher number represents the case where all wetlands and adjacent uplands would be irrigated by the LDWP. The lower number represents the case where the existing irrigation-induced wetlands would be maintained solely by continued irrigation of adjacent uplands.

Cropland was not generally included in either the proposed water budgets or the total available water summary for any of the action alternatives. Cropland would be maintained as either acquired cropland (Proposed Action)

or acquired under conservation easements with the water rights remaining with the landowner (Pahcease and Topanotes alternatives). The exception was for the Riverdell North property in which new cropland would be established and managed solely for wildlife (Pahcease Alternative only).

The water quality or salinity control factor is water added to the wetland water budget to prevent the accumulation of salts in wetlands (Christensen and Low 1970). The water required for wetland water quality control is non-consumptive and amounts to a minimum of 27 percent and up to 50 percent of the wetland ET, depending on the quality of inflowing water, as described in sections 2.1.1.8 and 4.6.6.2.1.

Temporary irrigation water for planted riparian species, particularly cottonwood, would be needed for three to five years per planting block and for up to 10 years on sites with large planted riparian areas such as Riverdell North and Ted's Flat. Temporary irrigation is included in the proposed water budget. The long-term water budget for the LDWP would decrease by 260 acre-feet after construction, after temporary irrigation ceases.

The estimated total annual water requirement for the Proposed Action ranges from 8,452 to 10,118 acre-feet, depending on the amount of irrigation-induced wetlands maintained by the project. The maximum water requirement of 10,118 acre-feet per year also includes an annual maximum of 260 acre-feet for temporary irrigation of cottonwoods as cottonwoods would be planted on a site-by-site basis in up to three 120-acre blocks per year. A maximum of 360 acres of cottonwoods would be irrigated at any one

time. Once cottonwoods are established, the maximum water requirement would be reduced by 260 acre-feet to 9,858 acre-feet per year. Available water rights total 12,403 acre-feet. Table 4-31 provides a breakdown of this amount by site and by water budget component.

4.5.6.2.2 Water Availability

Water for the LDWP would come from existing water rights appurtenant to land within the project area under both the low and maximum demand scenarios. A comparison of water requirements and available water rights for the Proposed Action is displayed in Table 4-31. As shown in the table, sufficient water rights exist with lands within the project area to operate the project. If it becomes necessary to move or transfer UIIP water within the project area, the BIA would address administratively.

At the Uresk Drain site, the Drain would be partially filled. The flow rate in the Drain is estimated to be 3 to 7 cfs. The Uresk Drain would require approximately 1,400 acre-feet of water to initially create and restore open water/emergent marsh complexes and other wetlands within the site, which is an amount within the water rights available for the Uresk Drain (see Table 4-32). The initial creation or "filling" of these wetlands would be staged and completed over a period of several months. Once filled, these wetlands would not be drained on an annual or other regular basis. The exact timing of water introduction into the wetlands would be arranged to coincide with the physical construction schedule and according to the interim duty schedule or other water right agreement in place.

Once water levels in the Uresk Drain wetlands are at operational stage, the site would be operated as a flow-through system with water supplied by the Myton Townsite Canal. Annual outflow from the Uresk Drain to the Duchesne River is expected to remain near its current level when water for water quality control is included in the site water budget.

Under the Proposed Action, the Ted's Flat North Oxbow may be reconnected to the Duchesne River. This oxbow system would convey water naturally only when flow in the Duchesne River between Myton and Randlett exceeds about 1,700 to 2,000 cfs, which usually occurs prior to the irrigation season.

Under the Proposed Action, both the water available for the LDWP (12,403 acre-feet) and the water required for the LDWP (10,118 acre-feet) would be within the range of baseline canal diversions. On average, 51,466 acre-feet of water are diverted by the UIIP within the LDWP project area of influence, with an average diversion range of 49,425 to 52,449 acre-feet within most years (Table 4-32). The exact percent of the UIIP diversions attributable to water rights associated with land within the LDWP project varies slightly from year to year, but averages 24.1 percent of the total diversions (ranging from 23.6 percent in average and high flow years to 25.8 percent in very low flow years). However, the proposed LDWP water budget would account for only an average of 19.0 percent of the UIIP diversions (ranging from 18.6 percent in average and high flow years to 20.4 percent in very low flow years). Therefore, both the higher percentage of UIIP diversion use representing all water available with the land in the project area, and the proposed LDWP water budget percent of the UIIP diversions were presented in the impact analysis.

Based on the records available, water diversions within the project area appear to be relatively constant except in the lowest streamflow years, in which streamflow is less than about 37,000 acre-feet at the Myton gage (see also sections 4.5.5.4.1 and 4.5.5.4.2). In these very low flow years, total diversions within the project area are approximately 3,518 acre-feet lower than average.

Under the LDWP, the water budget for the wetlands and associated wildlife habitat would remain similar among years, instead of varying from year to year. As a result, LDWP would call for up to 10,113 acre-feet on an annual basis, with a right to call for 12,403 acre-feet. This would not change water availability to junior water right holders in average and high flow years. In low flow years, there could be a slight reduction in water available for junior water right holders (127 to 162 acre-feet throughout the entire Duchesne River system). In very low flow years, or years in which the flow at Myton is less than 37,000 acre-feet, there would be a reduction of 718 to 908 acre-feet of natural flow water to junior water right holders, including those of the Riverdell North property, than under baseline conditions. This reduction would occur on average once every six years and represent less than one percent of the water diverted locally from the Duchesne River.

The reduction in natural flow water available for junior water right holders would be spread over a number of water right holders, would represent a fairly rare occurrence and represent a relatively small amount of water. Overall, this would not be a significant impact within the lower Duchesne River canal systems described in section 4.5.5.2, although some individual junior water right holders could be impacted in very low flow years.

As described in section 4.5.5.3.2, some lands that irrigate with 1861 priority water from UIIP canals in the project area (i.e., senior water right holders) have received water in excess of their legal entitlement. With the LDWP water budget remaining constant among years, instead of varying from year to year, there would be less or potentially no “excess water” available to lands served by the UIIP. Because there is no way to determine how much “extra water” some lands irrigated with 1861 priority water may have received in past years, there is no way to determine the significance of any reduction that may occur. In no case, however, will any lands served by a UIIP canal receive less than their legal entitlement to water.

4.5.6.2.3 Net Change in Duchesne River Streamflow

Duchesne River flows would change if there were changes in the range of diversion amounts or return flows. Water allocated to lands served by the Myton Townsite, Grey Mountain and Ouray School canals are currently diverted from the Duchesne River at an average annual amount of 51,466 acre-feet, with 12,403 acre-feet of this water allocated to land within the LDWP project area. These diversions are within the range of historic diversions. With implementation of the project, the same amount of water would continue to be diverted. As described in section 4.5.6.2.2, diversions would occur at the same rate every year rather than varying from year to year. This would result in less natural river flow being available to junior water right holders in some years, but would not change the Duchesne River flows.

The main factors affecting changes in return flows under the Proposed Action would be:

- The changes in ET among habitat types, such as the conversion of irrigated grassland to wetland,
- Increased soil seepage in wetlands created from desert shrub or non-irrigated grassland, and
- Increased flow-through water.

The soil seepage rates would not change within existing wetland or irrigated pastures; therefore, changes in seepage within these habitats were not considered in the return flow analysis.

Under the Proposed Action, there would be an increase in ET associated with the restored/created wetlands, which by itself could reduce the amount of water returning to the Duchesne River. However, this increased ET would be offset by a combination of reduced upland ET, increased soil seepage in new wetlands and the water for wetland salinity control, which would return directly to the Duchesne River as surface water runoff.

Overall, the water budget model predicts that operation of the Proposed Action could increase return flows locally by about 357 acre-feet per year. These return flows would be returned to the river over 20 river miles during a 12-month period, and therefore would not result in a measurable change in stream flow.

Table 4-31. Water Requirements and Water Availability (acre-feet) for Each Site under the Proposed Action.¹

| Water Budget Component | | | | Total |
|---------------------------------------|-----------------------|-----------------------|------------------------|------------------------------------|
| | Uresk Drain | Riverdell South | Ted's Flat | |
| Wetland support-enhancement | 1,210 | 190 | 376 | 1,776 |
| Wetland support-created/restored | 821 | 841 | 855 | 2,517 |
| Upland habitat | 2,516 | 932 | 1,209 | 4,657 |
| Water quality control | 486 | 198 | 224 | 908 |
| Cropland | 0 | 0 | 0 | 0 |
| Temporary irrigation | 81 | 159 | 130 | 260 ³ |
| Total Requirement ² | 3,904 to 5,114 | 2,130 to 2,320 | 2,418 to 2,794 | 8,452 to 10,118³ |
| Water Available | 5,740 | 3,103 | 3,560 | 12,403 |
| Difference ¹ | +626 to +1,164 | + 782 to + 973 | + 766 to +1,142 | +2,285 to +3,951 |

¹Differences between Water Requirements and Water Availability are identified as positive (+) if water availability exceeds site water requirements and negative (-) if water availability is less than water requirements.

²The range of values reflect differences in the amount of irrigation-induced wetlands to be supported by the Proposed Action.

³ The maximum temporary irrigation in any year is 260 acre-feet.

Table 4-32. Potential Changes in Natural Flow Water Availability to Junior Water Right Holders under the Proposed Action During High, Average and Low Flow Years.

| Type of Flow Year | UIIP Diversions (average acre-feet) | Difference from Baseline Average | Diversions Attributable to LDWP (%) ¹ | Potential decrease in Junior Water Rights (acre-feet) ¹ | Average Frequency of Occurrence |
|----------------------|-------------------------------------|----------------------------------|--|--|---------------------------------|
| High Flow | 52,449 | +17 | 18.6-23.6 | 0 | 1/3.5 years |
| Average Flow | 52,512 | +46 | 18.6-23.6 | 0 | 1/2.5 years |
| Low Flow | 50,802 | -664 | 19.2-24.4 | 127-162 | 1/6 years |
| Very Low Flow | 48,048 | -3,418 | 20.4-25.8 | 718-908 | 1/6 years |
| All Years | 51,466 | | 19.0-24.1 | | |

¹ The lower number reflects the percent of UIIP diversions that the proposed LDWP water budget would represent; the higher number represents the percent of UIIP diversions associated with water rights associated with land within the project boundaries.

4.5.6.2.4 Groundwater Table Changes

Uresk Drain. Within the Uresk Drain site, there would be no measurable changes in groundwater elevations in the Goose Pond, West Fields or Head of Drain areas as there are no berms, impoundments or other physical changes planned for these subareas.

Wetlands in the Main Site would be created by a mix of partial Drain filling, excavation and berm construction. The Drain within the Main Site would be sealed at the clay-cobble contact (at an elevation approximately 1½ to 2½ feet from the bottom of the Drain). Sealing this contact would result in an increased groundwater table within the Drain's area of influence, approximately 600 feet north and south of the ditch.

Berms would be constructed perpendicular to the Drain and along natural topographic contours, so that water would be ponded behind or west of the berms, with greater wetland development to the south of the Drain than to the north. Water depths behind the berms would vary from 4.5 feet directly west of each berm (up to 8 feet in the clay borrow area and in portions of the partially filled Drain) to early season surface inundation only within the wet meadow and mesic shrub areas along the wetland edges (WWS 2000). Wetlands would generally extend from 1,000 to 1,500 feet north of the Drain, and from 2,000 to 2,500 feet south of the Drain.

All of the excavation for deep water areas would occur south of the Drain in low permeability clay soils. As a result, open water and deep marsh wetland areas would generally be located more than 500 feet south of River Road, with native shrubs planted adjacent to River Road.

The first large berm would be placed at least 100 feet west of River Road along the eastern boundary. This would eliminate any direct ponding of water against River Road at this location. As noted on Map 2, existing ditches bordering River Road would be maintained to both ensure water is delivered to downstream water users and to prevent water from ponding against the county road. The area south of the Drain is relatively flat, and both the extent of wetlands and the area in which the groundwater table would be affected is greater than on the north side of the Drain. The southern extent of wetlands would be limited by a sharp topographic break (10 feet) between the proposed wetlands and adjacent sagebrush desert shrub habitat (generally along the 5,040-foot elevational contour), with another 10 to 20-foot increase in elevation between the sagebrush and Myton Townsite Canal (5,070 feet above MSL in the vicinity of the proposed wetlands).

West of Mallard Springs, two smaller berms would be placed across the Drain. These smaller structures would affect groundwater levels within approximately 200 feet in all directions. The berms are proposed to be constructed just west of Mallard Springs and 200 feet west of Mallard Springs, so that the area of anticipated groundwater rise would be located south of 8000 South.

In summary, the area in which the groundwater table would rise within the Uresk Drain would be restricted to the area bordered by 3000 West, 8000 South and River Road on the north, east and west sides. To the south of the Drain, increases in groundwater tables would generally occur south of the 5,040 contour. Water tables north of 8000 South would maintain their current characteristics under the Proposed Action (Basin Hydrology 2007).

Riverdell South. Wetlands on the Riverdell South site would be created by constructing small berms (4 feet high, average 225 feet long) across the historic oxbows. The oxbows are defined topographic features with the bottoms located three to six feet below the adjacent ground surface. Open water and emergent marsh would be limited to the area defined by the oxbow (see WWS 2000) with an associated high groundwater table extending along the length of the oxbow system and between 100 to 150 feet perpendicular to the oxbow center. The area in which the water table would be raised would generally be restricted to north of River Road. However, the water table would be raised within the two existing oxbow traces south of River Road.

Ted's Flat. Wetlands created north of the Duchesne River would be restricted to the well defined and deep North Oxbow system with limited groundwater table increases outside of the oxbows. Along the South Oxbows, open water and emergent marsh would also be contained within the oxbow footprint, with seasonally saturated wet meadows created within a 100 to 200-foot area adjacent to the oxbows. The exception to this would be in the southwest corner of the site, where 40 acres of emergent marsh/open water would be created. The area in which these wetlands would be created is 10 feet below River Road.

4.5.6.2.5 Summary of Impacts

Sufficient water rights exist with lands within the project area to operate the project and the water required for the LDWP would be within the range of baseline canal diversions. The LDWP would not result in a measurable change in Duchesne River flow.

The Proposed Action would have no effect on the legal entitlement to water to any lands served by the UIIP or on other senior water rights. There would be no change in water availability to junior water right holders in average and high flow years. In low and very low flow years, there could be a slight reduction of natural flow water available for junior water right holders (127 to 908 acre-feet) throughout the entire Duchesne River system.

The reduction in natural flow water available for junior water right holders would be spread over a number of water right holders, would represent a fairly rare occurrence and represent a relatively small amount of water. Overall, this would not be a significant impact within the lower Duchesne River canal systems described in section 4.5.5.2, although some individual junior water right holders could be impacted in very low flow years.

There would be no increase in the ground water table outside of the project boundaries at the Uresk Drain and Ted's Flat sites. The ground water increase in Riverdell South would mostly be restricted to the project area north of River Road, but there would be an increase in the water table within two existing oxbows south of River Road.

4.5.6.3 Pahcease Alternative

4.5.6.3.1 Water Requirements

The estimated total annual water requirement for the Pahcease Alternative is from 13,176 to 14,420 acre-feet depending on the amount of irrigation-induced wetlands maintained by the project. Table 4-33 provides a breakdown of estimated water requirements by site and by water budget component.

Table 4-33. Water Requirements and Water Availability (acre-feet) for Each Site under the Pahcease Alternative.¹

| Water Budget Component | Site | | | Total |
|---------------------------------------|-----------------------------|---------------------------|------------------------------------|---|
| | Flume | Uresk Drain | Combined Riverdell North and South | |
| Wetland support-enhancement | 443 | 1,211 | 199 | 1,853 |
| Wetland support-created/restored | 2,169 | 1,024 | 1,077 | 4,270 |
| Upland habitat | 2,441 | 2,304 | 683 | 5,428 |
| Water quality control | 495 | 529 | 269 | 1,293 |
| Cropland | 0 | 0 | 1,316 | 1,316 |
| Temporary irrigation | 175 | 64 | 188 | 260 ³ |
| Total Requirement ² | 5,280 to 5,723 | 3,921 to 5,132 | 3,532 to 3,732 | 13,176 to 14,420³ |
| Water Available | 8,421 | 5,820 | 5,370 | 19,611 |
| Difference ² | +2,698 to +3,141 | +688 to +1,899 | +1,638 to +1,838 | +5,024 to +6,435 |

¹ Differences between Water Requirements and Water Availability are identified as positive (+) if water availability exceeds site water requirements and negative (-) if water availability is less than water requirements.

² The range of values reflect differences in the amount of irrigation-induced wetlands to be supported by the Pahcease Alternative.

³ The maximum temporary irrigation in any year is 260 acre-feet.

Table 4-34. Potential Changes in Natural Flow Water Availability to Junior Water Right Holders under the Pahcease Alternative During High, Average and Low Flow Years.

| Type of Flow Year | UIIP Diversions (average acre-feet) | Difference from Baseline Average | Diversions Attributable to LDWP (%) ¹ | Potential decrease in Junior Water Rights (acre-feet) ¹ | Average Frequency of Occurrence |
|----------------------|-------------------------------------|----------------------------------|--|--|---------------------------------|
| High Flow | 52,449 | +17 | 27.8-37.4 | 0 | 1/3.5 years |
| Average Flow | 52,512 | +46 | 27.8-37.4 | 0 | 1/2.5 years |
| Low Flow | 50,802 | -664 | 28.7-38.6 | 190-256 | 1/6 years |
| Very Low Flow | 48,048 | -3,418 | 30.4-40.9 | 1,070-1,439 | 1/6 years |
| All Years | 51,466 | | 28.3-38.1 | | |

¹ The lower number reflects the percent of UIIP diversions that the proposed Pahcease Alternative water budget would represent; the higher number represents the percent of UIIP diversions associated with water rights associated with land within the Pahcease Alternative boundaries.

4.5.6.3.2 Water Availability

As described for the Proposed Action, water for the Pahcease Alternative would come from existing water rights associated with land within the project area under both the low and maximum demand scenarios.

The Uresk Drain wetlands would be filled as described in section 4.5.6.2.2. The Ted’s Flat north oxbows would not be connected to the Duchesne River as described for the Proposed Action. Instead, the Flume oxbow system would be connected to the existing secondary river channel. Neither the present river channel nor secondary channel entrance elevations would be lowered. Water would only enter the oxbows when the secondary channel flows exceed 250 to 300 cfs, which would occur when flows in the Duchesne River approximate 2,000 cfs (WWS 1998a).

Under the Pahcease Alternative, both the water available for the LDWP (19,611 acre-feet) and the water required for the LDWP (14,420 acre-feet) would be within the range of baseline canal diversions, which average 51,466 acre-feet (Tables 4-33 and 4-34). The exact percent of UIIP diversions attributable to water rights associated with land within the LDWP area for the Pahcease Alternative varies slightly from year to year, but average 38.1 percent of the total diversions (ranging from 37.4 percent in average and high flow years to 40.9 percent in very low flow years). However, the proposed LDWP water budget would account for only an average of 28.3 percent of the UIIP diversions (ranging from 27.8 percent in average and high flow years to 30.4 percent in very low flow years). Therefore, both the higher percentage of UIIP diversion use representing all water available with the land in the project area, and the proposed LDWP water budget percent of the UIIP diversions were presented in the impact analysis.

Under the Pahcease Alternative, the water budget for wetlands and associated wildlife habitat would remain similar among years, instead of varying from year to year. As a result, the LDWP would call for up to 14,420 acre-feet on annually, with a right to call for 19,611 acre-feet (Table 4-33). This would not change water availability to junior water rights holders in average and high flow years. In low flow years, there could be a reduction in water available for junior water right holders of 190 to 256 acre-feet (Table 4-34).

In very low flow years, or years in which the flow at Myton is less than 37,000 acre-feet, there would be a reduction of 1,070 to 1,439 acre-feet of natural flow water to junior water right holders, including those of the Riverdell North property, than under baseline conditions. This reduction would occur on average once every six years and represent approximately one percent of the water diverted locally from the Duchesne River.

The reduction in natural flow water available for junior water right holders would be spread over a number of water right holders, would represent a fairly rare occurrence and represent a relatively small amount of water. Overall, this would not be a significant impact within the lower Duchesne River canal systems described in section 4.5.5.2, although some individual junior water right holders could be impacted in very low flow years.

As described in section 4.5.5.3.2, some lands that irrigate with 1861 priority water from UIIP canals in the project area (i.e., senior water right holders) have received water in excess of their legal entitlement. With the LDWP water budget remaining constant among years, instead of varying from year to year, there would be less or potentially no “excess water” available to lands served by the UIIP. Because there is no way to

determine how much “extra water” some lands irrigated with 1861 priority water may have received in past years, there is no way to determine the significance of any reduction that may occur. In no case, however, will any lands under a project canal receive less than their legal entitlement to water.

4.5.6.3.3 Net Change in Duchesne River Streamflow

The main factors affecting changes in return flow under the Pahcease Alternative would be:

- The changes in ET among habitat types, such as the conversion of irrigated grassland to wetland,
- Increased soil seepage in wetlands created from desert shrub or non-irrigated grassland,
- Increased flow-through water, and
- Both the increased ET and soil seepage associated with establishing new cropland in the Riverdell North property.

Under the Pahcease Alternative, there would be an increase in ET associated with the restored/created wetlands and the new cropland (Table 4-34). This combined increased ET would be offset by a combination of reduced upland ET, increased soil seepage in new wetlands and the water for wetland salinity control, which would return directly to the Duchesne River as surface water runoff.

Overall, the water budget model predicts that operation of the Pahcease Alternative could increase return flows locally by about 147 acre-feet per year, which would enter the river over a 20 mile stretch during a 12-month period, and therefore would not result in a measurable change in stream flow.

4.5.6.3.4 Groundwater Table Changes

Under the Pahcease Alternative, groundwater table changes within the Uresk Drain site would be as described for the Proposed Action for the Goose Ponds, Main Site and West Field areas, but different for the Head of the Drain subarea.

The Head of the Drain subarea is relatively flat with generally 3 feet of elevational change between the 8000 South on the south of the subarea and River Road on the north of the subarea. There is a larger topographic difference (up to 10 feet) between the western and eastern boundaries of the subarea. The groundwater table gradient parallels the ground surface topography in this area with a strong west to east flow pattern. Under the Pahcease Alternative, a large berm would be placed across the Drain approximately 300 feet north of 8000 South. The berm would be situated so as to create wetlands within the grasslands to the east of the Drain. Water would be impounded up to 3 feet in depth directly behind the berm, with the water table being raised and creating wetlands up to 1,200 feet north and east of the berm.

Forty-eight acres of wetlands would be created in the Head of the Drain with a maximum of 262 acre-feet of water supplied during the six month irrigation season. Of this amount, seepage and ET would account for approximately 220 acre-feet of water. Due to the dispersion of water into these wetlands over a six month period, the rate and volume of seepage (averaging 0.5 acre-feet/acre/year, with a range of 0.45 to 0.61 acre-feet/acre/year), the perching nature of soils in this area, and the areas general groundwater gradient of west-to-east/north-to-south, the proposed berms would create a very localized, if any, rise in the underlying water

table. There is insufficient water volume and duration associated with water management at these berms in conjunction with the distance to the Myton Cemetery for these berms to have any affect on the Myton Cemetery. However, due to the strong west to east gradient, the groundwater table could rise to the east of the LDWP project area within the 40-acre parcel between the site and River Road.

Groundwater changes within Riverdell South would be the same as described for the Proposed Action. There are minimal wetlands proposed for the Riverdell North property, all along the North oxbow, which would be connected to the Duchesne River at both ends. This would limit the extent of groundwater rise to the existing oxbow footprint.

Wetlands within the Flume would be restored along the historic oxbow system, similar to that described for the Riverdell South property. The area in which groundwater would rise would generally extend from 150 to 200 feet from the oxbows. With the maintenance of these ditches, the area of groundwater table rise would generally be restricted to within the site boundaries. However, the water table could increase on approximately 8.6 acres of land adjacent to the southwest portion of the Flume where the secondary channel would be reconnected to the oxbows.

The groundwater table in the Full Connector wetland would remain within the footprint of the wetland as mapped in 1997 and the increased groundwater table in the Pit Wetland would be more than 300 feet from adjacent properties or roads.

4.5.6.3.5 Summary of Impacts

As described for the Proposed Action, sufficient water rights exist with lands within

the Pahcease Alternative boundaries to operate the project and the water required for the LDWP would be within the range of baseline canal diversions. There would be no measurable change in Duchesne River streamflow.

The Pahcease Alternative would have no effect on the legal entitlement to water to any lands served by the UIIP or on other senior water rights. There would be no change in water availability to junior water right holders in average and high flow years. In low and very low flow years, there could be a slight reduction of natural flow water available for junior water right holders (190 to 1,439 acre-feet) throughout the entire Duchesne River system.

The reduction in natural flow water available for junior water right holders would be spread over a number of water right holders, would represent a fairly rare occurrence and represent a relatively small amount of water. Overall, this would not be a significant impact

within the lower Duchesne River canal systems described in section 4.5.5.2, although some individual junior water right holders could be impacted in very low flow years.

There would be an increase in the ground water table east of the Uresk Drain site boundaries, adjacent to the Flume and within two existing oxbows south of River Road adjacent to the Riverdell South site.

4.5.6.4 Topanotes Alternative

4.5.6.4.1 Water Requirements

The estimated total annual water requirement for the Topanotes Alternative is from 11,286 to 13,328 acre-feet, depending on the amount of irrigation-induced wetlands maintained by the project. Table 4-35 provides a breakdown of this amount by site and by water budget component.

Table 4-35. Water Requirements and Water Availability (acre-feet) for Each Site under the Topanotes Alternative.¹

| Water Budget Component | Site | | | Total |
|---------------------------------------|-----------------------------|---------------------------|-----------------------------|-----------------------------|
| | Flume | Uresk Drain | Ted's Flat | |
| Wetland support-enhancement | 443 | 1,211 | 3,485 | 5,139 |
| Wetland support-created/restored | 2,169 | 1,024 | 919 | 4,112 |
| Upland support | 2,441 | 2,304 | 792 | 5,537 |
| Water quality control | 495 | 529 | 241 | 1,265 |
| Cropland | 0 | 0 | 0 | 0 |
| Temporary irrigation | 175 | 64 | 133 | 260 ³ |
| Total Requirement ² | 5,280 to 5,723 | 3,921 to 5,132 | 2,085 to 2,473 | 11,286 to 13,328 |
| Water Available ⁴ | 8,421 | 5,820 | 3,560 | 17,802 |
| Difference ² | +2,698 to +3,141 | +688 to +1,899 | +1,087 to +1,475 | +4,473 to +6515 |

¹ Differences between Water Requirements and Water Availability are identified as positive (+) if water availability exceeds site water requirements and negative (-) if water availability is less than water requirements.

² The range of values reflect differences in the amount of irrigation-induced wetlands to be supported by the Topanotes Alternative.

³ The maximum temporary irrigation in any year will be 260 acre-feet.

Table 4-36. Potential Changes in Natural Flow Water Availability to Junior Water Right Holders under the Topanotes Alternative During High, Average and Low Flow Years.

| Type of Flow Year | UIIP Diversions (average acre-feet) | Difference from Baseline Average | Percent Diversions Attributable to LDWP | Potential decrease in Junior Water Rights (acre-feet) | Average Frequency of Occurrence |
|-------------------|-------------------------------------|----------------------------------|---|---|---------------------------------|
| High Flow | 52,449 | +17 | 25.4-33.9 | 0 | 1/3.5 years |
| Average Flow | 52,512 | +46 | 25.4-33.9 | 0 | 1/2.5 years |
| Low Flow | 50,802 | -664 | 26.2-35.0 | 174-232 | 1/6 years |
| Very Low Flow | 47,948 | -3,418 | 27.8-37.1 | 950-1306 | 1/6 years |
| All Years | 51,466 | | 25.9-34.6 | | |

4.5.6.4.2 Water Availability

As described for the Proposed Action, water for the Topanotes Alternative would come from existing water rights associated with land within the project area under both the low and maximum demand scenarios.

The Uresk Drain wetlands would be filled as described in section 4.5.6.2.2. The Ted’s Flat north oxbows would be connected to the Duchesne River as described for the Proposed Action and the Flume oxbows as described for the Pahcease Alternative.

Under the Topanotes Alternative, both the water available for the LDWP (17,802 acre-feet) and the water required for the LDWP (13,328 acre-feet) would be within the range of baseline canal diversions, which average 51,466 acre-feet (Tables 4-35 and 4-36). The exact percent of the UIIP diversions attributable to water rights associated with land within the LDWP project area for the Topanotes Alternative varies slightly from

year to year, but average 34.6 percent of the total diversions (ranging from 33.9 percent in average and high flow years to 37.1 percent in very low flow years). However, the proposed LDWP water budget would account for only an average of 25.9 percent of the UIIP diversions (ranging from 25.4 percent in average and high flow years to 27.8 percent in very low flow years). Therefore, both the higher percentage of UIIP diversion use representing all water available with the land in the project area, and the proposed LDWP water budget percent of the UIIP diversions were presented in the impact analysis.

Under the Topanotes Alternative, the water budget for the wetlands and associated wildlife habitat would remain similar among years, instead of varying from year to year. As a result, the LDWP would call for up to 13,328 acre-feet on an annual basis, with a right to call for 17,802 acre-feet (Table 4-35). This would not change water availability to junior water right holders in average and high flow years. In low flow years, there could be a reduction in

water available for junior water right holders of 174 to 232 acre-feet (4-36). In very low flow years, or years in which the flow at Myton is less than about 37,000 acre-feet, there would be a reduction of 950 to 1,306 acre-feet of natural flow water to junior water right holders, including those of the Riverdell North property, than under baseline conditions. This reduction would occur on average once every six years and represent approximately one percent of the water diverted locally from the Duchesne River.

The reduction in natural flow water available for junior water right holders would be spread over a number of water right holders, would represent a fairly rare occurrence and represent a relatively small amount of water. Overall, this would not be a significant impact within the lower Duchesne River canal systems described in section 4.5.5.2, although some individual junior water right holders could be impacted in very low flow years.

As described in section 4.5.5.3.2, some lands that irrigate with 1861 priority water from UIIP canals in the project area (i.e., senior water right holders) have received water in excess of their legal entitlement. With the LDWP water budget remaining constant among years, instead of varying from year to year, there would be less or potentially no “excess water” available to lands served by the UIIP. Because there is no way to determine how much “extra water” some lands irrigated with 1861 priority water may have received in past years, there is no way to determine the significance of any reduction that may occur. In no case, however, will any lands under a project canal receive less than their legal entitlement to water.

4.5.6.4.3 Net Change in Duchesne River Streamflow

As described for the Proposed Action, the main factors affecting changes in return flow under the Topanotes Alternative would be:

- The changes in ET among habitat types, such as the conversion of irrigated grassland to wetland,
- Increased soil seepage in wetlands created from desert shrub or non-irrigated grassland, and
- Increased flow-through water.

Under the Topanotes Alternative, there would be an increase in ET associated with the restored/created wetlands. This increased ET would be offset by a combination of reduced upland ET, increased soil seepage in new wetlands and the water for wetland salinity control, which would return directly to the Duchesne River as surface water runoff.

Overall, operation of the Topanotes Alternative would increase return flows locally by about 585 acre-feet per year, which would enter the river over a 20 mile stretch during a 12-month period, and therefore would not result in a measurable change in stream flow.

4.5.6.4.4 Groundwater Table Changes

Changes in groundwater tables would be as described for the Ted’s Flat site under the Proposed Action and for the Uresk Drain and Flume sites under the Pahcease Alternative.

4.5.6.4.5 Summary of Impacts

As described for the Proposed Action, sufficient water rights exist with lands within the Topanotes Alternative boundaries to operate the project and the water required for the LDWP would be within the range of baseline canal diversions. There would be no measurable change in Duchesne River streamflow.

The Topanotes Alternative would have no effect on the legal entitlement to water to any lands served by the UIIP or on other senior water rights. There would be no change in water availability to junior water right holders in average and high flow years. In low and very low flow years, there could be a slight reduction of natural flow water available for junior water right holders (714 to 1,306 acre-feet) throughout the entire Duchesne River system.

The reduction in natural flow water available for junior water right holders would be spread over a number of water right holders, would represent a fairly rare occurrence and represent a relatively small amount of water. Overall, this would not be a significant impact within the lower Duchesne River canal systems described in section 4.5.5.2, although some individual junior water right holders could be impacted in very low flow years.

There would be an increase in the ground water table east of the Uresk Drain site boundaries and adjacent to the Flume site.

4.5.6.5 No Action Alternative

Under the No Action Alternative, existing water diversions would continue via the Grey Mountain, Myton Townsite and Ouray School

canals up to the water rights allowable by law. The Duchesne River would remain mostly dry downstream of the Myton Townsite Canal until return flows enter the river east of Myton. Most of the water diverted from the Duchesne River in the Grey Mountain and Duchesne Feeder canals would continue to be exported out of the Duchesne River corridor. Junior water right holders would continue to be subject to the diversion rights of senior water right holders.

4.6 WATER QUALITY

4.6.1 Introduction

The water quality analysis addresses potential impacts on water quality from the construction and operation of the Proposed Action and alternatives. This section focuses on the primary types of impacts that would occur from changes in surface water quality caused by the LDWP. The data presented in this section is based on the following water quality studies and data summaries: Mundorff (1977), ReMillard et al. (1995), CUWCD (1996b), USGS (1998) and WWS (2000). The following water quality topics are addressed in the impact analysis:

- Increased levels of contaminants in the Duchesne River or the mitigation wetlands, and
- Changes in the salt load to the Duchesne River (and ultimately the Colorado River) from the mitigation wetlands.

4.6.2 Issues Eliminated from Further Analysis

The following issue was eliminated from detailed analysis for the reasons described below:

- Effects of current agricultural practices and associated fecal contamination and pesticide use on Tribal resources.

This issue relates to general agricultural practices within the Uinta Basin that may contribute non-point source pollution to wetlands and streams. The LDWP would eliminate cattle grazing within the project area and reduce associated fecal contamination but it would not affect overall grazing and agricultural practices outside of the project area. Changes in general agricultural practices are not part of the LDWP project.

4.6.3 Issues Addressed in the Impact Analysis

The following issues raised during public scoping and agency consultation were considered in this analysis:

- Would the project increase contaminants or salts in the mitigation wetlands that could adversely affect wildlife?
- Would the project increase contaminants in the Duchesne River to a level that could adversely affect fish or wildlife?
- Would the project affect salinity inputs to the Duchesne River in terms of the total amount of salts?

4.6.4 Area of Influence

The project area of influence for water quality includes the areas depicted on Figure 1-2 in portions of Duchesne and Uintah counties in northeast Utah, and the Duchesne River between Bridgeland and the confluence with the Green River at Ouray.

4.6.5 Affected Environment

4.6.5.1 Water Quality Overview - Fish and Wildlife Concerns

Temperature and other water quality criteria are established by the State of Utah based on specific beneficial uses. The Duchesne River and its tributaries upstream of the Myton sewage treatment plant are designated as Class 3A with respect to aquatic wildlife. The Class 3A designation indicates that the river is protected for cold water fish and other aquatic life. The Flume site is within the area designated as Class 3A. Downstream of Myton, the Duchesne River is designated as Class 3B, which indicates that the river is protected for warm water aquatic life. The remainder of the LDWP project area outside of the Flume site is within the portion of the Duchesne River designated as Class 3B. According to the State of Utah, waters not specifically classified according to beneficial use are presumed to be used for secondary contact recreation and by waterfowl and water-oriented wildlife. For the purpose of this analysis, open water ponds and oxbow lakes within the Duchesne River corridor are assumed to provide habitat for waterfowl and water-oriented wildlife and are subject to the corresponding water quality criteria.

Previous studies have identified the main water quality parameters of concern in the Duchesne River affecting fish and wildlife as high concentrations of boron and TDS. Within the project area, the main parameters of concern affecting either wildlife or their plant or invertebrate food base are low and fluctuating concentrations of dissolved oxygen (DO), high summer water temperatures and high concentrations of boron and TDS. Water quality standards for each of these parameters may be exceeded locally, as described in the following sections, but not at levels that would cause the Duchesne River to be listed as an impaired water body for the aquatic use designations. However, the Duchesne River is listed as impaired for agricultural use (Class 4) as a result of TDS exceedances (DEQ 2002). Herbicides, pesticides, other organic compounds or heavy metals have not been detected in the project area at levels that would be of concern for aquatic species.

In the Duchesne River, TDS increases in a downstream direction from a summer high of 600-800 parts per million (ppm) west of Myton, 1,500-2,000 ppm near Myton, and 3,000-4,000 ppm near Randlett (Mundorff 1977). Tetra-Tech, Inc. (undated, as posted by DEQ 2007) cite an annual average TDS concentration of 665.6 ppm (range 186-2,222 ppm) at Myton, and an annual average TDS concentration of 962.3 ppm (range 184-2,316 ppm) at Randlett. Specific conductance is a measure of the ability of water to conduct an electric current and is directly related to both TDS and salinity. Within the project area, specific conductance also increases from values of 1,640 microsiemens per centimeter (uS/cm) at Myton to a high of 2,290 at Randlett (ReMillard et al. 1995).

The downstream increase in Duchesne River salinity is generally attributed to the diversion

of large amounts of water with low TDS concentrations from the upstream reaches of the river for irrigation and smaller amounts of water with higher TDS concentrations being returned to the river. However, approximately 83 percent of the TDS increase from Myton to Randlett is due to inflow from the Uinta River. Increases in TDS (and corresponding salt load) downstream of Myton to the Uinta River total about 21,500 tons annually, compared to an average inflow from the Uinta River of 106,500 tons of salt annually.

Boron concentrations in the Duchesne River also increase in a downstream direction from an average summer high of 701 parts per billion (ppb) at Myton to an average summer high of 848 ppb at Randlett. Within the project area, the Flume oxbow system contains the highest TDS and boron concentrations measured within any of the project sites (see Table 4-37). High boron concentrations have also been measured in some of the Riverdell oxbows. Ted's Flat contains the lowest boron and TDS values of any of the sites.

Water quality within the Myton Townsite Canal, which borders the Uresk Drain and portions of the Riverdell South and Ted's Flat sites, meets water quality standards throughout its length for TDS, specific conductance and boron. Table 4-37 shows the water quality of the Myton Townsite Canal at its outlet to the Duchesne River. Water quality of the Myton Townsite Canal is fairly similar to that of the adjacent Ted's Flat site with the exception that DO levels in the Myton Townsite Canal are much higher than in the Ted's Flat oxbows. Specific water quality parameters are discussed below for each of the proposed sites.

4.6.5.1.1 Salinity

Salinity (as estimated by TDS [expressed as ppm] or specific conductance [expressed as uS/cm]) can affect wildlife and aquatic species either directly or indirectly through effects on food sources, as many submerged aquatic plants cannot tolerate high salinity. Mature waterfowl (a wildlife group for which there is the most data) can tolerate relatively high salinities but ducklings can be affected by TDS levels greater than 3,200 ppm as young birds can not excrete excess salts through nasal glands as can adult waterfowl. Important waterfowl food plants can be adversely affected by salinity. Christiansen and Low (1970) suggest that conductances of less than 1,000 uS/cm are excellent for waterfowl plant production in Utah, but that conductances of more than 8,000 uS/cm are restrictive. Native riparian plants are also generally salt sensitive with adverse effects occurring at soil salinity levels of 2,000 ppm. A general rule of thumb is that these soil levels may be reached if the TDS level in the water supply is consistently greater than 1,500 ppm (Briggs 1996).

The specific conductances measured on the Duchesne River and within portions of the project area fall within acceptable limits for waterfowl production (up to 2,290 uS/cm in the Duchesne River and up to 2,280 uS/cm in the Uresk Drain), but are slightly higher than the range of specific conductances considered “excellent” for waterfowl. Duchesne River TDS levels exceed the water quality standard of 1,200 ppm from east of Myton to the Green River at times during the summer, but remain below the level at which young waterbirds could be adversely affected.

TDS levels within the Flume and Riverdell South oxbow systems exceed the water quality standards of 1,200 ppm during the summer,

reaching values from 1,610-2,680 ppm by the end of the growing season, but remain below the level at which waterfowl could be affected. If sustained for a substantial portion of the growing season, these levels could affect the success of native riparian plants such as cottonwoods. The high TDS values at these two sites likely reflect the influence of return flows on water quality as TDS values in the canals serving the Riverdell South oxbows are much lower at their source. For example, late summer TDS levels in the Myton Townsite Canal, which is used to irrigate land adjacent to the Riverdell South oxbow system, have been measured at 695 ppm, much lower than the 1,610 ppm measured in the oxbow itself.

TDS levels in the Uresk Drain and Ted’s Flat sites remain relatively constant throughout the growing season (1,087 ppm for the Uresk Drain and 704-764 ppm for Ted’s Flat) and are within water quality standards.

4.6.5.1.2 Boron

Boron is a naturally occurring element required in small amounts by plants and animals for growth, but it can be toxic in higher concentrations. Elevated boron levels in irrigation water can be toxic to certain agricultural crops. Boron tends to accumulate in aquatic systems due to the relatively high solubility of most of its compounds (EPA 1975). In the western U.S., the most common source of elevated boron is agricultural drains (Smith and Anders 1989). Concentrations of boron in water greater than 200 ppb have been shown to impair survival of some fish species, and concentrations of 100 ppb affect reproduction in rainbow trout (Eisler 1990). However, other fish and representative species of aquatic plants, freshwater invertebrates and amphibians can tolerate prolonged exposure to

boron at concentrations of 10,000 ppb without adverse effects.

There is no established wildlife protection standard for concentrations of boron in water, though standards have been recommended at the following levels: 5,000 ppb for fish, 4,000 ppb for aquatic plants and 10,000 to 12,000 ppb for sensitive aquatic species (Eisler 1990). States that have established a wildlife protection standard for boron have placed the level at 1,000 ppb (CUWCD 1996b). All these recommended levels are much higher than the adopted Utah standard of 750 ug/L (750 ppb) for boron in irrigation water.

Water samples from the Duchesne River within the project area have had average boron concentrations of less than 800 ppb, but single sample boron concentrations exceeding the recommended wildlife protection standards have been measured in the Duchesne River at Randlett (1,300 ppb).

In the project area, boron levels exceeding the recommended wildlife protection standard have been measured in the Flume, the Riverdell North oxbow, the Riverdell South oxbows and at the head of the Uresk Drain. Boron concentrations increase during the summer growing season at all sites except the Uresk Drain. Late summer boron concentrations range from a low of 640 ppb at Ted's Flat to levels greater than 3,000 ppb in the Riverdell North oxbow, the Riverdell South oxbows and the Flume oxbows. The higher boron levels in the Flume, Riverdell North and Riverdell South oxbows parallel the higher TDS concentrations and likely reflect return flow inputs.

No project sites contain lethal concentrations of boron; however, boron is stable in natural systems and boron not taken up by plants or

animals tends to accumulate over time (Eisler 1990). Soil samples from the project area were analyzed by the FWS in 1995 (USGS 1998). This study did not indicate that boron was accumulating in the project area soils at levels greater than background soil concentrations. Studies by the DOI at the nearby Pariette Wetlands (as cited in USGS 1998) also showed little biomagnification of boron in animal tissue. The Pariette Wetlands are flushed annually during spring run-off, which may prevent boron accumulation. Boron could accumulate in closed basins receiving boron-rich inflow.

4.6.5.1.3 Physical Parameters (DO, Temperature and pH)

Surface waters must contain at least minimum levels of DO in order to maintain aquatic life. Requirements vary between cold-water and warm-water species. The minimum water quality standard for DO in cold water aquatic systems is to maintain levels above 4 mg/L (1-day average) and 5.0 mg/L (7-day average). The minimum acceptable long-term DO level for warm-water aquatic species is 6.5 mg/L (DEQ 2003). The minimum water quality standard for DO in warm water aquatic systems is to maintain levels above 3 mg/L (1-day average) and 4 mg/L (7-day average). The minimum acceptable long-term DO level for warm-water aquatic species is 5.5 mg/L (DEQ 2003). DO levels will generally decrease with an increase in temperature. Aquatic plants and some invertebrate species can be adversely affected by DO levels of less than 2-3 mg/L. Aquatic plants and invertebrates are important because they provide an important food source for many wetland-dependent species, waterfowl and other waterbirds.

Summer DO concentrations in the project area fall below the acute standards in the Riverdell

South oxbows and are slightly less than the chronic standards in the Ted's Flat oxbows. DO concentrations are higher in drains emptying into the Flume oxbows, where surface water discharges of up to 4 cfs have been measured. Increases in water velocity and depth contribute to increased DO concentrations in flowing water (Kadlec and Knight 1995).

The established temperature standards for the protection of aquatic life are 20 degrees centigrade (68 degrees Fahrenheit) for cold-water fish and 27 degrees centigrade (80 degrees Fahrenheit) for warm-water and non-game fish. No temperature standard has been established for protection of waterfowl or water-oriented wildlife. Summer water temperatures approximate the cold water fish standard at the outlet of the Flume with the Duchesne River and exceed it at the upper end. At the remaining LDWP sites, summer water temperatures are less than the warm water fish standards at all sites, although the summer water temperatures in the Swamp wetland at Ted's Flat approach the standard and may exceed it in some years.

The acceptable pH range for both cold- and warm-water species is between 6.5 and 9. All of the proposed sites have pH levels within this range.

4.6.5.2 Baseline Water Quality Summary - Fish and Wildlife Concerns

Boron and TDS concentrations in the project area are generally above the wildlife standards but are well below the toxic effects levels. The FWS identified that none of the levels of the constituents would be limiting to adult waterfowl, and that adverse effects of boron on waterbird growth and reproduction would not be expected with development of any of the project sites as a waterbird management area (USGS 1998).

The sampling sites in which the highest concentrations of boron and TDS were measured are also the sites with the lowest flows. The high TDS and boron concentrations in the Riverdell North and Riverdell South oxbows were measured at discharges of 0.01 cfs or less. In the Flume, boron concentrations decreased in a downstream direction corresponding to an increase in discharge from 1 to 4 cfs. Similar results were observed in the Uresk Drain as boron concentrations decreased, with increasing flow from the head of the Drain (0.01 or less cfs) to the Drain outlet (5-7 cfs). As observed in the Flume, the Uresk Drain TDS levels did not increase in a downstream direction.

Ted's Flat was within water quality standards for all parameters except DO which was measured at a level insufficient to support warm-water species and some aquatic plants. The Myton Townsite Canal, which would be used to supply water to most of the project area, has good quality water throughout its length, with boron and TDS concentrations similar to that of Ted's Flat but with much higher DO levels.

Data in Table 4-37 displays existing water quality within the project area as summarized from Mundorff (1977), FWS (1990), ReMillard et al. (1995), USGS (1998) and WWS (2000).

4.6.5.2.1 Federal Salinity Standards

Salinity in the Duchesne River is regulated by the Clean Water Act, which relegates authority to individual states and designated Tribes to set water quality criteria, and regulatory and enforcement authority to EPA. In addition, the Colorado River Salinity Control Program, through implementation by NRCS and BOR, has the goal of reducing salinity in the lower Colorado River to 1972 levels (specifically 869 mg/L (ppm) at Imperial Dam). Although these two programs are related, they are administered and monitored under different authorities.

Colorado River Salinity. The Colorado River Salinity Control Act (PL 93-32, 98-569 and 104-20) authorized the DOI and the NRCS to enhance and protect water quality within the Colorado River Basin. Salts in the Colorado River are important as the river is used to supply water to 18 million people and irrigation water to approximately three million acres. Salt load reductions in Colorado River tributaries, such as the Duchesne River, are necessary to reduce total salts in the Colorado River. Reclamation measures the effects of increases in salts in either the mainstem Colorado River or its tributaries at Imperial Dam on the Colorado River near the Mexican border.

The estimated long-term average annual salt load contributed to the Colorado River by the Duchesne River is 330,000 tons (BOR 1986 as cited in Swanson 2007), which represents 4

percent of the total annual Colorado River salt load of 8.2 million tons at Imperial Dam.

From data available through Utah DEQ and analysis by Tetra-Tech, Inc. (undated, as posted by DEQ 2007) the total salt load in the Duchesne River is approximately 169,000 tons at Myton and 297,000 tons at Randlett. Inflow from the Uinta River (106,500 tons) accounts for 83 percent of the increase between Myton and Randlett. Total salt load increases by about 21,500 tons in the reach between Myton and the Uinta River.

Using the Reclamation method, Swanson (2007) estimates that the wetlands and irrigated pastures in the LDWP project area contribute between 8,608 to 12,109 tons of salt annually to the Duchesne River under baseline conditions. This represents 2.6 to 3.7 percent of the total Duchesne River salt load. Baseline salt load contributions by site are listed in Table 4-38.

Clean Water Act. Water quality in the lower Duchesne River, from Myton to the confluence with the Green River, is listed by the state of Utah (DEQ 2006) as impaired for TDS because instantaneous maximum concentrations at Myton and Randlett regularly exceed the irrigation water use criteria of 1,200 milligrams per liter (ppm). A Total Maximum Daily Loads (TMDL) analysis for the Duchesne River watershed has been prepared (Tetra-Tech, Inc., undated as posted by DEQ 2007) and submitted by the Utah DEQ to EPA for approval. Once approved by EPA, the TMDL would identify sources of TDS and proposed voluntary measures intended to reduce TDS to levels lower than the Utah water quality criteria.

Based on the mass balance analysis described in section D.6.2.1, under baseline conditions,

the weighted average TDS concentration of the total return flow, including surface and groundwater, from the sites in the Proposed Action area is 1,492 ppm (Table 4-38).

For comparison, the baseline TDS concentrations of the return flow from the sites in the Pahcease and Topanotes Alternatives are 1,401 and 1,495 ppm, respectively.

Table 4-37. Summary of Key Water Quality Parameters for Individual Sites within the LDWP Project Area. Cells where values exceed water quality standards are shaded. Warm water standards apply to all sites except the Flume.

| Standards | Minimum Summer DO (mg/L) | Maximum Summer Temp (degrees C) | TDS ¹ (ppm) | pH | Boron ¹ (ppb) | Selenium (ppb) |
|--|---|---------------------------------|---|----------------------|--------------------------------|----------------|
| Water Quality Standard | 3-4 Warm water 4-6.5 Cold water | 27 20 | 1,200 (3,200 affects ducklings) | 6.5-9 | 1,000 (lethal at 1,000,000) | >2 |
| Plant Effect Levels | Aquatic plants, invertebrates at < 2-3 | N/A | Cottonwood at >1,500 ppm (sustained) | >9 | >3,000 | Unknown |
| SITE | | | | | | |
| Flume ² (Cold water standards apply) • Upper drain • Lower end | 7.2 8.3 | 25 20 | 1,650-2,100 599-2,680 | 8.0 8.0 | 3,500-10,000 4,000-230 | 1-2 ND |
| Riverdell ^{2, 3} • North oxbow • South oxbow | 0.4 2.7 | 22 13 | 641-1,670 1,510-1,610 | 7.5 7.4 | 920-8,200 1,700-3,700 | ND ND |
| Uresk Drain ⁴ • Head of drain • Mid-drain • Drain outlet | Not collected | Not collected 23.5 22 | 1,070 1,160 1,030 | 7.6 8.2 8.1 | 1,400 1,000 1,000 | ND ND ND |
| Ted's Flat ^{2,4,5} • Swamp • South oxbow | Not collected 3.9 | 25.7 18.5 | 704 764 | 8.8 Not collected | 640 410-760 | ND ND |
| Myton Townsite Canal ⁶ | 6.5 | 20.5 | 270-695 | 6.5 | 190-670 | ND |
| ¹ Range of values reflect spring and summer concentrations, respectively ² USGS 1998 ³ FWS 1990 ⁴ WWS 2000 ⁵ Mundorff 1977 ⁶ ReMillard et al. 1995 ND=non-detect | | | | | | |

Table 4-38. Estimated Salt Loads (Tons per Year) Delivered to the Duchesne River under Baseline Conditions for Sites Considered in the Proposed Action and Alternatives, Based on the Method used by Reclamation.

| Site | Salt Load (tons/yr) | | |
|-----------------|---------------------|----------------------|-----------------------|
| | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Flume | N/A | 5,664 | 5,664 |
| Uresk Drain | 3,982 | 3,982 | 3,982 |
| Riverdell North | N/A | 0 | N/A |
| Riverdell South | 2,463 | 2,463 | N/A |
| Ted's Flat | 2,163 | N/A | 2,163 |
| Total | 8,608 | 12,109 | 11,809 |

4.6.6 Impact Analysis

4.6.6.1 Significance Criteria

Impacts to water quality would be considered significant if any of the following occurred:

- The project would result in an exceedance of established wildlife guidelines for environmental contaminants or salts within the project boundaries,
- The project would result in an exceedance of federal or state water quality standards or established guidelines for environmental contaminants in downstream surface waters in the Duchesne River, or
- The project would increase the total salinity load in the Colorado River by a significant amount. Changes in Colorado River salt loads are measured at Imperial Dam, where the Colorado River Salinity Simulation Model is used to estimate change in total salts. This model predicts changes as small as 1 ppm; within the

project area, such small changes would result in daily loads that are likely smaller than the error in calculation, so that the difference in salt load is not detectable at a significant level. Approximately 10,000 tons of salts are required to change the salinity at Imperial Dam by 1 ppm. Impacts to the salinity load of the Colorado River would be considered significant if the project resulted in a measurable change at Imperial Dam, by increasing total salt by more than 10,000 tons over baseline conditions.

4.6.6.2 Proposed Action

4.6.6.2.1 Fish and Wildlife Concerns

4.6.6.2.1.1 Salinity, Boron and TDS. Boron and TDS occur in irrigation return flows entering each site. Under the Proposed Action, return flows would continue to enter the sites. To maintain water within tolerable salinity levels for wetland-dependent wildlife, considerable outflow from the wetland is required (Christiansen and Low 1970). Under

the Proposed Action, wetlands on all sites would be operated as flow-through systems. A water quality control factor is an increase in the water requirement of a site that would be applied to each site's wetland water budget in order to meet the flow-through requirements and prevent accumulation of salts. Because of incomplete mixing of waters within emergent marshes, the actual amount of water required to maintain a salt balance at an acceptable limit can only be approximated based upon the salinity of the inflowing water. A water quality control factor of 1.27 (meaning a 27 percent increase in the wetland water requirement of the site) was estimated as necessary for those sites receiving inflow with TDS levels less than 800-1,000 ppm. Sites with TDS concentrations greater than 1,200-1,500 ppm in the inflow water require a wetland water quality control factor of 1.5.

The supplemental water required to operate the majority of the non-riparian wetlands as flow-through systems would be primarily provided either directly from canals with low TDS and boron levels, such as the Myton Townsite Canal, or the Duchesne River west of Myton (Table 4-40). These sites are the Flume, the Uresk Drain, Riverdell South oxbows and Ted's Flat South oxbows. The water quality control factor for these wetlands is estimated at 1.27 of the wetland water budget. Water for the Ted's Flat North oxbows would be supplied by the Ouray School Canal. Supplemental water to operate the sites as flow-through systems would be returned to the Duchesne River as a non-consumptive use of water.

Under the Proposed Action, TDS concentrations in the Uresk Drain and Riverdell South sites are predicted to decrease by approximately 8 to 11 percent. Boron concentrations should decrease by a similar

amount. Addition of water for salinity control should be effective at maintaining lowered TDS concentrations in the site.

Likewise, TDS concentrations are predicted to decrease at Ted's Flat by 7 percent, or 115 ppm. Boron concentrations should also be correspondingly lower. Increased TDS concentrations and volume of groundwater outflow from the site are expected to be compensated by reduced surface water concentrations. Use of supplemental water from the Myton Townsite canal should result in elevated DO levels.

Overall, there would be a general increase in wetland water quality within the Proposed Action area, with changes in surface and groundwater outflow concentrations as described in section 4.6.6.2.2.

4.6.6.2.1.2 Physical Parameters (DO, Temperature and pH). Increased DO levels would be expected in the Ted's Flat area as flow levels are increased throughout the growing season and surface water is supplied directly from the Myton Townsite Canal instead of through apparent groundwater seepage from the canal. Increased DO levels are also expected in the Riverdell South oxbows as flows are increased.

Current temperatures within the Proposed Action open water wetlands are within the range adequate for warm-water species. The project would not likely increase the water temperatures by increasing flow through the systems. The project also would not change the project area downstream of Myton to a cold-water fishery as the water sources used to provide the flow-through systems are similar to those existing in the project area. Temperatures may be lowered in portions of the oxbows in which water depths increase to

three to five feet; however, this depth would be insufficient to buffer cold-water species from high summer air temperatures. The project would, however, continue to support warm-water aquatic species.

Alkalinity and pH are not expected to change under the Proposed Action. The current levels of these parameters are high, but are within the range considered acceptable for warm-water aquatic life and important wildlife food plants such as bulrush and sago pondweed.

4.6.6.2.2 Federal Salinity Standards

4.6.6.2.2.1 Colorado River Salinity. Under the Proposed Action, and based on the Reclamation method, total salt loading from wetlands and irrigated pastures in the project area would increase by an estimated 115 to 829 tons annually (Table 4-39). Although representing an adverse impact, it is not a significant impact as it represents an amount too small to be measured at Imperial Dam (Swanson 2007).

| Table 4-39. Estimated Salt Loads (tons per year) Delivered to the Duchesne River under the Proposed Action Based on the Method used by Reclamation. | | | |
|--|----------------------------------|------------------------|----------------------------|
| Site | Salt Load (tons per year) | | |
| | Baseline Conditions | Proposed Action | Change in Salt Load |
| Uresk Drain | 3,982 | 4,047 to 4,811 | +115 to +829 |
| Riverdell South | 2,463 | 2,463 | 0 |
| Ted's Flat | 2,163 | 2,163 | 0 |
| Total | 8,608 | 9,437 | +115 to +829 |

Table 4-40. Summary of Water Quality of Supplemental Water Used for Water Quality Control.

| Site | Exceeds Water Quality Standards at some points | | | Supplemental Water Source ^{1,2} | | | Additional Water Quality Measures | |
|--|--|-------|----|--|---|--|-----------------------------------|--|
| | TDS | Boron | DO | Name | TDS (ppm) | B (ppb) | Spring Flushing | Increased Flow |
| Flume | ✓ | ✓ | | <ul style="list-style-type: none"> Duchesne River west of Myton Grey Mountain Canal ³ | <ul style="list-style-type: none"> 186-2222 average=665.6 est. 500 ³ | <ul style="list-style-type: none"> 190-670 | ✓ | ✓ |
| Uresk Drain <ul style="list-style-type: none"> Head Rest | | ✓ | | <ul style="list-style-type: none"> None Myton Townsite Canal | <ul style="list-style-type: none"> 1040 170-695 average=510 | <ul style="list-style-type: none"> NA 270-695 | | <ul style="list-style-type: none"> ✓ ✓ |
| Riverdell North | ✓ | ✓ | ✓ | <ul style="list-style-type: none"> Duchesne River east of Myton | <ul style="list-style-type: none"> 186-2222 average=665.6 | <ul style="list-style-type: none"> 390-701 (880) | ✓ | ✓ |
| Riverdell South | ✓ | ✓ | ✓ | <ul style="list-style-type: none"> Myton Townsite Canal | <ul style="list-style-type: none"> 170-695 average=510 | <ul style="list-style-type: none"> 270-695 | | ✓ |
| Ted's Flat <ul style="list-style-type: none"> North River South Oxbows | | | ✓ | <ul style="list-style-type: none"> Ouray School Canal ⁴ Myton Townsite Canal | <ul style="list-style-type: none"> est at 750 170-695 average=510 | <ul style="list-style-type: none"> 390-701 (880) 270-695 | | <ul style="list-style-type: none"> ✓ ✓ |

¹ All sites receive return flows to some degree. Supplemental water refers to the water required to restore, create and/or expand an existing wetland beyond any current return flow input. The named supplemental water source is the source for all water used for water quality control.

² Range of numbers represents late summer concentrations, respectively from Tetra-Tech (undated) as posted on DEQ (2007)

³ Not measured but assumed to equal or exceed the water quality for the MTC, which is diverted downstream of the Grey Mountain Canal

⁴ Not measured but assumed to reflect Duchesne River water quality between Myton and Randlett

4.6.6.2.2.2 Clean Water Act. The Duchesne River is listed as impaired for TDS concentrations under the 303(d) program. The dominant source of dissolved solids in the lower Duchesne River is the return of agricultural runoff to the river as groundwater and surface runoff. Water quality in wetlands within the LDWP would be ameliorated by the addition of water as a Salinity Control Factor. The amount of water added to maintain water quality within LDWP wetlands is dependent on the quality of inflowing water, ET rates, and other factors. In order to calculate the quality of water within the LDWP wetlands, as well as water flowing from the wetlands, it was necessary to evaluate the contribution of both surface and

groundwater flows at each site. The additional analysis of the contribution of both surface and groundwater return flows was also necessary to evaluate the LDWP effects on Duchesne River TDS concentrations in relation to its 303(d) status.

Under the Proposed Action, there would be a slight increase in return flows and a reduction of the surface water return flow TDS concentration from an average of 1,570 ppm to 1,422 ppm, a reduction of 148 ppm or 9.4 percent. The change in TDS return flow concentrations varies by site as shown in Table 4-41.

Table 4-41. Comparison of Average Return Flow TDS Concentrations Between Baseline and Post-Project Conditions under the Proposed Action. Return flows include both surface and groundwater inputs.

| Site | Baseline Return Flow TDS (ppm) | Post-Project Return Flow TDS (ppm) |
|------------------------------------|--------------------------------|------------------------------------|
| Uresk Drain | 1,574 | 1,403 |
| Riverdell South | 1,564 | 1,431 |
| Ted's Flat | 1,564 | 1,449 |
| Proposed Action¹ | 1,570 | 1,422 |

¹ Average annual weighted average

However, because of the increased volume of water flowing through the project and the changes in deep percolation, there would be a net increase in salt load to the Duchesne

River of 161 tons. This number falls within the range of values estimated by Reclamation methods.

Based on the site-specific water budgets, inflows and outflows from both surface water and groundwater, there would be an increase of 0.68 ppm in the Duchesne River between Myton and Randlett in the reach above the Uinta River. There would be a 0.6 ppm or 0.06 percent decrease in the TDS concentrations in the Duchesne River below the junction with the Uinta River. This would result in a change in the average annual TDS concentration from 962.3 to less than 962 ppm at Randlett and would not cause an overall exceedance of the water quality standard of 1,200 ppm. Changes in TDS concentration of this magnitude would not likely be detectable at Randlett, given the precision of flow and water quality measurements.

The estimated increase in TDS between Myton and Randlett is likely an overestimate, as the mixing model does not account for a change in water use elsewhere as a result of the LDWP. As noted in section 4.5.6.2.2, in some years the LDWP could reduce the water available to junior water right holders by 718 to 908 acre-feet (approximately equivalent to water use on 180 to 227 acres of land). Reductions in salt loads from those lands would negate any increases from the LDWP between Myton and Randlett.

4.6.6.2.3 Summary of Impacts

There would be a general increase in wetland water quality within the Proposed Action boundaries, as concentrations of boron and TDS would be reduced by seven to eleven percent. This represents a beneficial impact of the Proposed Action.

There would be a net increase of 161 tons in the Duchesne River salt load. Although representing an adverse impact, it is not a

significant impact on the Colorado River as it represents an amount too small to be measured at Imperial Dam.

Under the Proposed Action, the net change of both the decreased TDS concentration of surface water runoff and the increased TDS concentration of ground water seepage would result in an increase of 0.68 ppm in the Duchesne River downstream of Myton. Changes in TDS concentration of this magnitude would not likely be detectable, given the precision of flow and water quality measurements. There would be no measurable change in the TDS concentrations at Randlett.

4.6.6.3 Pahcease Alternative

4.6.6.3.1 Fish and Wildlife Concerns

The water budget parameters, water sources and salinity control factors would be the same as described for the Proposed Action. In addition, two oxbows would be connected to the Duchesne River to receive water during spring flow peaks.

The Flume would be connected to the Duchesne River west of Myton so as to receive increased flows during spring run-off. The increased spring flow in the Flume would assist in reducing accumulations of boron and other salts, flushing the compounds to the Duchesne River during a high flow period in which concentrations of these substances are well below water quality standards. Water for the Flume, during the irrigation season, would be obtained from the Grey Mountain Canal. There is no water quality data for this canal but it likely approximates the water quality of the Duchesne River west of Myton, which meets all water quality standards (see Table 4-40).

The LDWP would also connect the Riverdell North oxbow to the Duchesne River east of Myton. During operation, it would receive some water from the Duchesne River during spring when concentrations of contaminants are lowest. The water supply during irrigation season would be from the Riverdell Canal, which has higher TDS and boron levels than other LDWP water sources. The primary habitat proposed for this site is riparian, cropland and other upland and the levels of salts and boron in the water supply are below the levels at which adverse effects could occur to the proposed species to be planted.

The effects of the Pahcease Alternative on the Uresk Drain wetlands and outflows would be similar to those described for the Proposed Action (Table 4-43). Return flow TDS concentrations from the Flume and combined Riverdell North and South sites are expected to decline by 40 ppm and 237 ppm, respectively. The combined reduction in TDS

concentration from all sites is 145 ppm, or 9.4 percent of the baseline concentration.

Changes in physical parameters (DO, temperature and pH) would be similar to that described for the Proposed Action. Overall, there would be a general increase in wetland water quality within the Pahcease Alternative area, with changes in surface and groundwater outflow concentrations as described in section 4.6.6.3.2.

4.6.6.3.2 Federal Salinity Standards

4.6.6.3.2.1 Colorado River Salinity. Under the Pahcease Alternative, total salt loading from wetlands and irrigated pastures in the project area would increase by an estimated 579 to 1,275 tons annually (Table 4-42). This equates to an increase of 0.2 to 0.4 percent of the salt load of the Duchesne River. While representing an impact it is not significant as it represents an amount too small to be measured at Imperial Dam.

| Site | Salt Load (tons per year) | | |
|------------------------------------|---------------------------|----------------------|-----------------------|
| | Baseline Conditions | Pahcease Alternative | Change in Salt Load |
| Flume | 5,664 | 5,960 | +296 |
| Uresk Drain | 3,982 | 4,115 to 4,811 | +133 to +829 |
| Combined Riverdell North and South | 2,464 | 2,614 | +150 |
| Ted's Flat | N/A | N/A | N/A |
| Total | 12,110 | 13,235 | +579 to +1,275 |

4.6.6.3.2.2 Clean Water Act. Under the Pahcease Alternative, there would be a reduction of the surface water return flow TDS concentration from an average of 1,538 ppm to 1,393 ppm, a reduction of 145 ppm, or 9.4 percent. The change in TDS return flow concentrations varies by site as shown in Table 4-43.

However, because of the increased volume of water flowing through the project and the changes in deep percolation, there would be a net increase in salt load to the Duchesne River of 633 tons. This number is within the range of values estimated by Reclamation methods.

Table 4-43. Comparison of Average Return Flow TDS Concentrations (ppm) Between Baseline and Post-Project Conditions under the Pahcease Alternative. Return flows include both surface and groundwater inputs.

| Site | Baseline Return Flow TDS | Post-Project Return Flow TDS |
|--|--------------------------|------------------------------|
| Flume | 1,595 | 1,394 |
| Uresk Drain | 1,478 | 1,439 |
| Combined Riverdell North and South | 1,526 | 1,289 |
| Pahcease Alternative ¹ | 1,538 | 1,393 |

¹ Average annual weighted average

Based on the site-specific water budgets, inflows and outflows from both surface water and groundwater, there would be an increase of 2.6 ppm in the Duchesne River between Myton and Randlett in the reach above the Uinta River. There would be a 0.2 ppm or 0.02 percent decrease in the TDS concentrations in the Duchesne River below the junction with the Uinta River. This would result in a change in the average annual TDS concentration from 962.3 ppm to approximately 962 ppm at Randlett and would not cause an overall exceedance of the water quality standard of 1,200 ppm. Changes in TDS concentration of this magnitude would not likely be detectable at Randlett, given the precision of flow and water quality measurements.

This estimated increase in TDS concentrations between Myton and Randlett is likely an overestimate, as the mixing model does not account for a change in water use elsewhere as a result of the LDWP. As noted in section 4.5.6.3.2, in some years the LDWP could reduce the water available to junior water right

holders by 1,070 to 1,439 acre-feet (approximately equivalent to water use on 267 to 360 acres of land). Reductions in salt loads from those lands would negate any increases from the LDWP upstream of Randlett.

4.6.6.3.3 Summary of Impacts

There would be a general increase in wetland water quality within the Pahcease Alternative boundaries, as concentrations of boron and

TDS would be reduced by seven to nine percent. This represents a beneficial impact of the Pahcease Alternative.

There would be a net increase of 633 tons in the Duchesne River salt load. Although representing an adverse impact, it is not a significant impact on the Colorado River as it represents an amount too small to be measured at Imperial Dam.

Under the Pahcease Alternative, the net change of both the decreased TDS concentration of surface water runoff and the increased TDS concentration of ground water seepage would result in an increase of 2.6 ppm in the Duchesne River downstream of Myton. There would be no measurable change in the TDS concentrations at Randlett.

4.6.6.4 Topanotes Alternative

4.6.6.4.1 Fish and Wildlife Concerns

The water budget parameters, water sources and salinity control factors would be the same as described for the Proposed Action. In addition, the Flume oxbow would be connected to the Duchesne River to receive water during spring flow peaks as described for the Pahcease Alternative.

The effects of the Topanotes Alternative on the Uresk Drain and Ted's Flat wetlands and outflows would be similar to those described

for the Proposed Action. The effects of the Topanotes Alternative on the Flume wetlands and outflows would be similar to those described for the Pahcease Alternative (Table 4-44).

Under the Topanotes Alternative, the TDS concentration in return flows is expected to decline by 40 ppm to 177 ppm, depending on the site. The weighted TDS average of all return flows is expected to decline by 105 ppm, or 7 percent.

Changes in physical parameters (DO, temperature and pH) would be similar to that described for the Proposed Action. Overall, there would be a general increase in wetland water quality within the Topanotes Alternative area, with changes in surface and groundwater outflow concentrations as described in section 4.6.6.4.2

4.6.6.4.2 Federal Salinity Standards

4.6.6.4.2.1 Colorado River Salinity. Under the Topanotes Alternative, total salt loading from wetlands and irrigated pastures in the project area would increase by an estimated 429 to 1,125 tons (Table 4-44). The increase in salts equates to an increase of 0.3 percent of the salt load of the Duchesne River. While representing a negative impact (i.e., an increase in salt loading), it is not a significant impact as it represents an amount too small to be measured at Imperial Dam.

Table 4-44. Estimated Salt Loads (tons per year) Delivered to the Duchesne River under the Topanotes Alternative, Based on the Method used by Reclamation.

| Site | Salt Load (tons per year) | | |
|--------------|---------------------------|-------------------------|------------------------|
| | Baseline Conditions | Topanotes Alternative | Change in Salt Load |
| Flume | 5,664 | 5,960 | +296 |
| Uresk Drain | 3,982 | 4,115 to 4,811 | +133 to +829 |
| Ted's Flat | 2,163 | 2,163 | 0 |
| Total | 11,809 | 12,238 to 12,934 | + 429 to +1,125 |

4.6.6.4.2.2 Clean Water Act. Under the Topanotes Alternative, there would be a reduction of the surface water return flow TDS concentration from an average of 1,528 ppm to 1,423 ppm, a reduction of 105 ppm, or 6.9 percent. The change in TDS return flow concentrations varies by site as shown in Table 4-45.

However, because of the increased volume of water flowing through the project and the changes in deep percolation, there would be a net increase in salt load to the Duchesne River of 731 tons. This number falls within the range of values estimated by Reclamation methods.

Based on the site-specific water budgets, inflows and outflows from both surface water and groundwater, there would be an increase of 3.0 ppm in the Duchesne River between Myton and Randlett in the reach above the Uinta River. There would be a 1.7 ppm, or 0.2 percent, increase in the TDS concentrations in the Duchesne River below the junction with the Uinta River. This would result in a change in the average annual TDS concentration from 962.3 ppm to 964.0 ppm at Randlett and would not cause an overall exceedance of the water quality standard of 1,200 ppm. As with the Proposed Action and

Pahcease Alternative, changes in TDS of this magnitude would likely be too small to be detectable.

This estimated increase in TDS concentrations between Myton and Randlett is likely an overestimate, as the mixing model does not account for a change in water use elsewhere as a result of the LDWP. As noted in section 4.5.6.4.2, in some years the LDWP could reduce the water available to junior water right holders by 950 to 1,306 acre-feet (approximately equivalent to water use on 237 to 326 acres of land). Reductions in salt loads from those lands would negate any increases from the LDWP.

4.6.6.4.3 Summary of Impacts

There would be a general increase in wetland water quality within the Topanotes Alternative boundaries, as concentrations of boron and TDS would be reduced by seven percent. This represents a beneficial impact of the Topanotes Alternative.

There would be a net increase of 731 tons in the Duchesne River salt load. Although representing an adverse impact, it is not a significant impact on the Colorado River as it

represents an amount too small to be measured at Imperial Dam.

Under the Topanotes Alternative, the net change of both the decreased TDS concentration of surface water runoff and the increased TDS concentration of ground water

seepage would result in an increase of 3.0 ppm in the Duchesne River downstream of Myton and a change of 1.7 ppm in the Duchesne River below the junction with the Uinta River.

Table 4-45. Comparison of Average Return Flow TDS Concentrations Between Baseline and Post-Project Conditions under the Topanotes Alternative. Return flows include both surface and groundwater inputs.

| Site | Baseline Return Flow TDS (ppm) | Post-Project Return Flow TDS (ppm) |
|------------------------------|--------------------------------|------------------------------------|
| Flume | 1,571 | 1,394 |
| Uresk Drain | 1,478 | 1,439 |
| Ted's Flat | 1,530 | 1,435 |
| Topanotes Alternative | 1,528 | 1,423 |

¹ Average annual weighted average

4.6.6.5 No Action Alternative

Under the No Action Alternative, there would be no change in the water quality within the project area. The Flume, Riverdell North and Riverdell South oxbows would continue to be supported primarily by return flows, and boron and TDS concentrations would continue to exceed wildlife protection levels during late summer. The Uresk Drain would continue to exceed aquatic species protection criteria at its head, or uppermost 1,000 feet, but remain at or below other water quality parameters throughout the remainder of its length.

Ted's Flat would continue to meet all water quality standards except those for DO. The lands within the LDWP project area would

continue to supply from 8,608 to 12,109 tons of salt per year to the Duchesne River. Return flow concentrations, including both surface and groundwater return flow, would continue to have TDS concentrations ranging from 1,499 to 1,560 ppm.

4.7 SOIL RESOURCES

4.7.1 Introduction

The soil resources analysis addresses potential impacts on soil resources from the construction and operation of the Proposed Action and alternatives. Construction procedures and revegetation and erosion control measures (sections 2.1.1 and 2.1.2)

were reviewed to assess possible effects to the soil resources. Potential changes in soil erosion and stability were assessed by considering construction plans and erosion control procedures. Soil productivity was assessed by reviewing the physical and chemical characteristics of the soil resources within the project area from existing soil surveys (SCS 1959). Potential changes of the soil resources as a result of construction activities were assessed by considering soil texture, soil moisture, soil profiles and topsoil characteristics. Potential changes in soil productivity on adjacent farmland was based on the groundwater analysis presented in section 4.5.6.

4.7.2 Issues Eliminated from Further Analysis

No soil resource issues were eliminated from analysis.

4.7.3 Issues Addressed in the Impact Analysis

No issues were raised by the public during scoping. The following soil resources impact topics identified during agency meetings and public review of the DEIS are addressed in the impact analysis:

- Would the LDWP increase soil erosion, decrease soil stability or change soil productivity within the project area?
- Would the creation of wetlands by the LDWP affect soil productivity on adjacent farmlands?

4.7.4 Area of Influence

The area of influence consists of lands in, and immediately adjacent to, the Duchesne River corridor that would be impacted by the LDWP. Figures 1-3, 1-4 and 1-5 show the overall area of influence for each alternative.

4.7.5 Affected Environment

The available soil data pertaining to the project area varies in age, scale and level of detail. Tribal Trust lands within much of the project area have not been mapped since the 1950s. Soils information for the Myton area (which includes the Flume, Uresk Drain and part of the Riverdell North and Riverdell South sites) is based on a 1959 soil survey (SCS 1959), as verified by soil profile data collected between 1996-2004. Although soil taxonomy and drainage definitions in the 1959 survey are not equivalent to those used today, the soil survey is accurate when compared to more recent, but less comprehensive, field surveys. Soil data for portions of Uintah County was updated between 2002-2004. The soil data for the Ted's Flat site is based on this data (NRCS 2007).

Soils in the vicinity of the Duchesne River are a mix of deep and shallow soils over recent alluvium. Green River, Myton and Billings are the dominant soil types within, and adjacent to, the project area in Duchesne County (Table 4-46). Green River soils occur mostly along the Flume and Riverdell South oxbows, with Myton and Billings soils dominating the Uresk Drain. The productivity of Myton and Billings soils for crops are restricted by poor drainage and a high water table, by shallow, stony soils with limited fertility, or both. Most of the Green River soils within the project area (silty clays and clays) are restricted for crop use by poor

drainage and inadequate depth. These soils are most productive for wildlife habitat.

The more coarse-textured Green River soils also are subject to a high water table but can be cropped and produce between 3.0 to 3.5 tons of alfalfa/acre.

Similar soils occur on properties adjacent to the Flume, Uresk Drain and Riverdell sites, with small areas of Ravola soils on some adjacent farmland. Ravola soils are generally productive for crops, producing up to 4.0 tons of alfalfa/acre.

| Table 4-46. Dominant Soil Types Within and Adjacent to the LDWP Project Area | | | |
|---|--|--|--|
| Soil Series | General Description | Productivity | Potential Natural Community |
| Soils within the Myton Area | | | |
| Green River (5 soil types) | Alluvial soil, texture mostly silty clay and clay along oxbows | Soils mostly poorly drained and productivity limited by naturally high water table. Not suitable for cropping. | Cottonwood, willow, buffaloberry, sedges, rushes |
| | Coarser textured alluvial soils on slightly higher alluvial features | Soils subject to a high water table but can be cropped and produce 3-3.5 tons alfalfa/acre. | Not specified |
| Myton | Myton stony clay loam, poorly drained along old floodplains | Productivity limited by naturally high water table. Not suitable for cropping. | Sedges, saltgrass |
| | Myton stony, sandy loam on old alluvial terraces | Productivity limited by stony soils. Not suitable for cropping | Grasses, sagebrush |
| Billings | Silty clay and clays on alluvial fans and old floodplains | Productivity limited by slow internal drainage. Not suitable for cropping. | Greaswood, saltgrass |
| Ravola | Silt loam | Moderately well drained and can produce 4 tons alfalfa/acre with irrigation. | Not specified |
| Uintah County Soils | | | |
| Green River | Loamy soils within the current Duchesne River floodplain | Moderately well drained and can produce 3-3.5 tons alfalfa/acre with irrigation. | Cottonwood, willow, redbud |
| Turzo | Loamy alluvial fan and stream terrace soils | Productivity limited by slow internal drainage but can be cropped and produce 4 tons alfalfa/acre. | Shadscale |
| Umbo | Clay loam soils on alluvial fans | Productivity limited by slow internal drainage. Not suitable for cropping | Saltgrass wet meadow |
| Turzo-Umbo complex | Clay loam on alluvial flats; mixture of Turzo and Umbo soils | Productivity varies. | Shadscale |

Table 4-47. Potential Changes in Soil Productivity Within and Adjacent to the LDWP Project Area under the Action Alternatives

| Soil Series | Productivity | Potential Natural Community | Proposed Treatment(s) | Productivity Change |
|------------------------------------|--|--|---|---|
| Soils within the Myton Area | | | | |
| Green River silty clays and clays | Soils mostly poorly drained and productivity limited by naturally high water table. Not suitable for cropping. | Cottonwood, willow, buffaloberry, sedges, rushes | Restore and expand wetlands along oxbows in the Flume and Riverdell South sites. | No. Wetlands to occur in areas already classified as suitable for wildlife habitat and not suitable for crops. |
| Green River loams | Soils subject to a high water table but some portions can be cropped and produce 3-3.5 tons alfalfa/acre. | Not specified | Plant cottonwoods and willows where formerly occurred, maintain other upland in current habitat, maintain small areas of cropland in current condition. | No change in physical or chemical structure throughout most of the soil type. Cropland to be maintained. 23 acres of soil adjacent to the Flume to be subject to high water table with potential loss of crop productivity. |
| Myton stony, clay loam | Productivity limited by naturally high water table. Not suitable for cropping. | Sedges, saltgrass | Restore and enhance wetlands in the Uresk Drain Main Site, Goose Ponds and Head of Drain. | No. Wetlands to occur in areas already classified as suitable for wildlife habitat and not suitable for crops. |
| Myton stony, sandy loam | Productivity limited by stony soils. Not suitable for cropping | Grasses, sagebrush | Maintain and manage existing grassland for wildlife in the Uresk Drain West Fields. | No change in physical or chemical structure. Grassland too stony to cultivate. Up to 40 acres of soil east of the Uresk Drain subject to high water table. |
| Billings | Productivity limited by slow internal drainage. Not suitable for cropping. | Greaswood, saltgrass | Restore and expand wetlands. | No. Wetlands to occur in areas already classified as suitable for wildlife habitat and not suitable for crops. |

| Soil Series | Productivity | Potential Natural Community | Proposed Treatment(s) | Productivity Change |
|----------------------------|--|------------------------------------|--|---|
| Ravola | Moderately well drained and can produce 4 tons alfalfa/acre. | Not specified | No treatment. Maintain as cropland or other upland habitat. | Approximately 10 acres of soil to be subject to high water table with potential loss of crop productivity. |
| Uintah County Soils | | | | |
| Green River | Moderately well drained and can produce 3-3.5 tons alfalfa/acre with irrigation. | Cottonwood, willow, redtop | Plant cottonwoods and willows. | No chemical or physical change in structure. |
| Turzo | Productivity limited by slow internal drainage but can be cropped and produce 4 tons alfalfa/acre. | Shadscale | Expand wetlands in areas with slow drainage. Maintain rest of habitat as is. | No. High groundwater tables only within areas with limited productivity. |
| Umbo | Productivity limited by slow internal drainage. Not suitable for cropping | Saltgrass wet meadow | Enhance and expand wetlands. | No. Wetlands to occur in areas already classified as suitable for wildlife habitat and not suitable for crops |
| Turzo-Umbo complex | Productivity varies. | Shadscale | Expand wetlands in areas with slow drainage. Maintain rest of habitat as is. | No. High groundwater tables only within areas with limited productivity. |

Green River, Turzo, Umbo and Turzo-Umbo complex soils are the dominant soil types within, and adjacent to, the project area at Ted's Flat. The Green River soils outside of the active floodplain can be productive for crops. The crop productivity of the other soils are limited by slow internal drainage and high alkalinity. Portions of the Turzo soils can be cropped and produce between 3.0 to 3.5 tons of alfalfa/acre. However, in general, most of the soils are most productive as wildlife habitat.

4.7.6 Impact Analysis

4.7.6.1 Significance Criteria

Potential impacts to soils would be considered significant if the project created degraded soil conditions. As defined by the NRCS, this would occur when "site productivity, use, and potential for restoring the original plant community are seriously threatened" as a result of project construction or operation (BIA 2000a).

4.7.6.2 Proposed Action

4.7.6.2.1 Soil Erosion and Stability

Adverse soil erosion and stability impacts would be avoided and minimized by using appropriate construction procedures and SOPs as described in section 2.1.2. Construction is planned to occur in the driest time of the year when soil is least susceptible to harmful compaction. Cofferdams would be used to temporarily dewater wetland areas during berm and dike construction. Flows would be introduced gradually into each completed section following construction, with water levels carefully controlled for three to five years to facilitate the establishment of desired wetland and riparian vegetation.

Approximately 42 acres of vegetation would be temporarily disturbed during construction of the Proposed Action. This temporary reduction in vegetated cover may increase soil erosion in the short-term; however, improvements associated with the Proposed Action would result in a long-term increase in vegetation density, height and diversity.

4.7.6.2.2 Soil Productivity

Under the Proposed Action, the water table would be raised in, and adjacent to, the proposed wetland areas. Some areas that are currently not wetland would become permanently flooded to seasonally saturated. Most of the soils to be flooded have limited crop productivity because of an existing shallow groundwater table that interferes with cultivation, and have been classified by the NRCS as most suitable for wildlife habitat (Table 4-47).

Soils along the Riverdell South oxbows are generally Green River soils, which are alluvial soils that historically supported wetlands. Soils in the Uresk Drain Main Site, Head of Drain and Goose Ponds areas are underlain by somewhat poorly drained to poorly drained variants of the Myton and Billings series, which also supported more wetlands than under present conditions. The Proposed Action would return these soils to their original state. More well-drained variants of the Green River and Myton soils underlie uplands within the Riverdell South property and Uresk Drain West Fields, respectively. These areas would primarily be maintained as supporting upland habit (desert shrub or managed grassland, Table 4-47), although portions would be planted with native shrubs and trees. Soil productivity in these areas is expected to be the same as under baseline conditions.

Fifty-eight acres of cropland on Ravola silt loam occurs within the Uresk Drain. The cropland would be maintained under the Proposed Action, but approximately 10 acres of Ravola soil would be subject to a higher groundwater table with a potential loss of soil productivity.

Turzo, Umbo and Turzo-Umbo complex dominate the soils adjacent to the Ted's Flat South oxbows. Wetlands would be enhanced and expanded in those areas in which soils already have poor internal drainage and low productivity. The remaining areas of the soils would be maintained as upland habitat. The majority of the treatments proposed for the Ted's Flat site are to restore and enhance the riparian forest. Cottonwoods and native riparian shrubs would be planted on the Green River alluvial soils. Soil productivity in these areas is expected to be the same as under baseline conditions. No loss of soil productivity is anticipated on the Ted's Flat site.

Overall, the groundwater table rise would be restricted to those properties located within the boundary of the Proposed Action (see section 4.5.6.2.4) so that there would be no loss of soil productivity on adjacent properties associated with the LDWP.

4.7.6.2.3 Impact Summary

Construction activities may cause a slight temporary increase in soil erosion during and immediately after construction; however, the Proposed Action would result in a long-term reduction in soil erosion. Raising the water table in the project area would inundate some soils directly adjacent to the proposed wetland areas. These soils, however, are described as having restricted productivity due to a seasonally high water table resulting in excess

water and/or poor internal drainage. Soils that are located in the uplands in the project area would mostly retain the same productivity. There would be a potential loss of productivity on 10 acres of Ravola silt loam.

4.7.6.3 Pahcease Alternative

4.7.6.3.1 Soil Erosion and Stability

Impacts on soil erosion and stability are expected to be the same as those described for the Proposed Action.

4.7.6.3.2 Soil Productivity

Impacts on soil productivity would be the same as described for the Proposed Action for the Uresk Drain and Riverdell South sites with the following exception: The groundwater table could be raised within 40 acres of Myton soils adjacent to the Head of the Drain subarea. The productivity of these soils is limited for crop production by an existing high water table and stoniness of the soils. Changes in soil productivity for future crops would be slight.

As described for the Riverdell South oxbows, the Flume oxbows are bordered by Green River soils, which are alluvial soils that historically supported wetlands. The silty clay and clay variants of the Green River soils would be restored to wetlands, with no loss in soil productivity. The more coarse-textured soils along the Duchesne River would be replanted to cottonwoods. Approximately 14 acres of well drained Green River soils within the Flume site would be subject to an increased water table, potentially affecting soil productivity for crops. Productivity could also be reduced on an additional 9 acres of similar soils adjacent to the Flume.

Green River and Turzo soils are the primary soils on the Riverdell North property, with the North Oxbow mapped as Billings clay loam. Under the Pahcease Alternative, only the low productivity Billings soils would be flooded. Treatments for the remainder of the property would consist of riparian planting with temporary irrigation (Green River soils) or replanting of cropland or other upland plants with or without irrigation on the Turzo soils. There would be no change in soil productivity on the Riverdell North property.

4.7.6.3.3 Impact Summary

Construction activities may cause a slight temporary increase in soil erosion during and immediately after construction; however, the Pahcease Alternative would result in a long-term reduction in soil erosion. Raising the water table in the project area would inundate some soils directly adjacent to the proposed wetland areas. These soils, however, are described as having restricted productivity due to a seasonally high water table resulting in excess water and/or poor internal drainage. Soils that are located in the uplands in the project area would mostly retain the same productivity.

There would be a potential loss of productivity on 10 acres of Ravola silt loam and 23 acres of well drained Green River loams.

4.7.6.4 Topanotes Alternative

4.7.6.4.1 Soil Erosion and Stability

Impacts on soil erosion and stability are expected to be the same as those described for the Proposed Action.

4.7.6.4.2 Soil Productivity

Impacts on soil productivity for the Ted's Flat site would be the same as described for the Proposed Action. Impacts on soil productivity of the Uresk Drain and Flume sites would be the same as described for the Topanotes Alternative.

4.7.6.4.3 Impact Summary

Total soil impacts would be the same as described for the Pahcease Alternative.

4.7.6.5 No Action Alternative

No changes to soil erosion, stability or productivity would occur under the No Action Alternative. Soil resources would retain baseline conditions as described in section 4.7.5.

4.8 AGRICULTURE AND LAND USE

4.8.1 Introduction

This section addresses the potential impacts on agricultural resources and land uses within the project area resulting from the construction, operation and maintenance of the Proposed Action and alternatives. Issues concerning the compatibility of the project with local policy objectives and land use plans are also addressed.

The section defines and addresses changes in agricultural output as a result of the project and compares the changes to county-wide agricultural production. The significance of changes in agricultural production is primarily socioeconomic; therefore, no significance criteria are listed in this chapter for changes in agricultural output. The significance of changes in agricultural production is evaluated in terms of the local economies, which are analyzed in section 4.9, Socioeconomics.

4.8.2 Issues Eliminated from Further Analysis

All agriculture and land use issues raised during public scoping are addressed in this analysis. No issues were eliminated. Management of the project area to prevent weeds from spreading onto adjacent farmlands is addressed in section 2.1.4.3, Operating Agreements, section 4.2.6, Wetland and Riparian Habitats, and Appendix B, Weed Control Plan.

4.8.3 Issues Addressed in the Impact Analysis

The following issues raised during the public scoping and agency consultation process are addressed in the analysis:

- Will eliminating livestock grazing within the project area have any impact on the livestock industry on a county-wide basis?
- How will conservation easements in the project area impact county-wide agricultural production?

- Will the project affect local agricultural practices or methods of production?
- How do the project-induced changes in land ownership and management conflict with or adhere to county land use objectives?
- Will the land use changes contemplated by the Proposed Action and alternatives be in harmony with land uses in the immediate vicinity of the project as well as county-wide?

4.8.4 Area of Influence

The area of influence for this analysis is defined as Uintah and Duchesne Counties. Agricultural impacts would be felt primarily within the Uinta Basin economy of the two counties. It is not anticipated that any impacts would be felt statewide or otherwise outside the Uinta Basin. Additionally, conflicts with county land use plans would be meaningful only within the two counties.

4.8.5 Affected Environment

4.8.5.1 Agriculture and Land Use in Duchesne and Uintah Counties

There are 4,945,562 acres (7,727 square miles) in Duchesne and Uintah Counties. Of this total, 2,911,000 acres are regarded to be within the Uinta Basin, the principal drainage basin of both counties and the location of the major population centers as well as most of the economic activity. Table 4-48 summarizes land ownership patterns in both counties based on the Ute Tribe GIS database located in Fort Duchesne, Utah.

The 2002 Census of Agriculture provides the following overview of agriculture in the two

counties. In Uintah County, there were 908 farms or ranches. Total acreage was not computed in 2002 for Uintah County, but the 1997 Census stated that there were 2,268,090 acres in ranches and farms. Of this total, in 2002 there were 79,649 acres in cropland, of which 60,838 were irrigated and 33,160 acres were harvested. In Duchesne County, there were 932 farms or ranches comprising a total of 1,304,716 acres. Of this total, 133,874 acres were in cropland, of which 94,723 were irrigated and 50,093 were harvested. The value of crops and livestock produced in Uintah County in 2002 was \$29,500,000 and in Duchesne County the value was \$46,000,000. The average value of all types of farmland in each county was \$369 per acre in Duchesne County and \$232 in Uintah County. Table 4-49 provides a summary of acres of irrigated land in the two counties taken from the 2002 Census (USDA 2002).

The farm economy in the two counties is dominated by activities directed toward the production of livestock, including dairy products and sheep, but with a primary focus on beef production. Ninety percent of the farms in Duchesne and Uintah Counties are dependent in some manner upon beef production (including cattle grazing and production of cattle feed) for their farm income. Small grains and corn are grown on 10 percent of the acres devoted to crop production, with the remainder of crops consisting of livestock feed products such as alfalfa hay, grass hay and corn silage. Tables 4-50 and 4-51 summarize the agricultural production in the two-county area based on data presented in Utah Agricultural Statistics (2006).

| Table 4-48. Land Ownership in Duchesne and Uintah Counties. | | | | |
|--|------------------------|--------------------------|----------------------|--------------------------|
| Land Owner | Duchesne County | | Uintah County | |
| | Acres | Percent of County | Acres | Percent of County |
| Tribal | | | | |
| Uintah and Ouray Indian Reservation | 381,667 | 18.5 | 426,840 | 14.8 |
| Federal | | | | |
| Bureau of Land Management | 201,200 | 9.7 | 1,343,298 | 46.7 |
| Forest Service | 776,175 | 37.5 | 270,430 | 9.4 |
| National Park Service | 0 | 0 | 50,062 | 1.7 |
| U.S. Fish & Wildlife Service | 0 | 0 | 11,606 | 0.4 |
| Bureau of Reclamation | 16,890 | 0.8 | 8,829 | 0.4 |
| Other | | | | |
| State, Private | 692,386 | 33.5 | 766,179 | 26.6 |
| Total | 2,068,318 | 100 | 2,877,244 | 100 |

| Table 4-49. Summary of Irrigated Farm Characteristics in Duchesne and Uintah Counties. | | | |
|---|------------------------|----------------------|--------------|
| Land Uses | Duchesne County | Uintah County | Total |
| Number of farms | 932 | 908 | 1840 |
| Average size of farm (acres) | 1400 | 2853 (1997) | N/A |
| Total Cropland (acres) | 133,874 | 79,649 | 210,523 |
| Irrigated Land (acres) | 94,723 | 60,838 | 155,561 |
| Harvested Cropland (acres) | 50,093 | 33,168 | 83,271 |
| Irrigated Pasture (acres) | 52,447 | 30,265 | 82,712 |

Table 4-50. Summary of Crop Production in Duchesne and Uintah Counties. (Year of data in parentheses)

| Crops | Duchesne County | | | | Uintah County | | | |
|------------------------|-----------------|----------------|----------------|---------------------------|---------------|----------------|----------------|---------------------|
| | Acres | Units/ Acre | Yield/ Acre | Total Production | Acres | Units/ Acre | Yield/ Acre | Total Production |
| Wheat - All (2002) | 0 | Bushels | 0 | 0 | 800 | Bushels | 22 | 17,500 bushels |
| Barley - All (2006) | 600 | Bushels | 87 | 57,000 bushels | 500 | Bushels | 100 | 50,000 bushels |
| Corn - grain (2006) | 1500 | Bushels | 144 | 216,000 bushels | 1,100 | Bushels | 137 | 151,000 bushels |
| Corn - silage (2006) | 2700 | Tons | 19 | 50,600 tons ¹ | 2100 | Tons | 23 | 47,600 tons |
| Oats (2004) | 400 | Bushels | 85 | 33,800 bushels | 500 | Bushels | 82 | 41,000 bushels |
| Hay - All (dry) (2005) | 46,800 | Tons | 3.2 | 149,000 tons ¹ | 33,000 | Tons | 3.3 | 110,000 tons |
| Alfalfa hay (2005) | 32,000 | Tons | 3.6 | 114,000 tons ¹ | 26,000 | Tons | 3.6 | 93,000 tons |

¹ Cash value included in Table 4-51 under livestock products. Source: USDA, National Agricultural Statistics Service. Quick Stats.

| Table 4-51. Summary of Livestock Production in Duchesne and Uintah Counties. | | | | |
|---|---------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|
| Livestock Production (number of animals) | Duchesne County (2004) | Duchesne County (2006) | Uintah County (2004) | Uintah County (2006) |
| All cattle and calves | 57,000 | 56,000 | 45,000 | 34,000 |
| Beef cows | 28,500 | 27,500 | 20,500 | 23,000 |
| Milk cows | 3,000 | 2,500 | 1,400 | 1,100 |
| Breeding sheep and lambs | 3,100 | 2,500 | 8,900 | 12,500 |
| Total Livestock Farm Receipts (2004) (including crops produced for livestock consumption) | \$40,300,000 | | \$27,100,000 | |
| Total Farm Cash Receipts (2004) | \$49,600,000 | | \$33,000,000 | |

4.8.5.2 *Agriculture and Land Use within the Project Area*

The project areas for the different alternatives are located within the Uintah and Ouray Indian Reservation. The Reservation itself, and therefore the project areas, contains a checkerboard pattern of Indian and non-Indian ownership due to homesteading in the early 1900s. Land ownership in the different alternatives are listed in Table 2-3 in section 2.1.3.1. The majority of the land within each alternative is in Tribal Trust. Tribal Trust and existing federally-owned land together comprise from 67 to 74 percent of the different project areas. The remainder of the land is fee land.

Land uses and agricultural practices in the project areas are not particularly diverse when compared to the two counties overall. Of the total 4,807 acres of land within the Proposed Action project area, only 58 acres, or 1.2 percent, are devoted to crop production, principally alfalfa hay. Total production of alfalfa hay in the Proposed Action project area is estimated at 232 tons annually as compared

to 207,000 tons of alfalfa hay in the two-county area in 2005. The project area produces approximately 0.1 percent of the alfalfa hay produced in the two-county area. The small percentage of area affected is a result of the design of the Proposed Action project area to avoid established croplands.

The remaining 98.8 percent of the Proposed Action project area consists of irrigated, sub-irrigated and dry pastures devoted to grazing. Of this percentage, 1,899 acres, or 39.5 percent of the total project area, is irrigated pastureland. These lands are flood irrigated. Grazing practices vary, including year-round grazing and spring-only grazing, but the dominant practice is to graze cow-calf pairs from April through September. Production on irrigated pastures averages 2.5 AUMs per acre (Hanberg 2007, see Appendix I). Grazing intensity on irrigated lands is moderate to high, with no restrictions on forage amount.

The remaining 2,850 acres of the Proposed Action project area, approximately 60 percent of the total, are comprised of dry pasture that is grazed at very low intensity (less than 1

AUM). This land averages 0.1 AUMs per acre when privately owned, and 0.05 to 0.09 AUMs when it is Tribal land.

Total annual value of AUM production on these 2,850 acres is estimated to be \$3,640 (Hanberg, 2007) (See Table 4-52).

| Table 4-52. Estimated Agricultural Production on Lands in the Proposed Action Area under Baseline Conditions. | | | | | |
|---|--------------------------|--|-------------------------|---------------------------------------|--------------------|
| Land use | Acres¹ | Average Production/Acre² | Total Production | Average Value/Unit² | Total Value |
| Cropland - Tribal | 28 | 4 tons | 112 tons | \$105/ton | \$11,160 |
| Cropland - Fee | 30 | 4 tons | 120 tons | \$105/ton | \$12,600 |
| Cropland Totals | 58 | N/A | 232 tons | N/A | \$ 24,360 |
| Irrigated Pasture (Tribal) | 1,314 | 2.5 AUMs ³ | 3,276 AUMs | \$15/AUM | \$49,140 |
| Irrigated Pasture (Fee) | 585 | 2.5 AUMs | 1,242 AUMs | \$15/AUM | \$18,630 |
| Irrigated Pasture Totals | 1,899 | N/A | 4,518 AUMs | N/A | \$67,770 |
| Other - Tribal | 1,873 | 0.05-.09 AUMs | 145 AUMs | \$15/AUM | \$2,174 |
| Other - Fee | 977 | 0.1 AUMs | 98 AUMs | \$15/AUM | \$1,466 |
| Other - Totals | 2,850 | N/A | 242 AUMs | N/A | \$3,640 |
| Total Estimated Value | | | | | \$ 95,770 |
| ¹ Acres based on 1997 aerial photograph analysis and Hanberg (2007) ² Figures based on Hanberg (2007) ³ AUM = Animal unit month which represents the amount of forage consumed by a cow and calf in one month. | | | | | |

Although the exact proportions of land devoted to cropland, irrigated pasture and dry pasture vary among alternatives (see Table 2-6 in section 2.2.3 and Table 2-7 in section 2.3.3), agricultural patterns for the other two alternatives are similar to those described for the Proposed Action.

4.8.5.3 Land Use Plans

Duchesne and Uintah Counties both have general plans containing policies and

objectives for the land uses and management in the two counties (Duchesne County 1997, Uintah County 1996). These plans are similar in content and objectives.

The Proposed Action would initiate changes in land use and ownership in the project area. Some of these changes may conflict with Duchesne and Uintah Counties' general plans. Other changes may be consistent with the counties' goals of preserving open space and planning for nature-oriented recreation.

Key aspects of the land use plans that could be considered applicable to the LDWP include the following:

- Both counties state that there should be “no net increase” in public land and Duchesne County identifies that “the County shall be compensated for the loss of private lands or tax revenues due to land exchanges.”
- Land use plan objectives call for the protection of private property (“private property shall be protected from coerced acquisition by federal, state and local governments”), but also support acquisition of private property on a willing seller basis.
- The Duchesne County General Plan calls for “protecting private property rights during CUP Completion Act implementation” and notes that “private land shall not be converted to state or federal ownership in order to compensate for government activities outside of Duchesne County.”
- Supporting community and county sponsored beautification and cleanup efforts (Duchesne County), however “when law requires mitigation from conservation and other projects, the creation of artificial wetlands shall be considered only after all other mitigation possibilities have been exhausted. Creation or maintenance of an artificial wetland is contrary to the intent of conservation.”
- Developing an outdoor field institute or nature center (Duchesne County),
- Protecting the County’s rural character (Uintah County),

- Improving and protecting water quality (Uintah and Duchesne Counties), and
- Promoting responsible public land recreation and tourism (Uintah and Duchesne Counties).

Though the Ute Tribe has no formal land use plan, they have a general policy of trying to consolidate Tribal Trust lands whenever former Reservation, or “homesteaded lands,” become available for purchase.

4.8.6 Impact Analysis

4.8.6.1 Significance Criteria

The impact analysis for the Proposed Action and alternatives measures changes in agricultural production as a result of the LDWP. The significance of such changes is one of the socioeconomic questions addressed in section 4.9.

Changes in land use resulting from the project would be considered significant if such changes conflict with the objectives of the counties’ land use plans, or if changes are incompatible with land uses in the area such that the local lifestyle is adversely affected.

4.8.6.2 Proposed Action

4.8.6.2.1 Agricultural Production and Practices

Of the 4,807 acres in the Proposed Action project area, 58 acres are being cultivated for rotation crops (primarily alfalfa hay). As noted in Section 2.1.1.7, under the Proposed Action the management of these croplands would change. Any future planting and harvesting of crops on these lands would be in

support of wildlife, and no crops would be produced for the market. As indicated in tables 4-52 and 4-53, this would reduce the marketable yield by 232 tons per year, which has a value of \$24,360 at the current market value of \$105 per ton. According to USDA statistics, production of alfalfa hay was 207,000 tons in the two-county area in 2005. Loss of 232 tons under the Proposed Action would therefore reduce production in the two county area by approximately 0.1 percent.

There are 1,899 acres of irrigated pasture and 2,850 acres of other land open to grazing in the Proposed Action project area (Table 4-52). These lands support 4,760 AUMs per year, which is valued at \$71,410 at the current market value of \$15 per AUM. The Proposed Action would eliminate grazing on these lands to provide suitable habitat for wildlife, except in selected instances where grazing was deemed useful as a management tool.

The State of Utah does not compile statistics on the number of AUMs across the state, so it is not possible to directly compare the local reduction of AUMs to county-wide production. However, since the dominant form of grazing on the LDWP project lands is cow-calf pairs for five months of the year (May to September), the loss of these AUMs would be roughly equivalent to the loss of 950 cow-calf pairs (4,760 AUMs divided by five months), assuming that no alternative grazing lands were available. Table 4-51 indicates that there were 90,000 cattle and calves in Uintah and Duchesne Counties in 2006, which equates to 45,000 cow-calf pairs. The loss of 950 cow-calf pairs in the project area would represent a loss of 2.1 percent of the cow-calf pairs in the two counties. Again, this is a worst case prediction, since alternative

grazing lands or feed sources might be available to sustain existing populations of livestock.

Although marketable agricultural production within the Proposed Action project area (including both crop and livestock production) would cease, this would result in only a slight change in total county-wide production. Impacts to personal income would be difficult to predict, as land owners would be compensated for the fair market value of their properties and may find other agricultural land as a substitute. Allottees would be compensated at fair market value for their agricultural land and water rights. Lessees of Tribal Trust land are subject to Tribal lease provisions that allow a change in lease conditions at any time. Changes in lessee use of Tribal Trust land are consistent with existing Tribal policy.

Pasture land would be acquired in fee title. This action may impact individual landowners, but impacts would be minimized by developing standard land acquisition procedures according to the Uniform Relocation Assistance and Real Properties Acquisition Policies Act of 1970. These procedures are described in more detail in section 2.1.3.2.

The Proposed Action would impact agricultural practices and operations in the project area. Grazing would be eliminated from pastures in the project area unless necessary to achieve wildlife management goals. Fifty-eight acres of cropland would be acquired and devoted to sustaining wildlife. Such changes would have no effect on agricultural practices on adjacent farms.

Table 4-53. Estimated Marketable Agricultural Production under the Proposed Action.¹

| Land Use | Acres | Average Production/Acre | Total Production | Average Value/Unit ¹ | Total Value |
|----------------------------------|--------------------------|-------------------------|------------------|---------------------------------|-------------|
| Cropland -Tribal | 28 | 0 tons | 0 tons | \$105/ton | \$0 |
| Cropland - Fee | 30 | 0 tons | 0 tons | \$105/ton | \$0 |
| Cropland totals: | 58 | N/A | 0 tons | N/A | \$0 |
| Irrigated Pasture (Tribal) | 1,314 | 0 AUMs ² | 0 AUMs | \$15/AUM | \$0 |
| Irrigated Pasture (Fee) | 585 | 0 AUMs | 0 AUMs | \$15/AUM | \$0 |
| Irrigated Pasture Totals: | 1,899 | N/A | 0 AUMs | N/A | \$0 |
| Other - Tribal | 1,873 | 0 AUMs | 0 AUMs | \$15/AUM | \$0 |
| Other - Fee | 977 | 0 AUMs | 0 AUMs | \$15/AUM | \$0 |
| Other - Totals: | 2,850⁴ | | 0 AUMs | | \$0 |
| Total Estimated Value | | | | | \$0 |

¹ Figures based on Hanberg (2007)

² An Animal Unit Month (AUM) represents the amount of forage consumed by a cow and calf in one month

4.8.6.2.2 Ground Water Effects on Croplands

There are 58 acres of cropland within the Uresk Drain that would be acquired, with additional cropland located adjacent to the West Fields subarea of the Uresk Drain. The LDWP would not affect the ground water levels in the West Fields and thus there would not be any effect of the project on water tables within adjacent croplands (see section 4.5.6.2 for the groundwater analysis). Thirty acres of acquired cropland is located adjacent to the proposed wetlands within the Main Site. It is likely that the increased water table associated with the wetlands would affect the portion of the cropland both within the Uresk Drain site and below 5,040 MSL. There would no

effects on cropland outside of the Uresk Drain boundaries.

Only 0.5 acres of cropland located within the river floodplain would be acquired in Riverdell South under the Proposed Action. There are 40 acres of cropland immediately adjacent to the eastern Riverdell South boundary and approximately 120 acres of cropland south of River Road. The cropland east of the site boundary is located more than 800 feet east of the closest wetland area and five feet higher in elevation, and thus outside of the ground water area of influence. There is no cropland located adjacent to the oxbow traces south of River Road and there would be no impacts to the existing cropland south of River Road.

There is no cropland within the Ted's Flat site, with adjacent cropland located more than 10 feet above the proposed wetlands on the eastern boundary and more than 20 feet above and 1 mile east of the proposed wetlands on the western boundary.

4.8.6.2.3 Land Use Plans

The Proposed Action would initiate changes in land use and ownership in the project area. Some of these changes conflict with Duchesne and Uintah Counties' land use plans. Other changes are consistent with the counties' goals of preserving open space, planning for nature-oriented recreation and looking at restoration over creation of artificial wetlands.

Under the Proposed Action, up to 1,592 acres of private land would be acquired and converted to Tribal fee ownership. This land would remain on the county tax rolls and would not be classified as "public land", thereby being consistent with the Counties' no net increase in public land and compensation for tax revenue policies.

The only exception to this approach would be instances where fee lands could not be acquired on a willing seller basis and it becomes necessary to use eminent domain authority. This is not the preferred method of acquisition and will be avoided if possible. However, if lands are acquired through eminent domain, they would remain in federal ownership. Both actions would conflict with a number of items in two counties' land use plans:

- The call for "no net increase" in public land and directive for compensation from loss of private lands.

- Protection of private land from coerced government acquisition.
- Protection of private property rights during CUPCA implementation.
- Allowing private property owners the right to dispose of their land as they see fit.

It is also possible that county officials could view the LDWP as violating the policy of not allowing compensation in Duchesne County for government activities outside of Duchesne County, even though the LDWP is compensating for impacts that occurred downstream of Starvation Reservoir in Duchesne and Uintah counties.

Although the Duchesne and Uintah County land use plans are not binding on the federal government, the joint lead agencies have adopted several strategies to reduce the conflict between the counties' no-net-loss policies, private property concerns and project implementation. These strategies are listed below.

- The overall size of the project under the Proposed Action has been reduced to reduce land acquisition and potential land use conflicts.
- The project has been designed to avoid residences wherever possible and still meet wildlife habitat goals.
- Where land acquisition is necessary to meet the project goals, every effort will be made to acquire properties on a willing-seller basis.
- Eminent domain authority would be used only if negotiations on a willing seller basis fail.

Ultimately the conflict could remain unresolved if there were a net loss of private land in the two counties or if eminent domain were used.

The project would initiate land-use changes that are in harmony with other features of the counties' land use plans and land use patterns on adjacent lands. For instance, both counties have land use objectives that call for "protecting the county's rural character." The Proposed Action and alternatives support this county goal by creating and preserving an open space corridor.

Although the Proposed Action would eliminate grazing in the project area and initiate other land use changes, the land within the project area would remain rural and undeveloped in appearance. The marketable yield of crops and livestock products in the two county area would be reduced by 0.1 percent. Such changes should not affect the viability of an agricultural lifestyle within Duchesne and Uintah Counties nor interfere with land uses and lifestyles in the surrounding area.

Additionally, Duchesne County directs that artificial wetlands created for mitigation be used only after other mitigation possibilities are exhausted. The Proposed Action focuses on restoration of wetland and riparian habitats where they historically occurred as well as enhancement of existing habitats. Approximately sixty-two percent of the final wetland and riparian habitats represent existing habitats to be enhanced in their existing location. The remaining restoration focuses on both riparian and wetland habitats, with restoration of historic habitats the primary remaining form of mitigation.

4.8.6.2.4 Partial Landholding Acquisition

Under the Proposed Action there are approximately 14 properties in which portions of the land holdings fall inside the LDWP boundary and portions fall outside of the boundary (see Table 4-54). Of these parcels, four are actively being used as irrigated pastureland and the remaining ten are in the "other" category, which is neither irrigated pastureland nor cropland. In only one case, would the cropped portion of a property be placed within the LDWP, with the non-irrigated portion of the property left outside of the project boundary. This would occur in the Uresk Drain site. In one case in the Riverdell South site, the cropland associated with one property would be kept outside of the project boundary but portions of the pastureland included inside the project. There are no other instances in which landholdings would include splitting off a portion of cropland from the remainder of the property.

Partial acquisition of landholdings could potentially impact the viability of farming operations, with additional negative effects on family income and well-being. Negative financial impacts to individuals and families from farm splitting would be minimized by strict federal standards that govern property appraisals and compensation when real property is acquired by the United States. These federal appraisal standards, commonly known as the Yellow Book, were developed by several federal agencies with the assistance of the private Appraisal Institute. To assure adequate compliance with the standards, appraisal reports obtained by federal agencies must be reviewed by a qualified review appraiser from the Department of the Interior's Appraisal Services Directorate, an independent agency within the DOI.

The federal appraisal methodology required by the Yellow Book for acquiring only part of an entire parcel, values the entire parcel before the proposed acquisition, and then separately values the entire property interest remaining in the hands of the private property owner after the acquisition. This before and after approach is the best designed method to make sure that the United States pays for all of what a private landowner may sell to the United States; not only the market value of the interest in the land the United States actually acquires, but also any difference in the before and after market value of the remaining parcel retained by the private landowner. Willing-seller negotiations may result in acquisitions beyond what is required for the project if the landowner believes they are being left with an uneconomical remainder and would prefer to sell their entire parcel.

Without investigating each farming operation on an individual basis, which is beyond the scope of this analysis, it is not possible to predict whether partial land acquisition would have a significant impact on individuals or families. In some instances, replacement acreage may be acquired with compensation by the project; in other cases, farming

operations may continue successfully on reduced acreages. Nonetheless, it is possible families and individuals could view the land acquisition process as a significant negative impact on their lives, notwithstanding the financial compensation.

4.8.6.2.5 Summary of Impacts

The Proposed Action would result in a reduction of 4,760 AUMs per year. Fifty-eight acres of cropland would be acquired in fee title and managed for wildlife. These reductions will result in only a slight change in total county wide production. The significance of this change is discussed in section 4.9 Socioeconomics. There would be no effect on agricultural practices or production outside of the project boundaries.

Up to 1,592 acres of private land would be acquired and converted to Tribal fee ownership. This acquisition would conflict with some aspects of the two County land use plans, especially if eminent domain were used, which could result in a significant impact.

| Table 4-54. Summary of Partial Landholding Acquisition under the Proposed Action. | | | |
|--|-----------------------------|--------------------------------------|---------------------------------------|
| Site | Number of Properties | Land Use within LDWP Boundary | Land Use outside LDWP Boundary |
| Uresk Drain | 1 | Irrigated pasture | Irrigated pasture |
| | 1 | Cropland | Other |
| Riverdell South | 1 | Irrigated pasture, Other | Other (not contiguous to LDWP) |
| | 1 | Irrigated pasture | Cropland, Other |
| Ted's Flat | 7 | Other | Other |
| | 1 | Other | Other (not contiguous to LDWP) |
| | 1 | Other | Dairy |
| | 1 | Irrigated pasture, Other | Other |

4.8.6.3 Pahcease Alternative

4.8.6.3.1 Agricultural Production and Practices

Table 4-56 provides a summary of current and post-project agricultural uses, acreage, yield and crop values on lands within the Pahcease Alternative project area. Of the total 6,765 acres in the Pahcease Alternative, 239 acres are presently cropped for alfalfa hay. This acreage produces a total of 956 tons per year with a value of \$100,380 at current market prices of \$105 per ton.

In contrast to the Proposed Action, conservation easements would be used on cropland. Conservation easements would not reduce the total crop production, but would reduce the marketable crop yield by 20 percent. This translates to a reduction in the marketable yield of 191 tons per year, with a value of \$20,076 at the current market value

of \$105/ton. The Pahcease Alternative would reduce the marketable crop yield in the two-county area, which was \$15,200,000 in 2004, by 0.1 percent (GOPB 2006).

There are 5,439 acres of pasture land in the Pahcease Alternative that are grazed or available for grazing, with a potential yield of 8,796 AUMs (BIA 2002, Hanberg 2007). The current market value of these AUMs is \$131,935. Eliminating grazing would reduce cow/calf pairs in the two-county area by 1,759 (8,796AUMs divided by 5 months), a reduction of 2.0 percent on a county-wide basis. This is a worst-case assumption, since it is possible that alternative grazing sites or other options might be found to sustain some or all of these cow-calf pairs.

The value of total marketable agricultural production within the Pahcease project area (including both crop and livestock production) would decline from \$232,315 to \$80,325 if this alternative were implemented. This

reduction would result in only a slight change in total county-wide production. The production change is not anticipated to impact individual income as land owners would be compensated for the revenue loss either by land purchase or by purchase of conservation easements designed to provide income equivalent to the value of lost agricultural sales. Allottees would be compensated for the value of the marketable production from their agricultural land. Lessees of Tribal Trust land are subject to Tribal lease provisions that allow a change in lease conditions at any time. Changes in lessee use of Tribal Trust land are consistent with existing Tribal policy.

Pasture land would be acquired in fee title if privately owned, or by easement if on Tribal Trust lands. This action may impact individual landowners but impacts to individual homeowners would be minimized by avoiding residences unless they are essential to the success of the project and by developing standard land acquisition procedures according to the Uniform Relocation Assistance and Real Properties Acquisition Policies Act of 1970. These procedures are described in more detail in section 2.1.3.2.

As for the Proposed Action, the Pahcease Alternative would impact agricultural practices and operations in the project area. Grazing would be eliminated from pastures in the project area, unless necessary to meet wildlife management goals. Cropping practices and pesticide applications on farms within the project boundaries would be altered. Such changes would have no effect on agricultural practices on adjacent farms.

4.8.6.3.2 Ground Water Effects on Croplands

Impacts would be similar to those described for the Proposed Action for the Uresk Drain and Riverdell South with the following exceptions:

Under the Pahcease Alternative, an increased ground water table would be anticipated in approximately 10 of the 30 acres of cropland adjacent to the Uresk Drain Main Site wetlands. The increased water table would occur in that portion of the cropland located below an elevation of 5,040 feet MSL. Any loss of crop production in this area would be compensated for under the conservation easement purchased for this property.

An increased water table could occur in the approximately 40 acres of grassland located adjacent to and east of the Head of the Drain. This area is currently flood irrigated for pasture dominated by wheatgrass. An increased water table could affect the wheatgrass and result in a change in grass species composition, potentially reducing overall grass production.

On the Flume, there would be a potential loss of production on 14 acres of cropland associated with an increased water table.

4.8.6.3.3 Land Use Plans

The Pahcease Alternative would acquire up to 1,787 acres of private land, eliminate grazing on project lands and reduce marketable crop yield by 20 percent on 239 acres of land. Generally, the impacts of these actions on county land use and surrounding properties is the same as for the Proposed Action. However, both the Pahcease and Topnoates alternatives differ from the Proposed Action

in terms of the disposition of private land acquired for the project.

Under the Pahcease alternative, the 1,787 acres of private land acquired would be converted to federal ownership, rather than converted to Tribal fee land as in the case of the Proposed Action. As detailed in Section 4.8.6.2.2, this conflicts with the land use plans of both counties, which call for “no net increase” in public land. In contrast to the Proposed Action, the amount of land converted from private to public ownership under the Pahcease Alternative could be viewed as “significant impact” in terms of the criteria set forth in Section 4.8.6.1.

Additionally, if this private land cannot be acquired on a willing seller basis, eminent domain would be used as a last resort. County officials could also view this as a “significant impact” in that it conflicts with county land use plan objectives calling for protection of private property.

4.8.6.3.4 Partial Landholding Acquisition

Under the Pahcease Alternative there are approximately 13 properties in which portions of the land holdings fall inside the LDWP boundary and portions fall outside of the boundary (see Table 4-55). Of these parcels, approximately seven are actively being used as irrigated pastureland and four are being used for cropland that would be split by the project.

Partial acquisition of landholdings could potentially impact the viability of farming operations, with additional negative effects on family income and well-being. Negative financial impacts to individuals and families from farm splitting would be minimized by strict federal standards that govern property appraisals and compensation when real property is acquired by the United States as described in section 4.8.6.2.4 for the Proposed Action.

4.8.6.3.5 Summary of Impacts

The Pahcease Alternative would result in a reduction of 8,796 AUMs per year. No cropland would be acquired in fee title but conservation easements would be purchased on 239 acres of cropland. This would result in only a slight change in total county wide production. There would be no effect on overall agricultural practices outside of the project boundaries but 14 acres of land adjacent to the Flume site could be affected by an increase in the local groundwater table. The significance of these changes are discussed in section 4.9 Socioeconomics.

Up to 1,787 acres of private land would be acquired and converted to federal ownership. This acquisition would conflict with most aspects of the two County land use plans, especially if eminent domain were used, and would result in a significant impact.

Table 4–55. Summary of Partial Landholding Acquisition under the Pahcease Alternative

| Site | Number of Properties | Land Use within LDWP Boundary | Land Use outside LDWP Boundary |
|-----------------|-----------------------------|--------------------------------------|---------------------------------------|
| Uresk Drain | 1 | Irrigated pasture | Irrigated pasture |
| | 1 | Cropland | Other |
| | 1 | Irrigated pasture | Irrigated pasture |
| Riverdell North | 0 | N/A | N/A |
| Riverdell South | 1 | Irrigated pasture, Other | Other (not contiguous to LDWP) |
| | 1 | Irrigated pasture, Cropland | Other |
| Flume | 2 | Irrigated pasture, Other | Irrigated pasture, Other |
| | 1 | Irrigated pasture, Other | Other |
| | 2 | Other | Irrigated pasture, Other |
| | 1 | Irrigated pasture, Other | Cropland, Other |
| | 1 | Cropland, Other | Other |
| | 1 | Cropland, Other | Cropland, Other |

Table 4-56. Estimated Marketable Agricultural Production under the Pahcease Alternative. Both pre-project (baseline conditions) and post-project conditions are listed.

| Land Use | Acres | Pre-project Production | | | | Post-project Production | | |
|---------------------------------|--------------|--------------------------------------|-------------------|---------------------------------|------------------|-------------------------|------------------|-----------------|
| | | Average Production/Acre ¹ | Total Production | Average Value/Unit ¹ | Total Value | Average Production/Acre | Total Production | Total Value |
| Cropland -Tribal | 54 | 4 tons | 216 tons | \$105/ton | \$22,680 | 3.2 tons | 173 tons | \$18,165 |
| Cropland - Fee | 185 | 4 tons | 740 tons | \$105/ton | \$77,700 | 3.2 tons | 592 tons | \$62,160 |
| Cropland totals | 239 | N/A | 956 tons | N/A | \$100,380 | N/A | 765 tons | \$80,325 |
| Irrigated Pasture (Tribal) | 1,214 | 2.5 AUMs ² | 3,035 AUMs | \$15/AUM | \$45,525 | 0 AUMs | 0 AUMs | \$0 |
| Irrigated Pasture (Fee) | 1,213 | 3.0 | 3,639 | \$15/AUM | \$54,585 | 0 AUMs | 0 AUMs | \$0 |
| Irrigated Pasture Totals | 2,427 | N/A | 6,674 AUMs | N/A | \$100,110 | N/A | 0 AUMs | \$0 |
| Other ³ - Tribal | 2,623 | 0.68 AUMs | 1,784 AUMs | \$15/AUM | \$26,755 | 0 AUMs | 0 AUMs | \$0 |
| Other - Fee | 389 | 0.87 AUMs | 338 AUMs | \$15/AUM | \$ 5,076 | 0 AUMs | 0 AUMs | \$0 |
| Other- Federal | 1,087 | 0 AUMs | 0 AUMs | \$15/AUM | 0 | | | |
| Other - Totals | 3,012 | N/A | 2,122 AUMs | N/A | \$31,825 | N/A | 0 AUMs | \$0 |
| Total Value | | | | | \$232,315 | | | \$80,325 |

¹ Figures based on BIA 2002, Hanberg 2007

² AUM = Animal Unit Month, which represents the amount of forage consumed by a cow and a calf in one month

³ Category includes 1861 water-righted Tribal Trust lands which are currently idle but available to be put into production at any time.

4.8.6.4 *Topanotes Alternative*

4.8.6.4.1 Agricultural Production and Practices

Table 4-58 provides a summary of current and post-project agricultural uses, acreage, yield and crop values on lands within the Topanotes Alternative project area. Of the total 6,648 acres in the Topanotes Alternative, 356 acres are cropped for alfalfa hay and other rotation crops. This results in a total production of 1,424 tons, with a value of \$149,520 at current market prices of \$105 per ton. Conservation easements would not reduce the total crop production, but would reduce the marketable crop yield by 20 percent. This translates to a reduction in the marketable yield of 285 tons per year, with a value of \$29,904 at the current market value of \$105/ton. The Topanotes Alternative would reduce the marketable crop yield in the two county area by 0.2 percent.

There are 6,292 acres of irrigated and non-irrigated pasture land in the Topanotes Alternative that are grazed or available for grazing, with a potential yield of 8,991 AUMs. The current market value of these AUMs is \$134,875. Eliminating grazing would reduce cow/calf pairs in the two-county area by 1,798 (8,991 AUMs divided by 5 months), a reduction of 2 percent, if alternative grazing was not available.

Total marketable agricultural production within the project area (including both crop and livestock production) would be reduced from \$284,395 to \$119,616, a reduction of 58 percent. This reduction would result in only a slight change in total county-wide production. The production change is not anticipated to impact individual income as land owners would be compensated for the revenue loss either by land purchase or by purchase of conservation

easements designed to provide income equivalent to the value of lost agricultural sales. Allottees would be compensated for the value of the marketable production from their agricultural land. Lessees of Tribal Trust land are subject to Tribal lease provisions that allow a change in lease conditions at any time. Changes in lessee use of Tribal Trust land are consistent with existing Tribal policy.

Pasture land would be acquired in fee title or by easement on Tribal Trust lands. This action may impact individual landowners but impacts to individual homeowners would be minimized by avoiding residences unless they are essential to the success of the project and by developing standard land acquisition procedures according to the Uniform Relocation Assistance and Real Properties Acquisition Policies Act of 1970. These procedures are described in more detail in section 2.1.3.2.

As in the case of the Proposed Action, the Topanotes Alternative would impact agricultural practices and operations in the project area. Grazing would be eliminated from pastures in the project area, unless necessary to meet wildlife management goals. Cropping practices and pesticide application on cropped farms in the project area would be altered. Such changes would have no effect on agricultural practices on adjacent farms.

4.8.6.4.2 Ground Water Effects on Croplands

Impacts to cropland associated with an increased water table would be the same as described for the Pahcease Alternative.

4.8.6.4.3 Land Use Plans

The Topanotes Alternative would acquire up to 2,240 acres of private land, eliminate grazing on project lands and reduce marketable crop yield by 20 percent on 356 acres of land. The impacts of these actions on county land use and surrounding properties is the same as for the Pahcease Alternative.

4.8.6.4.4 Partial Landholding Acquisition

Under the Topanotes Alternative there are approximately 21 properties in which portions of the land holdings fall inside the LDWP boundary and portions fall outside of the boundary (see table 4- 57). Of these parcels, approximately seven are actively being used as irrigated pastureland and three for cropland that would be split by the project. Partial acquisition of landholdings could potentially impact the viability of farming operations, with additional negative effects on family income and well-being. Negative financial impacts to individuals and families from farm splitting would be minimized by strict federal standards that govern property appraisals and compensation when real property is acquired by the United States as described in section 4.8.6.2.4 for the Proposed Action.

4.8.6.4.5 Summary of Impacts

The Topanotes Alternative would result in a reduction of 8,991 AUMs per year. No cropland would be acquired in fee title but conservation easements would be purchased on 356 acres of cropland. This would result in only a slight change in total county wide production. There would be no effect on overall agricultural practices outside of the project boundaries but 14 acres of land adjacent to the Flume site could be affected by an increase in the local groundwater table. The significance of these

changes are discussed in section 4.9 Socioeconomics.

Up to 2,240 acres of private land would be acquired and converted to federal ownership. This acquisition would conflict with most aspects of the two County land use plans, especially if eminent domain were used, and would result in a significant impact.

Table 4-57. Summary of Partial Landholding Acquisition under the Topanotes Alternative.

| Site | Number of Properties | Land Use within LDWP Boundary | Land Use outside LDWP Boundary |
|-------------|-----------------------------|--------------------------------------|---------------------------------------|
| Uresk Drain | 2 | Irrigated pasture | Irrigated pasture |
| | 1 | Cropland | Other |
| Flume | 2 | Irrigated pasture, Other | Irrigated pasture, Other |
| | 1 | Irrigated pasture, Other | Other |
| | 2 | Other | Irrigated pasture, Other |
| | 1 | Irrigated pasture, Other | Cropland, Other |
| | 1 | Cropland, Other | Other |
| | 1 | Cropland, Other | Cropland, Other |
| Ted's Flat | 7 | Other | Other |
| | 1 | Other | Other (not contiguous to LDWP) |
| | 1 | Other, Dairy | Other |
| | 1 | Irrigated pasture, Other | Other |

Table 4-58. Estimated Marketable Agricultural Production under the Topanotes Alternative. Both pre-project (baseline conditions) and post-project conditions are listed.

| Land use | Acres | Pre-project Production | | | | Post-project Production | | |
|---------------------------------|--------------|-------------------------|-------------------|--------------------|------------------|-------------------------|-------------------|------------------|
| | | Average Production/acre | Total Production | Average Value/Unit | Total Value | Average Production/acre | Total Production | Total Value |
| Cropland -Tribal | 45 | 4 tons | 180 tons | \$105/ton | \$18,900 | 3.2 tons | 144 tons | \$15,120 |
| Cropland - Fee | 311 | 4 tons | 1,244 tons | \$105/ton | \$130,620 | 3.2 tons | 995 tons | \$104,496 |
| Cropland totals | 356 | N/A | 1,424 tons | N/A | \$149,520 | N/A | 1,139 tons | \$119,616 |
| Irrigated Pasture (Tribal) | 1,197 | 2.5 AUMs ² | 2,992 AUMs | \$15/AUM | \$44,880 | 0 AUMs ² | 0 AUMs | \$0 |
| Irrigated Pasture (Fee) | 1,024 | 3.0 | 3,072 AUMs | \$15/AUM | \$46,080 | 0 AUM ^{1,2} | 0 AUMs | \$0 |
| Irrigated Pasture Totals | 2,221 | N/A | 6,064 AUMs | N/A | \$90,968 | N/A | 0 AUMs | \$0 |
| Other ³ - Tribal | 3,235 | 0.68 AUMs | 2,200 AUMs | \$15/AUM | \$32,997 | 0 AUMs | 0 AUMs | \$0 |
| Other - Fee | 826 | 0.87 AUMs | 727 AUMs | \$15/AUM | \$10,910 | 0 AUMs | 0 AUMs | \$0 |
| Other - Totals | 4,071 | N/A | 2,927 AUMs | N/A | \$43,907 | N/A | 0 AUMs | \$0 |
| Total Value | 6,648 | | | | \$284,395 | | | \$119,616 |

¹ Figures based on BIA 2002 and Hanberg 2007.

² AUM = Animal unit month which represents the amount of forage consumed by a cow and calf in one month.

³ Category includes 1861 water-righted Tribal Trust lands which are currently idle but available to be put into production at any time.

4.8.6.5 No Action Alternative

Under the No Action Alternative, agricultural production in the project area would continue to be focused on cattle grazing and feed production. Such production would continue to represent 0.4 percent of the livestock production in the two-county area. More than one-half of the acres devoted to grazing would continue to consist of dry pasture with an estimated AUM of less than 1.0 per acre. Agricultural practices would continue as described for the baseline conditions. No actions would be taken to maintain open space or wildlife-related recreation on project lands. Land would remain open for conversion of agricultural land to other uses.

4.9 SOCIOECONOMICS

4.9.1 Introduction

This section addresses potential direct and indirect socioeconomic impacts resulting from the construction, operation and maintenance of the Proposed Action and alternatives of the LDWP. These impacts may result from project construction or the project's longer term effects on agriculture, recreation and other economic resources in the impact area.

4.9.2 Issues Eliminated from Further Analysis

The following issues raised during the public scoping and agency consultation process were eliminated from further analysis for the reasons listed below.

- Changes in population and demographics.

The Proposed Action and alternatives would

each generate 30 full-time, temporary jobs during the most active phase of the project. These jobs are expected to be filled primarily by Tribal members or from other people living in the Uinta Basin. The project should not generate any migration of labor into the Uinta Basin or otherwise create any noticeable changes in population or demographics in the project area.

4.9.3 Issues Addressed in the Impact Analysis

- Will employment levels change as a result of the LDWP construction and operation, and will this affect the local economy?
- Will there be a long-term economic impact from changes in agricultural practices within the project area?
- Is the community infrastructure in the local impact area and on the Uintah and Ouray Indian Reservation adequate to meet project-associated demand for housing, police and other community services during project construction and operation? Will there be other effects on community infrastructure?
- Will there be a change in the county tax base associated with the purchase of fee land?
- Will the project produce any economic benefits to Tribal members?

4.9.4 Area of Influence

For the purposes of the socioeconomic analysis, two impact areas of influence are defined: (1) a local impact area, comprised of Duchesne and Uintah Counties and (2) the Uintah and Ouray Indian Reservation. The Reservation is analyzed as a separate entity as the Tribe has social and economic needs different from the

counties as a whole. Accordingly, impacts that might be regarded as insignificant when viewed from a county-wide perspective, such as employment, could be considered significant from a Tribal perspective.

4.9.5 Affected Environment

4.9.5.1 Local Impact Area - Duchesne and Uintah Counties

4.9.5.1.1 Population

From 1990 to 2005, the estimated population of Duchesne County grew from 12,600 to 15,237, an annual increase of 1.4 percent. During the same period, the population of Uintah County grew at a nearly identical rate of 1.6 percent, from 22,230 to 26,883. During this period, both counties experienced population growth rates below the statewide average of 2.9 percent (GOPB 2006).

Between the years 2000 and 2005, population growth rates in Duchesne and Uintah counties slowed to an annual average of 1.1 and 1.2, respectively. However, that trend reversed itself between 2004 and 2005, when growth rates rose to 2.0 percent for Duchesne County and 2.5 percent for Uintah County. The sudden upsurge in population growth rates is likely related to the boom in oil and gas extraction in the two counties, although the connection has not been formally verified.

According to models prepared by the Utah Governor's Office of Planning and Budget in 2003, the population growth rates for both

counties had been expected to decline in the coming decades. According to those previous estimates, annual growth rates in the Uintah Basin were predicted to average 1.1 percent per annum through the year 2020, less than the statewide average of 2.2 percent. This would have resulted in a Uintah Basin population of 49,030 in the year 2020 (GOPB 2002).

These statistics do not reflect the recent surge in housing construction and employment that has occurred as a result of the current boom in mineral extraction in the Uintah Basin. It is likely that population growth rates at the present time are higher than 2005 projections, although data have not yet been compiled to fully assess this situation. Whether or not this changes the long term projections cannot be predicted, since mineral extraction is characteristically a boom and bust cycle, as it has been in the past for the Basin.

4.9.5.1.2 Employment

Table 4-59 shows that the 2006 unemployment rates for Duchesne and Uintah Counties were 3.5 percent and 3.0 percent, respectively. These rates are very close to the statewide unemployment rate of 3.5 percent for the same period. Both counties experienced a substantial decline in unemployment from 1999, when unemployment rates were 9.4 percent and 7.2 percent, respectively. The decline in unemployment can be attributed primarily to non-farm job growth of 3.5 to 5.7 percent during the period. This non-farm job growth exceeded the statewide average of 2.5 percent.

| County | Total NonAgricultural Employment | | Unemployment Rate | |
|----------|----------------------------------|----------|-------------------|----------|
| | 1999 | May 2006 | 1999 | May 2006 |
| Duchesne | 5,326 | 6,483 | 9.4% | 3.5% |
| Uintah | 9,892 | 13,195 | 7.2% | 3.0% |

The Utah State Water Plan (DWRi1999) contains future employment projections for the two counties generated by the Utah Process Economic and Demographic model. Through the year 2020, the number of jobs in Duchesne County is expected to increase by 38 percent, or 1.9 percent per year. In Uintah County, the growth during the same period is expected to be 46 percent, or 2.3 percent per year. This growth is expected to occur across a wide range of economic sectors, including construction, transportation, service, recreation and government employment. The exception to this trend is in the agricultural sector where the two counties are each expected to lose up to 100 agricultural jobs over the next 20 years.

4.9.5.1.3 Income

In contrast to the economic situation decades ago, both Uintah and Duchesne Counties have diverse, growing economies in which agriculture plays an increasingly minor role. Total personal income in the year 2004 was \$363,400,000 in Duchesne County and \$444,000,000 in Uintah County. In both counties, this represents an increase of 15 percent over the year 2003. Per capita income in both counties has also risen in comparison to the state average (90 percent of the state average in Duchesne County and 83 percent of the state average in Uintah County, UDWS 2005).

In Duchesne County, the largest single contributor to county payroll wages is government (33 percent), followed by transportation and public utilities (20 percent) and mining (18 percent). In Uintah County, the largest contributor to payroll wages is mining (32 percent), followed by government services (22 percent) and trade, transportation and utilities (21.5 percent)(UDWS 2005).

4.9.5.1.4 Agricultural Economics

Duchesne and Uintah Counties are generally regarded as rural areas, where a high proportion of private land is devoted to agricultural production. The Division of Water Resources (DWRi 1999) indicates there are 201,120 acres of privately-owned irrigated crop and pasture lands in the Uinta Basin, with over one million acres of private rangeland in the two counties. The average irrigated farm in Uintah County is 130 acres, while in Duchesne County the average size is 170 acres. More than 90 percent of the farms are devoted to beef production, either through cattle grazing or associated feed production.

Despite the visibility of agriculture in the Uinta Basin, the contribution of agriculture to the economies of the two counties is relatively small, generally only 1 percent or less. The majority of farms in the Uinta Basin exist only as part-time operations with farmers working full-time at other occupations (DWRi 1999). Table 4-60 provides recent comparisons

between total personal income in the two counties with personal income derived from agriculture (more recent county-level data on farm income is not available). These figures reveal several trends in Uinta Basin economics that are confirmed by viewing statistics over longer time frames:

- Total personal income in both counties is rising steadily,
- Personal income from farming is highly variable, and has fallen dramatically since its high point in 1990 when it reached \$12,900,000 in Uintah County and \$14,445,000 in Duchesne County,

- Personal income from farming has been falling as a proportion of total income in both counties over the past decade, a trend which is predicted to continue, and
- The long-term decline of agriculture in the two counties is also underscored by the prediction that the number of agricultural jobs in both counties will decline in the next 20 years.

| Measure | Uintah County | | | Duchesne County | | |
|---|---------------|-------|-------|-----------------|-------|-------|
| | 1997 | 1999 | 2004 | 1997 | 1999 | 2004 |
| Total Personal Income (\$millions) | 364.2 | 401.2 | 595.1 | 237.3 | 256.7 | 363.4 |
| Personal Income from Farming (\$millions) | 2.229 | 4.366 | NA. | 2.930 | 1.456 | NA |
| Agriculture as percent of Personal Income | 0.6% | 0.1% | NA. | 1.2% | 0.6% | NA. |

4.9.5.1.5 Community Infrastructure

Education. Public education in the Uinta Basin is in stable financial condition, although a number of schools are beginning to reach capacity. The Duchesne County School District has a bonding debt of \$5,790,000, which is 24.9 percent of its legal bonding capacity and slightly above the state average of 23 percent. The District has an undistributed reserve fund of \$500,000 and an unappropriated reserve of \$551,859. The

Uintah County School District is one of only two districts in the state with no outstanding bonds. It has an undistributed reserve fund of \$1,054,270 and an unappropriated reserve of \$2,577,948. Both districts appear to have the fiscal capability of expanding school capacity should it become necessary.

In the fall of 2001, the Uintah County School Board declared that all elementary and middle schools in the Vernal area had reached capacity (a condition that precludes transfers

from other areas), although some of the outlying schools such as LaPoint and Todd were still below full capacity.

In contrast to the situation in Uintah County, the Duchesne County school population has been shrinking over the past five years. Overall, the schools are now operating at about 70 percent of capacity, with 500 fewer students than five years ago. This trend is expected to continue in the near future, as the class sizes in the lower grades are smaller than the class sizes in higher grades. Union High School in Roosevelt appears on paper to be near capacity; however, many of the enrolled students are actually attending courses at either Uinta Basin Applied Technical College or the Utah State University Extension campus, both of which are located in Roosevelt (Miles 2002).

Law Enforcement and Fire Protection. Duchesne County reports the sheriff's office is currently understaffed due to personnel turnover, but there are adequate personnel to handle law enforcement needs in the County. The single exception is addressing drug abuse, a growing problem in the County (Hendricks 2002). Four cities in the county have their own fire departments, including the town of Myton. Additionally, there are three county fire stations. These facilities are adequately staffed by volunteers, although County officials feel they could use more volunteer help if it were available (Adams 2002).

The highway patrol office in Vernal covers the entire Uinta Basin. Although in the past the office has been understaffed, recent funding from the state has allowed them to hire a full complement of troopers and officers. They are experiencing no difficulties in handling law enforcement duties at this time (Bench 2002).

Medical Services. The only hospital in Duchesne County is the Uinta Basin Medical Center, located in Roosevelt. In addition to this facility, the Medical Center operates four satellite clinics. Bed occupancy rates at the hospital range from 40 to 50 percent. Technically, the hospital is quite advanced for a rural facility, with services including an MRI, CT, ultrasound and nuclear medicine. Specialties available at the hospital include surgery, orthopedics, pediatrics, ENT, ophthalmology, psychiatry, oncology and dermatology. There is one ambulance available in each of the towns of Altamont, Duchesne, Roosevelt and Tabiona, as well as a transport ambulance operating out of Roosevelt (Jensen 2002).

In Uintah County, the only hospital is the Ashley Valley Medical Center in Vernal, presently operating at a bed capacity of around 30 percent. The medical facilities are in good condition and technologically up-to-date. There are no satellite clinics affiliated with this hospital. Ambulance service in the county is provided by a private company. There are seven ambulances active in the county with the capacity to assign an additional five from Salt Lake City if needed (Batty 2002).

Public Utilities. The only company currently supplying natural gas in the Uinta Basin is Questar, which is meeting current demand and anticipates no future problems with supply or distribution. Moon Lake Electric, which supplies electricity to most of the Uinta Basin, is well-positioned to handle power needs in the area for many years to come. In addition, Qwest (formerly US West) and Uinta Basin Telephone report they have adequate telecommunications infrastructure in place to easily accommodate current and anticipated future demand.

Solid waste in Altamont, Duchesne and Roosevelt is collected by K&K Sanitation and deposited at the county landfill, which is many years from filling to capacity. Roosevelt's sewage treatment system, which was built to accommodate 20,000 citizens, is still a number of years away from capacity. Culinary water in Roosevelt is presently supplied by wells. New wells have come on line recently, and there are no present problems with supplying customer needs. Additionally, Roosevelt participated in the CUPCA 203 expansion of Big Sand Wash Reservoir, which should handle growth demands for water in the foreseeable future.

There is a public cemetery located at the edge of Myton within 1 mile of the LDWP boundary.

Housing. In the year 2001, 370 homes were sold in the Uinta Basin at an average price of \$97,825, a 14 percent increase in price from the prior year. This increase in price, coupled with a decrease in the number of days each house stayed on the market, is indicative of the fact that an upswing in oil and gas production in the Uinta Basin has caused the housing market to become tighter. This shift has had its greatest impacts on rental housing and housing available to low-income families. There are now waiting lists at 50 percent of the rental units throughout the Uinta Basin. Additionally, rents and rental deposits have increased, making it increasingly difficult for low-income families to find suitable housing. The situation is particularly acute for families earning only 30 percent of the area's median income. Housing for this income group is already insufficient, a situation which is expected to worsen in the next five years (UBAG 2002).

4.9.5.2. Local Impact Area - Uintah and Ouray Indian Reservation

Statistical information on the Tribe is not comprehensive and may be out-of date. The following presents a brief summary of available data which may not precisely reflect current conditions.

4.9.5.2.1 Population

There are 3,205 members of the Tribe, most of whom live on the Uintah and Ouray Indian Reservation (BIA 2000a). The Tribal population has remained relatively constant over the past decade. There are no projections available for the future population growth rate on the Reservation.

4.9.5.2.2 Employment

In 1995, 767 Tribal members were employed on the Uintah and Ouray Indian Reservation. The unemployment rate of 48 percent (250 people seeking work) was considerably higher than that of the Uinta Basin as a whole (CUWCD 2001). The primary employer of Tribal members on the Reservation is the Ute Tribe. No other data are available on Tribal employment by industry type.

4.9.5.2.3 Income

Income of Tribal members remains well below the income levels of Uinta Basin residents in general. The most recent data indicates that in 1989, the average Indian household in the Uinta Basin earned \$14,600, or 61.1 percent of the Uinta Basin average.

4.9.5.2.4 Agricultural Economics

The Tribe is traditionally not an agrarian society. Most of the Tribal land used for

agricultural purposes within the project area is leased to non-Tribal members for either grazing or crop production. Either the Tribe or individual allottees receive lease payments for the land but do not receive a royalty on the production. The agricultural production and value on the leased lands is included in Tables 4-52, 4-56 and 4-58.

Part of the Ute Tribe Water Settlement funds may be used to increase Tribal crop production outside of the project area through on-farm and irrigation system improvements. The BIA (2000a) estimated through use of an input/output (I/O) model that if farm improvements were made, the value of Tribal crop production could increase by up to \$1.8 million. Details of how and when these improvements would occur is unknown.

4.9.5.2.5 Community Infrastructure

The Tribe operates Uinta High School and Todd Elementary School on the Reservation. However, many Tribal members are educated at public schools in the area. Medical services are provided by the Indian Health Service facility located at Fort Duchesne. The Tribal police station is located in Fort Duchesne, and is currently staffed with 14 full-time officers and three jailers.

4.9.6 Impact Analysis

4.9.6.1 Significance Criteria

The significance criteria employed in this analysis vary depending on the socioeconomic variable being analyzed. The following list identifies different categories of impacts to be evaluated and the significance criteria applied to each category.

- **Social Services.** Impacts to social services would be considered significant if changes in social conditions brought about by the project exceed the capacity of social service providers to deliver the level of service identified under the baseline conditions.
- **Infrastructure.** Impacts to infrastructure would be significant if the LDWP required relocation of public facilities.
- **Economic Impacts.** Impacts to the Uinta Basin economy would be considered significant if there were a predicted change in employment or other economic sectors of 2.5 percent or greater.
- **Tribal Impacts.** Given the historic high levels of unemployment on the Reservation, any new jobs created or other improvements in socioeconomic conditions would be considered significant even though such changes may not be statistically significant within the Uinta Basin itself when analyzed through the IMPLAN model.

4.9.6.2 Proposed Action

4.9.6.2.1 Project Construction

The original DEIS evaluated socioeconomic impacts by using an input-output model of the Uintah Basin that was developed by the Governor's Office of Planning and Budget (GOPB). In the interim between the publication of the DEIS and the preparation of this FEIS, the GOPB model was discontinued and is no longer supported. Accordingly, the decision was made to utilize economic modeling software known as IMPLAN (Impact Planning for Analysis), which is also

based on input-output modeling and is very similar in formulation and results to the original model developed by GOPB. By using the IMPLAN software, it was possible to update the socioeconomic analysis for the FEIS by including data from the most recent national data sets.

As with the original GOPB model, the IMPLAN software utilizes national economic databases to characterize the Uinta Basin economy, then applies mathematical algorithms to describe how expenditures from a project will effect the regional economy. These impacts include direct, indirect, and induced economic impacts that result when expenditures in one sector of the economy result in additional expenditures in other sectors of the local economy. These secondary effects are characterized as “multipliers”. The IMPLAN software can view effects by using a variety of different multipliers; however, for the analysis in the FEIS, the economic effects were evaluated with the SAM multipliers (social account matrix), which capture the widest possible economic impacts in the regional economy. In contrast to other multipliers, the SAM multipliers account for spending in the local economy that occurs when employees spend additional wages that are generated by the initial expenditures that are being evaluated.

There are certain socioeconomic impacts that are not captured by the IMPLAN model, such as the effect of taking homes off the tax rolls. These effects are addressed in a separate discussion below.

Utilizing the IMPLAN methodology, impacts were evaluated for the most active year during the construction phase of the Proposed Action as well as the operational phase after project completion. Evaluating the most active year

of project construction should serve to project the maximum potential annual economic impact. All project-related activities expected to occur during that year were classified according to sectors available in the IMPLAN model. Estimated dollar values were assigned to each construction activity and related activities such as real estate fees, gas and supplies, lodging and consulting services. Annual losses from the elimination of grazing were also entered into the model. Other project expenses such as legal and engineering fees were not entered into the model since they are expected to be contracted outside the Uinta Basin and would have no effects within the defined impact area.

The IMPLAN model provides a variety of measures of economic change, including the number of new jobs created, increases in personal income, increases in total economic output, and tax impacts. The results also include indirect and induced economic effects that reflect the working of multipliers in the model. The following is a summary of the most important elements of economic change that are expected to occur:

- There would be \$932,298 of new inputs into the Uinta Basin economy (including negative inputs for agriculture) that would result in \$1,259,642 of economic output,
- 15.1 new jobs would be created, along with a loss of 1.8 jobs in the agricultural sector,
- Employee compensation would increase by \$375,305,
- There would be direct losses of \$95,770 from the elimination of agriculture in the project area, and

- There would be increased tax revenue of of \$235,060. Among many other tax categories, this includes sales tax and state income taxes.

To evaluate the significance of these changes, they must be compared to overall figures for Uintah and Duchesne Counties to confirm whether these changes represent a 2.5 percent change in baseline conditions. The Economic Report to the Governor 2006 (GOPB 2006) indicates that in the year 2004 there were 20,589 people employed in the two counties in the non-agricultural sector with a combined personal income of \$958,500,000. In comparing these figures to economic output and job creation under the Proposed Action, jobs and personal income in the two counties would increase by only 0.1 percent. Increases in other economic categories are proportionately similar. Accordingly, in view of the significance threshold of 2.5 percent that is stated above, it is apparent the Proposed Action would not have a significant impact within the overall Uinta Basin economy.

4.9.6.2.2 Operation and Maintenance

The IMPLAN model was also used to evaluate impacts after construction is complete. Inputs to the economy are smaller during this phase of the project as construction jobs are no longer funded. Positive inputs to the model include funding of the Tribal wetland office, maintenance of the facilities, and small increases in local revenues from hunters and wildlife watchers. Revenue losses from the elimination of grazing and cropping in the project area would continue. The IMPLAN model indicates that there would be a net increase of 3.2 permanent jobs, \$159,181 in employee

compensation and \$335,810 in total economic output. These increases would not be considered significant in terms of the total Uinta Basin economy.

4.9.6.2.3 Social Services and Infrastructure

As described in the baseline conditions, social services in the Uinta Basin are presently meeting local needs with the exception of a growing drug problem and some capacity problems in Uintah County schools. In-migration of labor to fill jobs created by the project could cause degradation of these services. However, as much as possible, jobs created by the project are expected to be filled by members of the Ute Tribe from the pool of unemployed workers. Any jobs which cannot be filled by Tribal members are expected to be filled by other people from within the two-county area. Accordingly, the project should not generate an in-migration of labor and there should be no significant impact on housing, schools, police or other social services as the projected labor force for the project is already using these same services at the present time.

The Myton cemetery is the only known public infrastructure in the LDWP area of influence which could be affected by changes in ground water levels, except for the paved county roads which are described in section 4.12.6. The ground water table rise within the Uresk Drain would be restricted to the area bordered by 1000 West, 8000 South and River Road on the north, east and west sides (see section 4.5.6.3). To the south, increases in ground water tables would generally occur south of the 5,040 foot contour and would not approach any roads or other facilities. No city or county infrastructure is located within the area of anticipated ground water rise. Due to the strong west to east ground water table

gradient within the project vicinity and the lack of any changes in ground water tables north of 8000 South, there would be no impact to the Myton cemetery under the Proposed Action (Basin Hydrology 2007).

4.9.6.2.4 Tax Revenues

IMPLAN estimates that the Proposed Action would generate additional tax revenues of \$235,060. The majority of these are federal taxes (\$189,931) and state income tax, which leave the region and have no impact on the local economy. There will also be small changes in sales taxes on purchases such as personal spending, gasoline and transient room taxes. These small increases in tax revenues would be proportional to the increases in personal income and economic output. As the larger increases in personal income and economic output were not significant within the wider Uinta Basin economy, the smaller increases in tax revenues would not be significant either.

County property taxes represent a separate category of taxes. The Proposed Action differs to some extent from the Pahcease and Topanotes alternatives in this regard, both of which would initiate permanent impacts to the county tax base with conversion of fee lands to federal ownership. Under the Proposed Action, private lands that are acquired would be converted to Tribal lands, which would remain in fee status and are subject to county taxation. Therefore, there would be no impacts to county tax revenues from this aspect of the Proposed Action.

The Proposed Action would result in the purchase and removal or relocation of nine residences (houses or trailers). Seven of the residences are on fee land and two are on Tribal Trust land. The seven parcels currently paying county property tax would likely be converted from a residential tax rate to a greenbelt tax rate. According to the Duchesne and Uintah County tax assessor's offices, the owners of these parcels paid a total of \$1,632 in taxes during 2006 (Table 4-63). With the conversion of the lands to a wildlife management area, up to \$1,632 in taxes could be lost within the two-county area. This represents a maximum value as (1) residents would be relocated, so that the tax loss from a residential parcel in one part of a county would likely be compensated for by a tax gain in another part of the county, and (2) taxes will still be paid on these parcels. Because, the resultant tax rate following land transfer is yet to be calculated, a maximum tax loss value was presented in this analysis.

The total tax change within the two-county area could range from none at all (with all residents relocating to similar value homes within the two-county area) to \$1,632 (Table 4-63). This represents less than 0.1 percent of the combined two-county tax revenues and is a non-significant impact in comparison to total county tax revenues.

Table 4-61. Estimated Changes in Duchesne and Uintah County Taxes Associated with Placement of Fee Land in Federal Ownership. The Proposed Action is not listed as fee land will generally be retained as fee land.

| Land Use Type/ Valuation | Acres | Greenbelt Valuation | Decrease in Tax Revenues [\$0.013142 x valuation] |
|-------------------------------------|--------------|--------------------------------|--|
| Pahcease Alternative | | | |
| Irrigated Pasture/\$225 acre | 1,213 | \$272,925 | -\$3587 |
| Dry Pasture/\$21 acre | 802 | \$16,842 | -\$221 |
| Total | 2,015 | \$289,767 | -\$3,808 |
| Topanotes Alternative | | | |
| Irrigated Pasture/\$225 acre | 1,024 | \$230,400 | -\$3028 |
| Dry Pasture/\$21 acre | 1,216 | \$25,536 | -\$336 |
| Total | 2,240 | \$255,936 | -\$3,364 |

Table 4-62. Estimated Changes in Duchesne and Uintah County Taxes Associated with Conversion of Certain Residential Parcels to Greenbelt Status.

| Alternative | Number of Residences | | 2006 Residential Parcel Tax |
|-----------------------|-----------------------------|------------------------------|--|
| | Fee Land | Tribal Trust land | |
| Proposed Action | 7 | 2 | \$1,632 |
| Pahcease Alternative | 10 | 2 | \$4,110 |
| Topanotes Alternative | 8 | 0 | \$3,679 |

Table 4-63. Estimated Maximum Total Changes in Duchesne and Uintah County Taxes Under the Proposed Action and Alternatives.

| | Property Tax Change Type | | Total Tax Revenue Decrease |
|-----------------------|--------------------------|---------------------|----------------------------|
| | Change from Fee land | Change to Greenbelt | |
| Proposed Action | 0 | -\$1,632 | -\$1,632 |
| Pahcease Alternative | -\$3,808 | -\$4,110 | -\$7,918 |
| Topanotes Alternative | -\$3,364 | -\$3,679 | -\$7,043 |

4.9.6.2.5 Uintah and Ouray Indian Reservation

Given the high rates of unemployment and low income on the Reservation, any new job opportunities or other improvements in social services for the Tribe would be significant. Under the Proposed Action, the construction phase would provide 15 jobs for nine months over a four year span, with an additional 15 temporary jobs for a planting crew, which would last for four months a year for 10 years. Preference would be given to Tribal members in filling these jobs. Additionally, a Tribal Wetlands Office would be established to manage the project during and after construction, employing approximately three permanent staff positions. Both phases of the project would create significant socioeconomic benefits to the Tribe. As these jobs would be filled with Tribal members presently living in the area, there should be no positive or negative impacts to social services from project construction or operation.

4.9.6.2.6 Summary of Impacts

Construction of the Proposed Action would increase the local net economic output by \$932,298, personal earnings by \$375,305 and

employment by 15.1 jobs. Project operation would increase revenue in the local economy by \$335,810. These net increases in revenue consider both the actual decrease in agricultural revenue and the multiplier effect of this decrease. None of the changes in output would account for more than a 0.1 percent change in the Uinta Basin economy and would therefore not be considered significant. The increase in employment for Tribal members would be a significant impact. The increase in employment for Tribal members would be a significant impact.

There would be no impacts on the local infrastructure, including roads, the Myton cemetery or local social services.

There would be no change in county taxes associated with changes in land ownership under the Proposed Action, as land would generally be maintained in fee status. Changes in tax revenues associated with acquisition of residences and conversion from residential to greenbelt use could result in tax losses of up to \$1,632. These represent maximum values as residents would be relocated, so that the tax loss from a residential parcel in one part of a county would likely be compensated for by a tax gain in another part of the county.

4.9.6.3 Pahcease Alternative

4.9.6.3.1 Project Construction

The peak construction year under the Pahcease Alternative would have similar economic inputs to the Proposed Action. The IMPLAN model indicates that these inputs to the Uinta Basin economy would create 15.5 new jobs, \$375,229 in increased employee compensation and \$924,729 in increased output in the Uinta Basin economy. There would be a loss of \$133,118 of receipts from grazing lands as well as a loss of three jobs in the agricultural sector. As for the Proposed Action, these economic changes would not be significant.

4.9.6.3.2 Operation and Maintenance

Economic impacts during the O & M period would be the same as for the Proposed Action.

4.9.6.3.3 Social Services and Infrastructure

As for the Proposed Action, the Pahcease Alternative would not create any social service impacts. There would be no impacts to the Myton Cemetery from an increased ground water table associated with the LDWP, as described in section 4.5.6.3.

4.9.6.3.4 Tax Revenues

Impacts on sales taxes and transient room taxes would be the same as for the Proposed Action. Under the Pahcease Alternative, there would be a projected annual loss of \$3,808 in property taxes to Duchesne and Uintah Counties as fee land is converted to federal ownership (Table 4-61). The losses in property taxes from the conversion of fee land to federal ownership would be subject to federal PILT payments.

Payments In Lieu of Taxes (PILT) is a federal program operated by the Bureau of Land Management (BLM) that provides funds to counties to offset the costs of having non-taxable federal lands within their jurisdiction, up to a specified maximum amount. PILT payments would be made to Duchesne and Uintah Counties up to the maximum allowable under law. All acreage acquired by the Federal government under this alternative will be reported to BLM for inclusion in the PILT calculations. The tax losses would vary considerably depending on the category of grazing land involved. Land categories and projected tax losses are identified in Table 4-61. These impacts would occur whether acquired fee lands are owned by the federal government or placed in trust for the Tribe.

The Pahcease Alternative would also result in the purchase and removal or relocation of 12 residences (houses or trailers). Ten of the residences are on fee land and two are on Tribal Trust land. The ten parcels currently paying county property tax would likely be converted from a residential tax rate to a greenbelt tax rate. According to the Duchesne and Uintah County tax assessor's offices, the owners of these parcels paid \$4,110 in taxes during 2006 (Table-62). With the conversion of the lands to a wildlife management area, up to \$4,110 in taxes could be lost within the two-county area. This represents a maximum value as (1) residents would be relocated, so that the tax loss from a residential parcel in one part of a county would likely be compensated for by a tax gain in another part of the county, and (2) taxes will still be paid on these parcels. Because, the resultant tax rate following land transfer is yet to be calculated, a maximum tax loss value was presented in this analysis.

The total property tax loss within the two-county area from the conversion of fee land to federal ownership and the conversion of some parcels from residential to greenbelt would range from \$3,808 (with all residents relocating to similar value homes within the two-county area) to \$7,918 (Table 4-63). These tax impacts would represent a change of less than 0.1 percent and would not be significant when viewed in the context of total county tax revenues.

4.9.6.3.5 Uintah and Ouray Indian Reservation

As for the Proposed Action, there would be an increase in jobs available for Tribal members during construction and O & M periods. This would result in a significant beneficial impact to the Tribe.

4.9.6.3.6 Summary of Impacts

Construction of the Pahcease Alternative would contribute to increasing the local net economic output by \$924,729, personal earnings by \$375,229 and employment by 15.5 jobs. Project operation would help increase revenue in the local economy by \$335,810. These net increases in revenue consider both the actual decrease in agricultural revenue and the multiplier effect of this decrease. None of the changes in output would account for more than a 0.1 percent change in the Uinta Basin economy and would therefore not be considered significant. The increase in employment for Tribal members would be a significant impact.

There would be no impacts on the local infrastructure, including roads, the Myton cemetery or local social services.

The total property tax loss within the two-

county area for the Pahcease Alternative from both the conversion of fee land to federal ownership and the conversion of some parcels from residential to greenbelt use would range from \$3,808 (with all residents relocating to similar value homes within the two-county area) to \$7,918.

4.9.6.4 Topanotes Alternative

4.9.6.4.1 Project Construction

The peak construction year under the Topanotes Alternative would provide \$754,543 of new net inputs to the Uinta Basin economy. The IMPLAN model predicts that these inputs would create 13.1 new jobs, \$316,387 increased employee compensation, and \$981,945 increased output in the Uinta Basin economy. The Topanotes Alternative would also result in \$135,959 in losses from the elimination of grazing and a loss of three jobs in the agricultural sector. As for the Proposed Action, these economic changes would not be significant.

4.9.6.4.2 Operation and Maintenance

The O&M period for the Topanotes Alternative would add 1.8 new net jobs to the Uinta Basin economy, and increase employee compensation by \$141,063 and economic output by \$197,331. The significance of these changes is the same as for the Proposed Action.

4.9.6.4.3 Social Services and Infrastructure

As for the Proposed Action, the Topanotes Alternative would not create any social services impacts. There would be no impacts to the Myton Cemetery from an increased ground water table associated with the LDWP as described in section 4.5.6.3.

4.9.6.4.4 Tax Revenues

Impacts on sales taxes and transient room taxes are the same as for the Proposed Action.

Under the Topanotes Alternative, there would be a projected annual loss of \$3,364 in property tax revenues to Duchesne and Uinta counties as fee land is converted to federal ownership (Table 4-61). In addition, there would be tax losses of up to \$3,679 with the conversion of certain residential parcels to greenbelt status. Losses in property taxes from the conversion of fee land to federal ownership would be compensated by federal PILT payments up to the maximum allowable. All acreage acquired by the Federal government will be reported to BLM for inclusion in the PILT calculations.

The total property tax loss within the two-county area from both the conversion of fee land to federal ownership and the conversion of some parcels from residential to greenbelt would range from \$3,364 (with all residents relocating to similar value homes within the two-county area) to \$7,043 (Table 4-63). These tax impacts would represent a change of less than 0.1 percent and not be significant when viewed in the context of total county tax revenues.

4.9.6.4.5 Uintah and Ouray Indian Reservation

As for the Proposed Action, there would be an increase in jobs available for Tribal members during both the construction and O&M periods. This would result in a significant beneficial impact to the Tribe.

4.9.6.4.6 Summary of Impacts

Construction of the Topanotes Alternative would increase the local net economic output by \$981,945, personal earnings by \$316,387 and employment by 13.1 jobs. Operation of the project would contribute to increased revenue in the local economy by \$197,331. These net increases in revenue consider both the actual decrease in agricultural revenue and the multiplier effect of this decrease. None of the changes in output would account for more than a 0.1 percent change in the Uinta Basin economy and would therefore not be considered significant. The increase in employment for Tribal members would be a significant impact.

There would be no impacts on the local infrastructure, including roads, the Myton cemetery or local social services.

The total property tax loss within the two-county area for the Topanotes Alternative from both the conversion of fee land to federal ownership and the conversion of some parcels from residential to greenbelt use would range from \$3,364 (with all residents relocating to similar value homes within the two-county area) to \$7,043.

4.9.6.5 No Action Alternative

Under the No Action Alternative, agricultural employment would continue to decline while employment in other sectors such as construction, services, recreation and government increases. Personal income would likely continue its increased trend. Agriculture would continue to be conducted on a large portion of the lands within the two-county area, but farms would continue to be operated part-time and agricultural income would continue to represent a small proportion of total personal income. The existing infrastructure would continue to meet current and projected future county needs. Tax revenues would continue to be collected on fee land within the project area.

There would be no project-associated jobs for Tribal members under the No Action Alternative. This would result in a loss of three full-time jobs in the Tribal Wetlands Office. Up to 30 temporary construction positions would not be available for Tribal members.

4.10 PUBLIC HEALTH AND SAFETY

4.10.1 Introduction

The LDWP public health and safety analysis addresses potential impacts from the construction and operation of the project. The analysis focuses on ways the implementation of the project may increase the threat to human health and safety from hazards associated with the increase in wetlands and open water.

4.10.2 Issues Eliminated from Further Analysis

The following public health and safety issues raised during public scoping and agency consultation were eliminated from detailed analysis in this section. Potential safety impacts associated with increased traffic are addressed in section 4.12.

- Increased risk of accidents to workers during project construction.

Hazards associated with construction activity were eliminated from detailed analysis as the SOPs listed in Appendix A would minimize the risks of construction hazards.

- Increased exposure to hazardous materials associated with proximity of the project area to the abandoned Myton City dump.

The upper boundary of the Uresk Drain is located approximately one half mile from the abandoned Myton City dump. There is no visible evidence in the Uresk Drain or on the abandoned dump site of potential hazardous substances (i.e., barrels, surface debris, odors, surface water discoloration or plant damage), nor is the city dump being used. However, to ensure that any potential groundwater contamination was identified, a full spectrum of water quality tests was conducted at the Uresk Drain sampling point closest to the dump. No hazardous substances were found in the Uresk Drain, either at the point closest to the abandoned Myton City dump or downgradient from that point.

4.10.3 Issues Addressed in the Impact Analysis

The following public health and safety impact topics are addressed in the impact analysis:

- Will the project increase mosquitoes in local residential areas such as Myton?
- Will the project increase the incidence of mosquito-borne diseases in the Uinta Basin?

4.10.4 Area of Influence

The project area of influence includes population centers within two miles of the project area depicted on Figure 1-2 for nuisance mosquitoes, and the Uinta Basin as a whole for disease-carrying mosquitoes.

4.10.5 Affected Environment

4.10.5.1 Mosquito Species

There are two main ecological groups of mosquitoes in Utah: those inhabiting temporary pools or floodwaters and those requiring standing water for longer periods (permanent/semipermanent water mosquitoes) (Andersen 1966, Knight et al. 2003, Clements 2003). The floodwater (FW) mosquitoes include the species *Aedes (Ochlerotatus) dorsalis* and other species of the genus *Aedes*, which are nuisance but primarily non-disease carrying mosquitoes. These species lay their eggs on moist soils, but the eggs do not hatch until subsequently inundated. Permanently flooded conditions prevent mosquito egg deposition. As a result, these species typically occur in areas in which the water level

fluctuates between flooded and drawn-down conditions, such as flood-irrigated pastures and seasonally-flooded wetlands. In particular, irregularly flooded saltgrass meadow subject to a repetitive moist-dry water regime provides high quality *Aedes* mosquito producing habitat.

Permanent water mosquito species include *Culex tarsalis*, which is both a nuisance mosquito and the primary vector of the western equine encephalitis (WEE), St. Louis encephalitis (SLE) and West Nile (WNV) viruses in Utah (Moore et al. 1993, CDC 2002). Permanent/semipermanent aquatic habitat (SP) mosquitoes lay eggs in large rafts on the water surface. The species breed in open areas of shallow water, typically 4-18 inches in depth, with larval densities decreasing dramatically with depths greater than one foot. The primary *Cx. tarsalis* habitat in the western U.S. is flood-irrigated pastures, fields and associated ditches and tailwaters, preferring organic-rich, stagnant water with low dissolved oxygen levels (CDC 2002). In contrast to its urban relative, *Cx. pipiens*, *Cx. tarsalis* does not breed in containers.

In addition to the differences in breeding habitat and disease transmission ability between the floodwater and permanent water mosquitoes, these species also differ in overwintering strategies and peak activity times. The nuisance, floodwater species more commonly bite during the day. Their eggs can overwinter in the soil. Conversely, the disease vectors overwinter only as adults and typically rest during the day in shaded places. Foraging activity occurs mainly at night, peaking during the times of changing light intensity at dusk and dawn. Day time shade and overwintering habitats include outbuildings, barns, chicken coops, and culverts.

Key ecological differences between the two main mosquito species in the LDWP area, *Aedes dorsalis* and *Culex tarsalis*, are summarized below in Table 4-64.

4.10.5.2 Mosquito Habitats

Mosquitoes need water to breed and most mosquito monitoring and control occurs in breeding habitats. Therefore, this section focuses on mosquito breeding habitats. In general, any area that collects standing water from ½ to 18 inches for a period of more than 5-7 days in the summer can produce mosquitoes. As noted in Table 4-64, the species that a habitat can support is dependent on the depth and timing of inundation in relation to the mosquito life history.

Although wetlands are typically thought of as mosquito habitat, conditions suitable for mosquito breeding can occur in both upland and wetland habitats. Irrigated grasslands are an example of an upland habitat that can produce mosquitoes. It is also important to note that not all parts of a wetland produce mosquitoes, and within a wetland mosquito habitat can vary both spatially and temporally. For example, open water greater than 1 ½ to 2 feet deep and strongly flowing water generally do not provide mosquito habitat. Conversely, mosquito production is increased in shallow, stagnant water, with low dissolved oxygen.

Under current conditions in the LDWP area, the following habitats have potential to produce mosquitoes:

- Emergent marsh complex,
- Wet meadow,
- Shallow, slack water portions of the Duchesne River,

- Irrigated grasslands, and
- Irrigation ditches.

Other habitats in the project vicinity with the potential to provide additional mosquito habitat include (but are not limited to):

- Adjacent irrigated pastures and associated ditches.
- Ouray National Wildlife Refuge.
- Other open water areas such as the Myton sewage treatment lagoons, portions of the Roosevelt golf course and the wetlands recently developed on the state-owned Mallard Springs.
- The Uinta River, especially in late summer when the flow is limited to stagnant water conditions.

The increased water turbulence associated with flowing water, combined with the steep canal sides, typically discourage egg deposition in larger irrigation canals which border the project areas such as the Grey Mountain, Myton Townsite and Ouray School Canals.

Table 4-65 summarizes the acres of potential mosquito breeding habitat within the LDWP boundaries for the Proposed Action, Pahcease and Topanotes Alternatives. The habitat acres within the LDWP project area were based on the project habitat map described in section 4.2. The habitat acres for areas adjacent to the project area and within the project area of influence, are also described in this section based on data available from published sources or measured from aerial photographs.

None of the habitats produce solely one type of mosquito (*Aedes* vs. *Culex*) as water level gradients, depressions, edges and other microsites within each habitat affect production. However, the habitats subject to flooding/dry cycles either seasonally (such as wet meadows) or within a given year (such as irrigated grassland) will generally produce more FW mosquitoes and the habitats that contain shallow, standing water for longer durations (such as irrigation ditches and emergent marsh complexes) will generally produce more SP mosquitoes.

The largest mosquito producing habitat within the project area is irrigated grassland (1,237 acres, see Table 4-65) which primarily produces FW mosquitoes, although *Culex* (an SP mosquito) can be produced in lower areas, depressions and in associated irrigation ditches. Overall there are 1,619 acres of habitats that primarily have the potential to produce FW mosquitoes and 421 acres of habitats that primarily have the potential to produce SP mosquitoes in the Proposed Action area, with the production capability of 42 acres of Duchesne River open water habitat unknown. There are 986 acres of habitats that primarily have the potential to produce FW mosquitoes and 313 acres of habitats that primarily have the potential to produce SP mosquitoes within the Myton residential area of influence for the Proposed Action. The number of baseline acres with the potential to produce mosquitoes within the Pahcease and Topanotes alternatives can be found in Table 4-65.

Looking specifically at the microtopography within representative oxbow cross sections, and not the entire project area, approximately 61 percent of the oxbows contain potential mosquito breeding habitat. The proportions of FW and SP habitat are roughly equivalent.

Approximately 10 percent of the oxbow is classified as edge habitat, where either type of species, both species types or neither species could breed depending on the season and timing of irrigation. Within the Uresk Drain Main Site, topographic analysis along selected transects indicates that approximately 58 percent of the area proposed for the large wetland complex contains potential mosquito breeding habitat, with 39 percent of the area dominated by FW habitat, 9 percent by SP habitat, and 10 percent edge habitat.

Regionally, there are 96,804 acres of irrigated grassland within the Uinta Basin and an estimated 33,500 acres of wetlands including the Ouray National Wildlife Refuge, Pelican Lake, and Stewart Lake (DWR 1999). These wetlands are comprised mainly of emergent marsh/open water complexes. Other potential mosquito breeding habitats include the four newly developed marsh complexes at Mallard Springs (approximately 75 acres), the Myton sewage lagoons (acreage unknown) and the slack water areas and edges of the lower Duchesne and Uinta Rivers (not quantified). Most of these areas contain potential *Culex* breeding habitat. Based on the data presented in the State Engineers Water Plan, there are at least an estimated 130,304 acres of irrigated grassland and wetland mosquito breeding habitat (SP and FW) in the Uinta Basin.

Table 4-64. Comparison of Ecological Differences between the Two Main Mosquito Species in the Uinta Basin.¹

| Species | Ecological Group | Breeding Habitat | Overwintering Stage/Habitat | Foraging Period | WNV Vector? |
|-----------------------|--|--|------------------------------------|---------------------------------|-------------------------|
| <i>Aedes dorsalis</i> | Floodwater or temporary pool (FW) | Moist soil, with hatching after inundation | Eggs/ in soil | Daylight hours | Not known to be in Utah |
| <i>Culex tarsalis</i> | Semipermanent to permanent standing water (SP) | Shallow standing water typically 4-8 inches deep | Adult/ buildings, barns, culverts | Night, peaking at dusk and dawn | Yes |

¹ Based on Anderson (1966), Clements (2000), Knight et al. (2003)

Table 4-65. Existing Habitats within the LDWP Area with the Potential to Produce Mosquitoes.

| Habitat Type | Dominant Hydrologic Regime | Mosquito Groups Potentially Supported | Size (Acres) | | |
|--|---|--|-----------------|----------------------|-----------------------|
| | | | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| Within the LDWP Project Area | | | | | |
| Emergent marsh complex | Consistently flooded during irrigation season, mostly shallow inundation (SP) | Primarily <i>Culex</i> , with potential for <i>Aedes</i> along edges | 421 | 409 | 483 |
| Wet meadow | Seasonally flooded (FW) | Primarily <i>Aedes</i> , with potential for <i>Culex</i> in depressions | 382 | 388 | 408 |
| Duchesne River-non riparian ¹ | Irregularly to permanently flooded (SP, FW) | Either <i>Culex</i> or <i>Aedes</i> along shallow, slow-moving edges | 42 | 77 | 32 |
| Irrigated grassland/other irrigated | Periodically flooded (FW) | Primarily <i>Aedes</i> with potential for <i>Culex</i> in depressions, lower field areas | 1,237 | 1,642 | 1,683 |
| Irrigation ditches | Stagnant, slow moving water (SP) | Primarily <i>Culex</i> | | | |

¹ Duchesne River unvegetated habitat included only if it is bordered by the LDWP on both sides

4.10.5.3 West Nile Virus

The West Nile virus (WNV) was first detected in the US in 1999 and in Utah in 2003. There was one human case in the Uinta Basin in 2003, and two human cases in 2004. The most active year for WNV in the Uinta Basin was in 2005 with 21 recorded human cases (7 in Duchesne County and 14 in Uintah County). Human WNV infections reached their highest level in Utah in 2006, but the number of cases in the Uinta Basin (4) were lower (Utah Department of Health 2007).

St. Louis and western equine encephalitis (SLE and WEE, respectively) outbreaks tend to occur in 10-11 year cycles. That means that although *Culex tarsalis* (the main encephalitis vector in Utah) can be present in an area, it may not transmit the WEE or SLE virus to humans every year (Moore et al. 2003). For example, between 2003 to 2006, there were no human cases of WEE or SLE recorded in Utah (Utah Department of Health 2007). It is unknown if the newer WNE virus will behave similarly to the other encephalitis viruses in the future.

The probability of contracting WNV is very low. Only infected adult female mosquitoes can transmit WNV and less than 1 out of every 500 mosquitoes are infected with the virus. The chances of developing an illness once bitten by an infected mosquito are 1 in 150 (or less than 1 percent). The probability of being both bitten by an infected mosquito and developing an illness is 1 in 75,000 (0.001percent). Eighty percent of the people who are bitten by an infected mosquito show no symptoms, and approximately 20 percent of the people bitten by an infected mosquito have only mild flu-like symptoms (CDC 2007). Even though the overall risk of contracting WNV is low, it can have serious consequences, especially for those with compromised immune systems, the very young and those over 50 years of age.

Similar to other encephalitis, the WNV is primarily a bird flu that is typically cycled between birds and mosquitoes. The virus requires an intermediate host to complete its life cycle; important intermediate hosts are wild birds, particularly peri-domestic birds, or birds that have adapted to living in close proximity with humans such as blue jays, common grackles, house finches, American crows, and house sparrows (CDC 2002). It is only incidentally transmitted to mammals (including horses) and humans by infected mosquitoes. Humans and other mammals are dead-end hosts, meaning that they can be infected but can not pass the virus on.

4.10.5.4 Mosquito Control

Mosquitoes will likely never be eliminated (Willott 2004) and both organized community and personal protective measures are crucial to preventing WNV infection (CDC 2002). This section describes the local mosquito control organizations and their existing programs. The roles of personal protection and public education are discussed in Appendix G.

The Mosquito Abatement Districts (MADs) in Duchesne and Uintah counties are the two main mosquito control organizations in the Uinta Basin. There are a number of components to their mosquito control programs which include both (1) ecological surveillance (virus, hosts and vectors) and (2) vector treatment.

The ecological surveillance conducted by the local MADs includes identifying the virus level in mosquito vectors and in the local bird population. This is accomplished through capture of adult mosquitos and examining their virus blood levels, and testing the blood of sentinel chickens and dead birds, especially peridomestic birds, for the WNV virus (see Appendix G for further description of these programs).

Additionally, mosquito larval populations are surveyed repeatedly throughout the growing season to identify the presence and abundance of *Cx. tarsalis*, prior to the adult flying stage. All of the monitoring is conducted throughout the growing season and is used to evaluate the effectiveness of mosquito control efforts and the need to change the level of mosquito control.

Approximately 38,000 acres of fee land are currently treated for mosquitoes in Duchesne County and a similar amount in Uintah County (for a total of approximately 80,000 acres in the Uinta Basin). The primary form of treatment is to target mosquito larvae before they emerge as flying adults by applying BTI (a biological control agent) or goldenbear oil, a light mineral oil that dissipates within two to three hours. Malathion, a stronger chemical used to treat flying adult mosquitoes, is typically used only when monitoring indicates either a high viral activity or that the current level of control has not been effective in suppressing the number of adult mosquitoes. The MADs generally follow a phased treatment approach in which the mosquito and virus monitoring is used to identify the level, frequency and type of control measures.

The Tribe also has a mosquito control department, but this department has not treated the lands within the LDWP project area due to the intermixed land ownership. The counties treat the fee land within the project boundaries and occasionally treat the adjacent Tribal land. Mallard Springs is not treated by either the state or Duchesne County. The Uintah County MAD treats mosquitoes on the ONWR under an operating agreement between the MAD and the FWS. The status of mosquito control on other federal lands in the Uinta Basin is unknown.

4.10.6 Impact Analysis

4.10.6.1 Significance Criteria

Impacts on public health and safety would be considered significant if:

- There were a substantial increase in habitats potentially supporting nuisance mosquitoes within two miles of the Myton residential area, or
- The project resulted in an increase in habitats, either in the Myton residential area or in the Uinta Basin, that could produce disease-bearing mosquitoes that could not reasonably be controlled.

The first significance criteria is based on the average flight distances of the main nuisance mosquito, *Aedes dorsalis*. This is because most mosquitoes do not fly far from their hatch site, with 90 percent of individuals dispersing less than 0.5 to 2-3 miles from where they hatch (Marra et al. 2004, Knight et al. 2003). Although *Aedes* individuals have been trapped at distances of up to 10-20 miles from their hatch site (AMCA 2002), the average flight distance value is used to describe the area of influence which the majority of nuisance mosquitoes would affect. This area of influence is used only for nuisance mosquitoes and not disease vectors. Myton is the only residential area located within the average flight range distance of the *Aedes* mosquitoes from sites within the LDWP project area. Most of the Uresk Drain site and approximately half of the Flume site are within two miles of Myton.

Culex tarsalis, the only known WNV vector in the Uinta Basin, is typically a weak flyer that disperses shorter distances than the nuisance mosquitoes. However, some mosquitoes do disperse further than the average, and have been documented as flying 8 to 10 miles in two

evenings and been trapped up to 25 miles from breeding sites (Moore et al. 1993). For this reason, the area of influence for WNV vectors includes the Uinta Basin and the significance criteria for potential disease vectors reflects this larger area of influence.

4.10.6.2 Proposed Action

4.10.6.2.1 Potential Mosquito Breeding Habitat

Under the Proposed Action, there would be a net increase of 497 acres of potential mosquito breeding habitat, of which 271 acres would be SP habitat and 226 acres would be FW habitat (increase of 299 acres of wet meadow minus a decrease of 73 acres of irrigated grassland, Table 4-66). This represents an eleven percent increase in potential mosquito breeding habitat from 42 percent of the overall project area to 53 percent. There would be no change in the habitat along the Duchesne River or local irrigation canals.

Within the Myton vicinity, there would be a net increase of 124 acres of potential mosquito breeding habitat, of which 68 acres would be SP habitat and 56 acres would be FW habitat (increase of 159 acres of wet meadow minus decrease of 103 acres of irrigated grassland). Looking at the oxbow microtopographic changes, there would be a small decrease in potential mosquito breeding habitat as a result of the increased open water. Edge habitat would remain similar to baseline conditions. There would also be a shift in the proportion of FW and SP habitats. Under baseline conditions, the proportions were roughly equivalent. Under the Proposed Action, the oxbows would support proportionally more SP habitat, even though the total potential breeding habitat would slightly decrease.

Within the Uresk Drain, the same percent of

mosquito habitat would be maintained along the Main Site cross sections under the Proposed Action as under baseline conditions. This is because as the total wetland area is expanded, the amount of open water (non mosquito-breeding habitat) would also be increased. In contrast to the oxbows, in which edge habitat would remain similar, the Uresk Drain edge habitat would increase from approximately 10 to 20 percent. There would also be a shift in microtopography within individual habitats that would favor the potential production of SP mosquitoes over FW mosquitoes.

The increased mosquito habitat would not be significant on a regional basis as it would represent an increase of less than 0.4 percent within the Uinta Basin. The increase of potential mosquito habitat within the Myton vicinity would be similar to the increase associated with the newly constructed Mallard Springs wetlands, which have not been identified as increasing mosquitoes within the Myton residential area. However, under the LDWP significance criteria, the increased habitat along with the shift in the proportion of potential mosquito breeding habitats toward SP mosquitoes (which include habitat for the WNV vector, *Culex tarsalis*), would create a significant impact locally. This impact however, would be mitigated with the implementation of a mosquito control program (refer to Section 4.10.6.2.2 and Appendix G).

4.10.6.2.2 Mosquito Control

As described in section 4.10.6.2.1, there would be an increase of potential mosquito breeding habitat under the Proposed Action with a shift toward a greater proportion of SP breeding habitats. This could increase the potential risk of WNV locally if the mosquito habitat were not treated. However, the LDWP would fund an expansion of the existing Tribal mosquito control program that is specific to the LDWP

project area. This would be funded by a combination of:

- Tribal mosquito control program, and
- Federal funds associated with the LDWP O&M budget.

The LDWP mosquito control plan can be found in Appendix G and contains elements that address monitoring, control, education and emergency management.

Under baseline conditions, 34 percent of the project area (1,592 acres) is treated by the local MADs for mosquitoes on a regular basis, with the remainder (3,215 acres) either untreated or only sporadically treated. With project implementation, all potential breeding habitat within the entire area of 4,807 acres would be treated as specified in Appendix G.

There would be no difference in control methods between the MADS and the LDWP program, as the LDWP was developed based on CDC recommendations as modified by the local MADs for use within the Uinta Basin.

4.10.6.2.3 Summary of Impacts

There would be a net increase of 497 acres of mosquito breeding habitat with the Proposed Action. This represents an 11% increase of such habitats within the project area and a 0.4% increase in the Uinta Basin. Overall, there would be a greater level of mosquito control within the LDWP area under the Proposed Action than under baseline conditions.

4.10.6.3 Pahcease Alternative

4.10.6.3.1 Potential Mosquito Breeding Habitat

Under the Pahcease Alternative there would be a net increase of 849 acres of potential mosquito breeding habitat, of which 441 acres would be SP habitat and 408 acres would be FW habitat (increase of 519 acres of wet meadow minus a decrease of 111 acres of irrigated grassland, Table 4-67). This represents a 13 percent increase in potential mosquito breeding habitat from 36 percent of the overall project area to 49 percent. Potential habitat for both SP (7 percent increase) and FW (6 percent increase) species would increase. There would be no change in the habitat along the Duchesne River or local irrigation canals.

Within the Myton vicinity, there would be a net increase of 688 acres of potential mosquito breeding habitat, of which 330 acres would be SP habitat and 358 acres would be FW habitat (increase of 397 acres of wet meadow minus decrease of 39 acres of irrigated grassland).

Microtopographic changes within the proposed oxbows and the Uresk Drain site would be the same as described for the Proposed Action.

The increase in mosquito habitat would not be significant on a regional basis as it would represent an increase of about 1 percent within the Uinta Basin. The increase of potential mosquito habitat within the Myton vicinity would be substantial. This increased habitat along with the shift in proportion of potential mosquito breeding habitats toward SP mosquitoes (which include habitat for the WNV vector, *Culex tarsalis*), would create a significant impact locally; however, it would be mitigated with the implementation of an organize mosquito control program (refer to Section 4.10.6.2.2 and Appendix G).

4.10.6.3.2 Mosquito Control

As described above in section 4.10.6.3.1, there would be an increase of potential mosquito breeding habitat under the Pahcease Alternative with a shift toward a greater proportion of SP breeding habitats. This could increase the potential risk of WNV locally if the mosquito habitat were not treated. However, the LDWP would fund an expansion of the existing Tribal mosquito control program that is specific to the LDWP project area. This would be funded by a combination of:

- Tribal mosquito control program, and
- Federal funds associated with the LDWP O&M budget.

The LDWP mosquito control plan can be found in Appendix G and contains elements that address monitoring, control, education and emergency management.

Under baseline conditions, 26 percent of the project area (1,787 acres) is treated by the local MADs for mosquitoes on a regular basis, with the remainder (4,978 acres) either untreated or only sporadically treated. With project implementation, all potential breeding habitat within the entire area of 6,765 acres would be treated as described for the Proposed Action, although the implementation would be more complicated due to the mixed ownership of lands within the project area.

4.10.6.3.3 Summary of Impacts

There would be a net increase of 849 acres of potential mosquito breeding habitat under the Pahcease Alternative. This represents a 13% increase in such habitat within the project area and a 1% increase within the Uinta Basin. Similar to the Proposed Action, there would be a greater level of mosquito control within the

LDWP area under the Pahcease Alternative than under baseline conditions with the implementation of a mosquito control program.

4.10.6.4 Topanotes Alternative

4.10.6.4.1 Potential Mosquito Breeding Habitat

Under the Topanotes Alternative there would be a net increase of 776 acres of potential mosquito breeding habitat, of which 442 acres would be SP habitat and 334 acres would be FW habitat (increase of 470 acres of wet meadow minus a decrease of 136 acres of irrigated grassland, Table 4-68). This represents a 12 percent increase in potential mosquito breeding habitat from 39 percent of the overall project area to 51 percent. Potential habitat for both SP (7 percent increase) and FW (5 percent increase) species would increase. There would be no change in potential breeding habitat along the Duchesne River or local irrigation canals.

Within the Myton vicinity, there would be a net increase of 688 acres of potential mosquito breeding habitat, of which 330 acres would be SP habitat and 358 acres would be FW habitat (increase of 397 acres of wet meadow minus decrease of 39 acres of irrigated grassland).

The microtopographic changes within the proposed oxbows and the Uresk Drain site would be the same as described for the Proposed Action.

The increased mosquito habitat would not be significant on a regional basis as it would represent an increase of approximately 1 percent within the Uinta Basin.

The increase of potential mosquito habitat within the Myton vicinity would be substantial. This increased habitat along with the shift in the proportion of potential mosquito breeding

habitats toward SP mosquitoes (which include habitat for the WNV vector, *Culex tarsalis*), would create a significant impact locally. This impact however, would be mitigated with the implementation of a mosquito control program (refer to Section 4.10.6.2.2 and Appendix G).

4.10.6.4.2 Mosquito Control

As described above in section 4.10.6.4.1, there would be an increase of potential mosquito breeding habitat under the Topanotes Alternative with a shift toward a greater proportion of SP breeding habitats. This could increase the potential risk of WNV locally if the mosquito habitat were not treated. However, the LDWP would fund an expansion of the existing Tribal mosquito control program that is specific to the LDWP project area. This would be funded by a combination of:

- Tribal mosquito control program, and
- Federal funds associated with the LDWP O&M budget.

The LDWP mosquito control plan can be found in Appendix G and contains elements that address monitoring, control, education and emergency management.

Under baseline conditions, 33 percent of the project area (2,171 acres) is treated by the county MADs for mosquitoes on a regular basis, with the remainder (4,477 acres) either untreated or only sporadically treated. With project implementation, all potential breeding habitat within the entire area of 6,648 acres would be treated as described for the Proposed Action, although the implementation would be more complicated due to the mixed ownership of lands within the project area.

4.10.6.4.2 Summary of Impacts

There would be a net increase of 776 acres of mosquito breeding habitat with the Topanotes Alternative. This represents a 12% increase of such habitats within the project area and a 1% increase in the Uinta Basin. Similar to the Proposed Action, there would be a greater level of mosquito control within the LDWP area under the Topanotes Alternative than under baseline conditions with the implementation of a mosquito control program.

Table 4-66. Comparison between Baseline and Post-Project Habitats within the Proposed Action Area with the Potential to Produce Mosquitoes.

| Habitat Type | Dominant Hydrologic Regime | Mosquito Groups Potentially Supported | Size (Acres) | | |
|--|---|---|--------------|-----------------|----------------|
| | | | Baseline | Proposed Action | Habitat Change |
| Emergent marsh complex | Consistently flooded during irrigation season, mostly shallow inundation (SP) | Primarily <i>Culex tarsalis</i> , with potential for <i>Aedes</i> along edges | 421 | 692 | +271 |
| Wet meadow | Seasonally flooded (FW) | Primarily <i>Aedes</i> , with potential for <i>Culex tarsalis</i> in depressions | 382 | 681 | +299 |
| Duchesne River-non riparian ¹ | Irregularly to permanently flooded (SP, FW) | Either <i>Culex tarsalis</i> or <i>Aedes</i> along shallow, slow-moving edges | 42 | 42 | 0 |
| Irrigated grassland/other irrigated | Periodically flooded (FW) | Primarily <i>Aedes</i> with potential for <i>Culex tarsalis</i> in depressions, lower field areas | 1,237 | 1,164 | -73 |
| Irrigation ditches | Stagnant, slow moving water (SP) | Primarily <i>Culex tarsalis</i> | | | |

¹ Duchesne River unvegetated habitat included only if it is bordered by the LDWP on both sides

Table 4-67. Comparison between Baseline and Post-Project Habitats within the Pahcease Alternative Area with the Potential to Produce Mosquitoes.

| Habitat Type | Dominant Hydrologic Regime | Mosquito Groups Potentially Supported | Size (Acres) | | |
|--|---|---|--------------|----------------------|----------------|
| | | | Baseline | Pahcease Alternative | Habitat Change |
| Emergent marsh complex | Consistently flooded during irrigation season, mostly shallow inundation (SP) | Primarily <i>Culex tarsalis</i> , with potential for <i>Aedes</i> along edges | 409 | 850 | +441 |
| Wet meadow | Seasonally flooded (FW) | Primarily <i>Aedes</i> , with potential for <i>Culex tarsalis</i> in depressions | 388 | 907 | +519 |
| Duchesne River-non riparian ¹ | Irregularly to permanently flooded (SP, FW) | Either <i>Culex tarsalis</i> or <i>Aedes</i> along shallow, slow-moving edges | 77 | 77 | 0 |
| Irrigated grassland/other irrigated | Periodically flooded (FW) | Primarily <i>Aedes</i> with potential for <i>Culex tarsalis</i> in depressions, lower field areas | 1,642 | 1,531 | -111 |
| Irrigation ditches | Stagnant, slow moving water (SP) | Primarily <i>Culex tarsalis</i> | | | |

¹ Duchesne River unvegetated habitat included only if it is bordered by the LDWP on both sides

Table 4-68. Comparison between Baseline and Post-Project Habitats within the Topanotes Alternative Area with the Potential to Produce Mosquitoes.

| Habitat Type | Dominant Hydrologic Regime | Mosquito Groups Potentially Supported | Size (Acres) | | |
|--|---|---|--------------|-----------------------|----------------|
| | | | Baseline | Topanotes Alternative | Habitat Change |
| Emergent marsh complex | Consistently flooded during irrigation season, mostly shallow inundation (SP) | Primarily <i>Culex tarsalis</i> , with potential for <i>Aedes</i> along edges | 483 | 925 | +442 |
| Wet meadow | Seasonally flooded (FW) | Primarily <i>Aedes</i> , with potential for <i>Culex tarsalis</i> in depressions | 408 | 878 | +470 |
| Duchesne River-non riparian ¹ | Irregularly to permanently flooded (SP, FW) | Either <i>Culex tarsalis</i> or <i>Aedes</i> along shallow, slow-moving edges | 32 | 32 | 0 |
| Irrigated grassland/other irrigated | Periodically flooded (FW) | Primarily <i>Aedes</i> with potential for <i>Culex tarsalis</i> in depressions, lower field areas | 1,683 | 1,587 | -136 |
| Irrigation ditches | Stagnant, slow moving water (SP) | Primarily <i>Culex tarsalis</i> | | | |

¹ Duchesne River unvegetated habitat included only if it is bordered by the LDWP on both sides

4.10.6.5 No Action Alternative

Under the No Action Alternative, mosquitoes would continue to be produced on 2,082 to 2,606 acres within the project area, with production of both SP and FW mosquitoes. This represents up to 42 percent of the land proposed for inclusion in the LDWP project area (see Table 4-65). Approximately 66 to 73 percent of this area would remain untreated for mosquitoes.

4.11 RECREATION RESOURCES

4.11.1 Introduction

The recreation analysis addresses potential impacts on recreation from the construction and operation of the Proposed Action and alternatives. The focus of the analysis is on all forms of wildlife-oriented recreation such as bird watching, nature education, fishing and hunting.

The following recreation impact topics are addressed in the impact analysis:

- Changes in the amount of recreational use within the LDWP project area.

4.11.2 Issues Eliminated from Further Analysis

No issues were eliminated from analysis. All recreation issues raised during public scoping and agency consultation were analyzed.

4.11.3 Issues Addressed in the Impact Analysis

The following recreation issues are addressed in the impact analysis:

- Would the project change existing recreational use within the Duchesne River corridor?

4.11.4 Area of Influence

The recreation impact area of influence consists of a 33 mile corridor along the Duchesne River from Bridgeland to Randlett.

4.11.5 Affected Environment

The project area lies within the Uinta Basin, an area of about 4,548 square miles. This area is highly regarded for its varied outdoor recreation resources including campgrounds, trails, streams and remote areas for hunting. These recreation resources are located on lands administered by the federal government, the state and the Tribe. Much of the current recreation use occurs in the Uinta Mountains and along tributaries to the Duchesne River above Starvation Reservoir and the SACS system. The primary recreation area administered by the Ute Tribe in the Uinta Mountains is the Big Springs area.

The main public wildlife-related recreation areas within the project vicinity include Bottle Hollow (a trout fishery), Pelican Lake (bluegill and bass fishery), Midview Reservoir (bluegill and bass fishery) and ONWR (waterfowl hunting, wildlife viewing). None of these are within the project area.

Recreation use of the Duchesne River corridor is generally low, due to lack of general access

as well as lack of fishing and hunting opportunities. Current access to private lands within the project area require individual private landowner permission in addition to a state license for hunting or fishing. Access to the Uintah and Ouray Indian Reservation is allowed, but restricted, and non-Indians are required to purchase Tribal permits for access. Public access is allowed on the state-owned Mallard Springs area and the federally owned Riverdell North property. Non-consumptive recreation does not require a permit but hunting does. Primary use of the two sites by recreationists is for small game and pheasant hunting, although recent wetland habitat improvements at Mallard Springs have caused an unquantified increase in the number of waterfowl hunters using the area.

Fishing within the project area is low to non-existent. The most abundant species in the Duchesne River are carp and catfish, which do not provide as much appeal to anglers as the trout streams located in the Uinta Mountains or the bass fisheries in nearby reservoirs.

Entry to the Duchesne River or other remote recreation sites within the project area can be accessed through a limited number of parking areas along county roads. Limited parking areas exist at the west end of the Flume site, the Goose Ponds overlook and Riverdell North overlook. A few more vehicles could be parked along the sides of county roads at wide shoulder points. As a result of these factors, very widely dispersed recreation presently occurs within the project site.

4.11.6 Impact Analysis

4.11.6.1 Significance Criteria

The project area is presently sparsely populated and visited. As a result, quantified

data regarding specifics of big and small game “takes” or other recreation statistics do not exist at this time. Therefore, significance criteria for recreation is not quantified. Recreation impacts would be considered significant if the LDWP resulted in a measurable change in recreation use in the project area. Impacts would be considered beneficial if they resulted in an increase in recreational use of the area and negative if they reduced current recreational use.

4.11.6.2 Proposed Action

Under the Proposed Action, the improved wetland, riparian, aquatic and upland habitats would attract and support additional wildlife species (see section 4.3), which traditionally attract additional recreationists, including wildlife watchers, hunters and anglers.

Hunting and fishing would require the appropriate Tribal permits on all Tribal Trust land placed under easements for the project and on most fee land acquired for the project and placed in Tribal ownership (fee status). Hunting and fishing on those parcels of fee land acquired from outside of the Reservation boundaries would be regulated under existing or future Operating Agreements to be negotiated between the state and the Tribe. Nonconsumptive recreation, such as wildlife watching, would be allowed as specified in the LDWP Management Plan. Nonconsumptive recreational use by non-Tribal members would require permission from the landowner (Tribe).

There would be no change in hunting or fishing permit regulations, but the change in land ownership from fee to Tribal fee on 1,592 acres of land would result in changes in who the hunting or fishing license permit would need to be purchased from. Likewise,

land owner permission would still be necessary to enter the land, with required permissions changing from multiple landowners to one (Tribe).

The need for only a single hunting or fishing permit within the LDWP wildlife management area would result in a simpler permit system than under baseline conditions. The overall ability of all Utah residents to enter the area would be increased as restricted fee land would become part of a larger wildlife management area administered by the Tribe. Conversely, the ability of non-tribal members to access the area without a permit would be changed.

Although increasing accessibility to the Duchesne River for some, the project would not likely increase fishing opportunities as there would be no change in the fishery as a result of the project. Hunting (particularly waterfowl hunting) and non-consumptive recreation opportunities would likely increase. The increase in potential use could be limited, however, by the general lack of parking. The few parking areas within the project area would only be minimally improved, and would generally only provide parking for one to five vehicles. A larger area that could provide parking for up to 20 vehicles or a bus may be created overlooking the Goose Ponds area of the Uresk Drain. Improvement of this area would allow the Uresk Drain site to become available to school groups for nature education programs.

The LDWP would not change the current use of the adjacent Mallard Springs or Riverdell North areas, but could improve their value as wildlife areas by creating wetland complexes adjacent to them.

Overall, there would be a small, and likely unmeasurable, increase in recreational use of the project area. Current levels of overall public recreation use or access would not be reduced.

4.11.6.3 Pahcease Alternative

Under the Pahcease Alternative, hunting and fishing permits would be required as follows:

- Tribal permits on Tribal land placed under easements, and
- State permits on acquired fee land and the Riverdell North property.

Nonconsumptive recreational use by non-Tribal members would require access permission on Tribal lands and federally owned lands managed by the Tribe, but not on the Riverdell North property. This would result in a single wildlife management area, requiring multiple permits, except on the Riverdell North property where no permit or special permission would be required for general access and either a state or Tribal permit would be all that would be required for fishing or hunting.

The restoration of wildlife habitat would increase potential wildlife-associated recreational opportunities. However, the need for multiple permits in a confusing access system would likely offset the potential increased opportunities resulting in a no net change in overall recreational use.

4.11.6.4 Topanotes Alternative

Impacts of the Topanotes Alternative would be similar to those described for the Pahcease Alternative.

4.11.6.5 *No Action Alternative*

Recreation resources of the Duchesne River corridor would not differ significantly from existing conditions. Recreational use in the Uinta Basin would continue to be concentrated in the Uinta Mountains and at local reservoirs. Access would continue to be limited on both fee and Tribal Trust land, but open to the public on the Riverdell North property.

4.12 TRANSPORTATION

4.12.1 Introduction

This section addresses direct physical impacts and operational impacts on the road system of the Uinta Basin resulting from the construction, operation and maintenance of the Proposed Action and alternatives. Most of these impacts would occur during the 7-year construction phase of the project. However, there may also be long-term increases in traffic from people visiting the project area for a number of purposes, including hunting, wildlife observation and education.

4.12.2 Issues Eliminated from Further Analysis

Two transportation issues were identified during the public scoping process:

- Increased traffic on town roads in Myton, where children frequently play in the streets, and
- Potential project impacts on paved county roads.

The traffic issue will not be addressed further in the analysis as project operations would require vehicular traffic to bypass the town and use a combination of 7500 East and River Road, the designated truck routes in the Myton area.

4.12.3 Issues Addressed in the Impact Analysis

The following concerns are addressed in the impact analysis:

- Effects on existing Levels of Service (LOS) that might be impacted by workers traveling to and from the job, deliveries of various materials or visits by recreational users. LOS, which is defined in more detail below in section 4.12.5, is a highway rating system that evaluates traffic flow conditions on various road segments.
- Potential for direct physical effects on roads from transportation of heavy equipment and project construction materials, and
- Potential for damage to paved county roads through ponding or saturation of the road base associated with the operation of the proposed wetlands.

4.12.4 Area of Influence

The transportation impact area of influence is comprised of the road network in the Uinta Basin that would be used during construction of the Proposed Action or alternatives, as well as the local roads used for recreation and project maintenance after construction is complete. This includes an area extending from Duchesne to Vernal, particularly the road system around the town of Myton and

adjacent to the Duchesne River corridor from Myton to Randlett. These roads are listed and evaluated in section 4.12.5.

4.12.5 Affected Environment

4.12.5.1 Local Road Network and LOS

The road network in the project vicinity consists of Highway 40, a two-lane major

arterial route, as well as several paved county roads and numerous county, Tribal and private dirt roads that vary in quality and day-to-day physical conditions.

Highway 40 is the primary transportation route through the Uinta Basin and would likely carry much of the increased traffic load from the construction of the project. Table 4-69 lists the roads in the project area and their present LOS status.

| Road | Lanes | Surface | LOS or status | Cars per Day ¹ |
|--|--------|--------------|---------------|---------------------------|
| U.S. Highway 40 - Duchesne to Roosevelt | 2 to 4 | Paved | B | 5,796 |
| U.S. Highway 40 - Roosevelt to State Road 88 | 2 to 4 | Paved | B, C | 5,571 |
| River Road (includes 1000 West) | 2 | Paved & dirt | B | * |
| 7500 East, Myton | 2 | Paved | B | * |
| 8000 South, Myton | 2 | Paved | B | * |
| 3000 West, Myton | 2 | Paved | B | * |
| Miscellaneous dirt roads | 1 | Dirt | Good to fair | 0 |

¹ Average of segments from Traffic 2006 Book, Utah Department of Transportation
 * volumes not calculated by UDOT or local highway departments

| Table 4-70. Description of Paved County Roads Adjacent to Proposed Wetland Areas. | | | |
|---|------------------------------|--|------------------------------------|
| Site | Proposed Wetland Area | Culvert Status | Water Table (ft below road) |
| Flume | Flume Oxbows | No paved county roads adjacent to wetland expansion area ¹ | NA ¹ |
| | Pit Wetland | | |
| | Full Connector | No culvert, wetland to be restored in previous location which did not abut paved roads | |
| Uresk Drain | Goose Ponds | No wetland expansion proposed | NA |
| | Main Site | Existing culverts under River Road | 5.8 ft |
| | West Fields | No wetland expansion proposed; existing culverts under 3000 West | NA |
| | Head of Drain/West Drain | Existing culvert under 8000 South | 3.0 ft |
| Riverdell North/South | South Oxbows | 1 existing culvert under River Road, 1 culvert to be added by the LDWP | 5.0 ft |
| | North Oxbow | No adjacent road | NA |
| Ted's Flat | North Oxbows | No paved county roads adjacent to wetland expansion area ¹ | NA ¹ |
| | South Oxbows | 2 existing damaged culverts under River Road, culverts to be replaced by LDWP | 5.0 ft |
| ¹ Culverts under dirt roads would be replaced and resized as necessary (see Table 2-2) | | | |

The LOS classification scheme is a methodology used by highway engineers to evaluate how well traffic is moving on a particular road segment (US DOT 1997). LOS A is a condition described as “free-flow,” where average speeds approach 60 miles per hour (mph), passing frequency is low and platoons (vehicles moving in groups) are infrequent. LOS B is a regime of traffic flow where speeds of 55 mph or slightly higher are expected on level terrain, where

passing must be done frequently to maintain speed, and where platoons are forming more regularly. With LOS B, service flow rates of 750 passenger cars per hour, totaled in both directions, can be achieved under ideal conditions

LOS C is also a situation of stable flow where average speeds can exceed 52 mph. However, unrestricted passing demand exceeds passing capacity, and there is a

noticeable increase in platoon formation and size and frequency of passing impediments. A service flow rate of up to 1,200 passenger cars per hour can be accommodated under LOS C under ideal conditions. LOS D, E and F do not occur on any roads in the project area and are therefore not described in this analysis.

According to the Utah Department of Transportation statistics (UDOT 2006) and conversations with local highway officials (Kay 2002), all of the roads in the project area operate at LOS B or better, with the exception of a few segments of Highway 40 around the town of Roosevelt, which operate at LOS C.

4.12.5.2 Project Area Roads

The paved county roads adjacent to or traversing the project area are River Road (including 1000 West), 8000 South and 3000 West. These roads were constructed according to AASTHO Standards (American Association of State Highway and Transportation Officials), which ensure that roads are built at appropriate elevations and with appropriate drainage within areas subject to flood irrigation. These roads were also constructed with culverts where drainage ditches and oxbows abut the roads. Table 4-70 provides a list of the paved roads adjacent to each proposed wetland complex and summarizes the status of culverts where wetlands would be expanded.

4.12.6 Impact Analysis

4.12.6.1 Significance Criteria

Impact significance criteria are based on professional judgment, federal and state regulations and standards and contacts with state and county officials. The following

impacts on roads and bridges would be considered significant if they occurred as a result of the Proposed Action or other alternatives:

- A change in the LOS provided by an existing road, or
- Physical damage to transportation systems that is not repaired.

4.12.6.2 Proposed Action

Construction of the Proposed Action would occur over a 7-year period, with the vast majority of work being performed by two main seasonal work crews - one for site preparation and berm building and the other for planting. There would also be management personnel onsite throughout the construction season and material deliveries. These categories of activities are described in more detail below. An estimate of the amount of vehicular traffic associated with each activity is also included.

Main construction crew. An estimated crew of 15 workers would be used to perform the main construction tasks described in section 2.1.2. This crew would generate 15 daily round trips during construction season.

Planting, seeding crew. A second crew of 15 workers would be engaged in planting and weed control activities for an estimated 4-month work period. During this work period, the number of daily vehicle round trips generated by this crew would be a maximum of 15 per day.

Management. There would be a number of managers, supervisors, engineers and inspectors who visit the job site on a daily

basis. It would be impossible to predict in advance how many vehicle trips might be related to this supervisory activity on any particular day; however, for the sake of this analysis, it is assumed that this facet of the project would generate a maximum of 10 round trips per day.

Deliveries, hauling, miscellaneous. The list of materials to be delivered to the project area is listed in Table 2-5 and summarized below:

- Concrete for control structures - 270 cubic yards in 100 vehicle trips over a 7-year period,
- Rock to strengthen berms around control structures,
- Delivery of seeds, fencing and other miscellaneous materials - one round trip per day, and
- Transport of cottonwood poles and other plants from the nursery area - one load per day.

It is predicted that the vehicular traffic from these activities would not generate more than 10 round trips per day, including a portion involving large trucks.

In a worst-case scenario, during the height of the construction process, there would not be more than 50 vehicle round trips occurring on any particular day: 30 for the construction and planting crews, 10 for management activities and 10 for deliveries and other miscellaneous tasks. This period of maximum vehicular activity would occur only during the 4-month period when the planting crew is in operation. During the remaining six months of construction activity the vehicular traffic associated with the project would not exceed 35 round trips per day.

If all 50 daily project-related trips occur on Highway 40, it is possible, although highly unlikely, that such traffic increases might cause the LOS to change from B to C on certain sections of the road. As indicated by Table 4-69, the average number of cars per day on various segments of Highway 40 between Duchesne and Roosevelt is approximately 5,700, or an average of 237 cars per hour. However, there are specific segments in and around the town of Roosevelt where the number reaches 8,870 cars per day, or 370 cars per hour. Adding 50 vehicles to either of these numbers in any one hour period would clearly not change the LOS on Highway 40 given that roads of that type can handle 750 vehicles per hour and still operate comfortably within LOS B.

Traffic is not evenly distributed throughout a 24-hour period. Local officials have estimated that up to 35 percent of the traffic on the most congested segments may occur between the peak hours of 4:00 to 6:00 p.m. (Kay 2002). At this time, traffic flows could reach 1,500 cars per hour on Highway 40 near Roosevelt, which is in the range of LOS C. Adding any additional traffic to this highway segment could push the LOS clearly into the C range. The potential for this to occur would be minimized by scheduling deliveries and construction inspections to occur outside of the peak traffic hours.

The counties in the project area do not keep statistics on traffic volumes on county roads other than on Highway 40. However, UDOT and the counties have indicated that these other roads in the project area all operate at LOS B or better and have traffic volumes that are only a small fraction of the numbers seen on Highway 40. Some of the traffic generated by the project would use these highways; however, this extra traffic would not be

sufficient to move these roads from LOS B to LOS C.

Physical damage to the road system during construction is expected to be minimal; moreover, it is anticipated that any damage to the road system caused by project construction would be repaired as part of the project itself.

Transportation Impacts After Construction.

Vehicle trips associated with ongoing maintenance and management of the project are not expected to generate more than several automobile trips per day and would not be sufficient to change the LOS on any road. Public use for hunting or other wildlife-related activities could potentially bring more traffic to the area. Although the project would allow access for wildlife-related purposes, parking would be limited to a few designated small, gravel parking lots. Accordingly, the number of visitors to the facility should remain small and have no significant impacts on the LOS of roads in the project area.

The greatest potential impact on roads through the LDWP operation would occur if water from the wetland areas were to pond directly against the road or result in damage to the road base through groundwater seepage.

The area in which the groundwater table would rise within the Uresk Drain would be restricted to the area bordered by 8000 South, River Road and 3000 West on the north, east and west sides (see section 4.5.6.2.4 for further description of the groundwater area of influence). The groundwater rise within several hundred feet of the roads would be restricted to seasonal saturation within areas currently irrigated. All such areas are also

bordered by drainage ditches that would retain water well below the paved road surfaces. The existing cobble road base would also prevent water from migrating upward and adversely affecting the road's structural integrity (Basin Hydrology 2007).

Similar to the Uresk Drain, the wetlands created along the oxbows within the Riverdell South and Ted's Flat sites would be impounded on the downstream side of the berm (or the side away from the road). There would be no water ponded against River Road. River Road would remain 3 to 5 feet above the maximum wetland water table elevation in Riverdell South and 3 to 10 feet above the wetland water table elevation in Ted's Flat. The culverts along River Road, adjacent to both the Riverdell South and Ted's Flat sites, would be repaired or resized, as necessary, to ensure that water associated with the oxbows does not pond against the road.

There would be no impacts to River Road, 3000 West or 8000 South associated with the proposed wetlands under the Proposed Action.

4.12.6.3 Pahcease Alternative

Transportation impacts during construction would be the same as those described for the Proposed Action.

Impacts to paved county roads bordering the Uresk Drain and Riverdell South sites would be the same as described for the Proposed Action, with the exception of the Head of the Drain area.

Under the Pahcease Alternative, the water would be impounded north of 8000 South. This impoundment would not affect 8000

South, but would raise the water table up to 1,200 feet north and east of the berm toward River Road. The potential for the increased water table in this area to affect River Road would be limited by the existing drainage ditches along the road. These ditches are located 3 or more feet below the road surface (see Table 4-70)

There are no paved county roads bordering the proposed wetlands in the Flume or Riverdell North sites.

There would be no impacts to River Road, 3000 West or 8000 South under the Pahcease Alternative.

4.12.6.4 Topanotes Alternative

Transportation impacts from the Topanotes Alternative would be the same as those described for the Proposed Action on the Ted's Flat site and for the Pahcease Alternative on the Uresk Drain and Flume sites.

4.12.6.5 No Action Alternative

As both population and oil and gas activities increase in the Uinta Basin, the LOS of certain main routes, such as Highway 40, is likely to decrease over time. The exact nature or timing of this decrease is not currently known.

Physical damage to roads abutting the LDWP area would be a function of local traffic generated by population increases and oil and gas leasing and could occur under the No Action Alternative.

Roads would continue to be repaired and updated according to schedules determined by UDOT and Duchesne and Uintah Counties.

4.13 AIR QUALITY

4.13.1 Introduction

This section addresses air quality and potential impacts from emissions generated during construction of the Proposed Action or alternatives. All construction activities and general vehicle travel would generate emissions. The primary pollutants of concern are particulates (associated with earth moving and increased use of unpaved roads) and vehicle emissions (associated with heavy equipment use). None of the construction activities would result in remedial action of any hazardous waste activity.

4.13.2 Issues Eliminated from Further Analysis

No issues were eliminated from analysis as no air quality issues were raised during public scoping.

4.13.3 Issues Addressed in the Impact Analysis

The following issue is addressed in the impact analysis:

- Will the construction and operation of the LDWP result in reduced air quality in the Uinta Basin?

4.13.4 Area of Influence

The area of influence is the Uinta Basin.

4.13.5 Affected Environment

The primary factors that determine air quality are the locations of air pollution sources,

amounts and types of pollutants and meteorological conditions over a period of time. Air pollution can be particulate pollution, as a result of dust, smoke or other suspended particulates, or invisible chemical pollutants from vehicle emissions, commercial or industrial sites.

Ambient air quality is regulated by provisions under the Federal Clean Air Act of 1970 as amended. Two air quality standards established by the U.S. Environmental Protection Agency are applicable to the Uinta Basin: the National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD).

NAAQS created standards for the maximum allowable concentrations of specific air pollutants including particulate matter (measured as PM_{10} or $PM_{2.5}$, or particles less than 10 or 2.5 microns in diameter, respectively), sulfur oxides (SO_x), ozone (O_2), carbon monoxide (CO), nitrogen oxides (NO_x) and lead (Pb).

PSD standards are denoted by the classification of air, Class I, Class II and Class III, and are designed to prevent the deterioration of air quality by any new construction or other modification in attainment areas. In general, Class I attainment areas are national parks, monuments, wilderness areas and wild and scenic rivers. Class II attainment areas also have scenic qualities, but greater concentrations of pollutants are allowable.

The entire Uinta Basin, including the lands within the LDWP project area, is designated as Class II, with air quality typically classified as good. All areas of the Uinta Basin are in compliance with the NAAQS standards, and are expected to remain as Attainment Areas

under the revised standards issued in November 2006. Although some decline in air quality has been observed in Verbal and Moab, this has not been observed in the Myton area (Utah DEQ 2006).

Windblown dust (PM_{10}) from agricultural activities and unpaved roads are the predominant existing pollution sources in the Myton area. Combustion products, such as vehicle emissions, emissions from local burning (wood stoves, other personal burning), fires and oil and gas activities produce PM_{10} , $PM_{2.5}$, O_x , SO_x and ozone. These emissions are minimal near Myton, but have increased in more populated areas such as Vernal and Moab.

Although no federal Class I designated areas exist in the Uinta Basin, the High Uintas Wilderness, classified as a Class II PSD area, is approximately 30 miles north of the project. The High Uintas Wilderness is the nearest area of concern for air quality, and is considered acid rain sensitive.

The Uinta Basin has an arid to semi-arid, continental climate with widely ranging daily and annual temperatures. The seasons are distinct, with an average annual precipitation of slightly more than eight inches. Winters are typically cold with 6-10 inches of snowfall and an average winter temperature of 20 degrees Fahrenheit. Average minimum winter temperature is 8 degrees Fahrenheit. Summers are mild with occasional hot spells. The average summer temperature is 69 degrees, with an average daily maximum temperature of 87 degrees Fahrenheit. With an average seasonal rainfall of 3.5 inches, less than half of the annual average precipitation falls during the summer months. Although wind direction is variable, the predominant winds are out of the west. From April

through July, the highest average wind speed is 10 miles per hour.

4.13.6 Impact Analysis

4.13.6.1 Significance Criteria

As a Class II attainment area, potential impacts on air quality would be considered significant if the NAAQS standards are exceeded during construction. This would occur if several hundred tons of NO_x, SO_x or particulates were emitted during any 12-month period of construction. Particulates include dust emissions and pollutants emitted from the burning of fuel, especially diesel fuel, used by large trucks and other vehicles. These standards only apply to direct air quality impacts of the projects, which include emissions from construction traffic and operation of construction equipment. Indirect emissions would include traffic induced by the new wildlife management area.

4.13.6.2 Proposed Action

The Proposed Action would increase vehicle emissions in the Uinta Basin during construction. Table 4-71 provides an estimate of maximum emissions by construction equipment during any single year of construction. This estimate is based on a worst-case scenario in which all equipment that would potentially be used on the project would be running continuously eight hours per day for a nine month period. Based on the worst-case analysis, the maximum amounts of pollutants generated during construction would be less than 23 tons per year. None of the three specific air pollutants of concern (NO_x, SO_x and PM₁₀) would exceed allowable air standards for the area during any single year of construction activities. The prevailing direction of wind during the

construction period is west to east, which is away from the High Uintas Wilderness Area. There should be no impact from the LDWP construction on the air quality of the High Uintas Wilderness.

The Proposed Action may increase some visitation to the area, which would indirectly increase recreation traffic and vehicle emissions. Because parking would be limited to a few designated small, gravel parking lots, the number of visitors to the facility should remain small and have no measurable air quality impacts. The air quality standards would not be violated because they only apply to direct air quality impacts of a project, such as emissions from construction equipment.

Table 4-71. Estimated Emissions from LDWP Construction Equipment under the Worst-Case Scenario. Estimates are in tons per year.

| Alternative | Nitrogen Oxides (NO _x) | Sulfur Oxides (SO _x) | Particulates (PM ₁₀) | Total Emissions |
|-----------------|------------------------------------|----------------------------------|----------------------------------|-----------------|
| Proposed Action | 20 | 1.7 | 1.3 | 23 |
| Pahcease | 20 | 1.7 | 1.3 | 23 |
| Topanotes | 20 | 1.7 | 1.3 | 23 |
| No Action | 0 | 0 | 0 | 0 |

The worst-case scenario means that all construction equipment is running for a full eight hours per day for the entire length of the construction period.

4.13.6.3 Pahcease Alternative

Under the Pahcease Alternative, air quality emissions would increase over baseline conditions. Total emissions per year would not exceed 23 tons (Table 4-71), which would not result in an exceedance of the NAAQS standards.

Recreational traffic and vehicle emissions would be similar to those described for the Proposed Action.

4.13.6.4 Topanotes Alternative

Air quality emissions for the Topanotes Alternative would be the same as described for the Pahcease Alternative.

4.13.6.5 No Action Alternative

There would be no change in air quality emissions from the No Action Alternative. No project-related construction or increase in recreational traffic would occur. Baseline air conditions would continue as described in section 4.13.5.

4.14 NOISE

4.14.1 Introduction

This section addresses potential impacts of noise generated from construction activities of the Proposed Action and alternatives for the LDWP. Federal, state and local noise regulations were reviewed to determine applicability to the project and to assess potential impacts. Potential indirect noise impacts were also considered in this analysis.

4.14.2 Issues Eliminated from Further Analysis

No issues were eliminated from analysis as no noise issues were raised during public scoping.

4.14.3 Issues Addressed in the Impact Analysis

The following issue is addressed in the noise impact analysis:

- Will the project, during either construction or operation, increase noise levels within the Duchesne River corridor?

4.14.4 Area of Influence

The impact area of influence includes all areas in which noise generated by the Proposed Action would be heard. Noise would be generated from the roads used by construction and recreation traffic, as well as areas directly adjacent to where construction activities would take place. Figure 1-2 shows the overall project area of influence and Maps 1-4 identify the anticipated locations of construction activities.

4.14.5 Affected Environment

The A-weighted decibel scale (dBA) is used to measure noise. Incremental values on this scale represent the loudness of common sounds perceived by humans. Quantified baseline noise was not available for the impact area of influence; however, some general inferences can be made based on field visits and published noise studies (CEQ 1970, Urban Institute 1976). The Uinta Basin is generally quiet except for the noise generated by traffic on roads, particularly Highway 40. Highway traffic typically generates noise at about 70 dBA, with large trucks generating noise up to 90 dBA. These are decibel ratings generated at 50 feet from the traffic, the standard distance at which noise studies are conducted. Decibel levels are reduced by a factor of four each time the distance is doubled, assuming no other mitigating factors such as trees, walls or other physical barriers are in the sound trajectory.

The only sensitive receptors in the LDWP project area are a few private residences near areas where construction would occur. Sensitive receptors are defined as establishments that are especially susceptible to noise impacts such as schools, nursing homes, hospitals and residences. There are no

schools or hospitals adjacent to the construction sites or the main travel route (Highway 40). Myton is the only town adjacent to the project area and trucks are required by the town to use a separate truck route that diverts traffic around the residential area to access River Road.

4.14.6 Impact Analysis

4.14.6.1 Significance Criteria

Noise that would be generated by the Proposed Action and alternatives was considered significant if it would exceed baseline noise levels over the long term or acceptable levels defined in EPA's Noise Pollution Level index (EPA 1971) during construction. "Normally unacceptable" noise levels are considered to be 74 to 88 dBA in the EPA index. Noise levels are considered significant if activities near sensitive receptors would likely generate noise exceeding "normally unacceptable." Noise at this level is annoying, and if people are exposed to it for long periods, noise barriers need to be constructed to make the indoor environment tolerable. Noise levels above 88 dBA are considered "clearly unacceptable" in the EPA index. Noise at this level is very annoying, can cause hearing damage to people exposed for eight hours or more and the cost to construct noise barriers to make both the indoor and outdoor environments tolerable would be prohibitive.

4.14.6.2 Proposed Action

Noise would be generated by vehicles and heavy equipment during the construction of the features of the Proposed Action. A full list of equipment to be used and associated noise levels at 50 feet are outlined in Table 2-

2 of Chapter 2. The loudest equipment (scraper and grader - up to 95dBA, [85 dBA at 50 feet] bulldozer and end-loader - up to 96 dBA [82-84 dBA at 50 feet]) would likely be limited to construction sites within the project area away from most sensitive receptors.

A few private residences (sensitive receptors) are located adjacent to the construction areas, but are located at a distance greater than 50 feet from construction activities (generally ranging from 300 to 1,000 feet). Three residences adjacent to the Uresk Drain site may experience noise above baseline levels during construction, as these residences are located within 300 feet of the large berms and within 100 feet from a Russian olive removal, native shrub planting area. It is unlikely that noise levels would exceed “clearly unacceptable” (above 88 dBA) for these few residences given the noise attenuation with increased distance from the source of the sound. However, noise levels could be annoying during the proposed Russian olive removal and planting of native shrubs, during an approximately 2-month period.

Some people may experience noise in excess of the significance criteria if they are within 50 feet of the construction sites. Others may experience lower noise levels as the distance from the construction site increases. Potential noise impacts would occur only during the weekdays for at most eight hours each day.

Baseline noise in the project area is generated from trucks traveling along Highway 40. Decibel (A-weighted) levels from these trucks varies from 70 to 90 dBA. This noise level is similar to what would be generated by the trucks that would be used to deliver materials to the construction sites. People would experience a slightly higher frequency of truck noise on Highway 40, but it is not

expected to be significant to sensitive receptors for the duration of the construction activities.

Some construction noise would occur on smaller roads in the project area that are not regularly traveled by construction equipment under baseline conditions. These roads are not regularly traveled by pedestrians and there would be little to no impact on pedestrians as trucks pass. Residences along River Road may experience some noise impacts from increased traffic frequency during construction.

There may be some increased frequency of visitors to the project area after construction, but there would be minimal development of improved parking facilities and increased use of the area would likely consist of local residents and Tribal members. Noise levels created by vehicles would be the same as traffic under baseline conditions, but there could be a small increase in the frequency of a noise impact.

4.14.6.3 Pahcease Alternative

The Pahcease Alternative would cause similar noise impacts as described for the Proposed Action with potential additional impacts on one residence within the Flume site that is located within 300 feet of proposed construction activities.

4.14.6.4 Topanotes Alternative

The Topanotes Alternative would cause similar noise impacts as described for the Pahcease Alternative.

4.14.6.5 *No Action Alternative*

The No Action Alternative would have no noise impacts. Baseline conditions would continue as described in section 4.14.5.

4.15 CULTURAL RESOURCES

4.15.1 Introduction

This analysis addresses potential impacts on cultural resources resulting from the construction, operation and maintenance of project features associated with the Proposed Action and alternatives of the LWDP. A Class I Cultural Resource Inventory of the project area was completed in 2002 (Alpine Archeology 2002). An intensive Class III survey of features within the selected alternative would be completed prior to construction according to the terms of a Programmatic Agreement (PA) negotiated among the project partners and the Utah State Historic Preservation Office (SHPO). The Class I survey report is on file at the Tribal office. Appendix F contains a signed Programmatic Agreement regarding future cultural resource surveys and a letter from the Tribal Cultural Resources Specialist clearing the project for significant Tribal sites.

4.15.2 Issues Eliminated from Further Analysis

No issues were eliminated from analysis; all cultural issues raised during public scoping and agency consultation were analyzed.

4.15.3 Issues Addressed in the Impact Analysis

The following cultural issues are addressed in the impact analysis:

- What are the extent and type of cultural resources in the project area?
- What is the probability of historic properties occurring within the area of, and potentially being impacted by, proposed project features?
- Are there any potentially impacted prehistoric and historic sites eligible for the National Register of Historic Places (NRHP) to locate and record?
- Are there any ethnographic, traditional and religious use areas eligible to the NRHP, using as guidelines National Historic Register Bulletin 38, American Indian Religious Freedom Act, PL 95-341 and the Native American Graves Protection and Repatriation Act of 1990, PL-101-601?

4.15.4 Area of Influence

The area of influence, as shown on Figure 1-2, includes up to 8,838 acres along the Duchesne River corridor between Bridgeland and Randlett.

4.15.5 Affected Environment

This section presents a broad overview of cultural resources in the Uinta Basin. A detailed overview of cultural resources in the Uinta Basin is presented in the “Cultural Resource Inventory of the Lower Duchesne Wetland Project: Duchesne and Uintah Counties, Utah” (Alpine Archeology 2002).

The earliest inhabitants of the region may have been representative of the Paleoindian stage, which emphasized exploitation of megafaunal and floral resources during the period of transition from the Pleistocene to the Holocene dating between 10,000 B.C. and 7,800 B.C. Paleoindian components are very

infrequent in the vicinity of the project area; the stage is mostly represented by surface finds of isolated diagnostic projectile points (Spangler 1995).

Warming of the environment to essentially modern conditions resulted in the end of the Pleistocene and extinction of several megafaunal species upon which Paleoindian cultures relied; this stage is known as the Archaic. Archaic stage remains are relatively well-represented in the Uinta Basin. In northeastern Utah, the Formative stage (between A.D. 1 and A.D. 400) is represented by the Fremont culture, and remains of this culture are quite common in low-lying areas where farming was possible.

During the late Protohistoric to early Historic periods (between A.D. 1200 and 1400), the way of life and material culture of the Ute and Shoshone are remarkable for their similarity to earlier hunter and gatherer groups. Initial Euroamerican entry into the region was by the Dominguez-Escalante Expedition in 1776. This expedition stimulated traders in New Mexico to venture northward to trade with the Utes in central Utah. Euroamerican entry into the region increased during the fur trade with numerous trapping parties utilizing the area throughout the 1820s and 1830s.

As a result of the growing conflicts between settlers and the Utes in the Basin, the Uintah Reservation was established by Executive Order of President Abraham Lincoln on October 3, 1861. The project area remained Ute land until 1905, when it was opened to homesteading. The General Land Office (GLO) patent record search conducted for this project verifies that most of the homesteads in the project area were cash sales between 1908 and 1920 (see Appendix A of Alpine Archeology [2002]).

In 1906, Congress authorized an Act (34 Stat. 375) establishing the Indian Irrigation Project, which specified that proceeds from the sale of lands from the former Uintah Indian Reservation were to be used to construct an irrigation system for Indians. The canals are still in use today.

Most of the known sites within the project area are historic structure or engineering features. Only one prehistoric and eight historic sites within the LDWP area have been formally recorded. Significant cultural resources are limited to four historic canals officially determined eligible to the NRHP; the remaining five sites are either unevaluated or judged insignificant by their field recorders. No sites in the project area have been listed on the NRHP, nor are there any sites of cultural importance or sacred sites to the Ute Tribe within the project area.

4.15.5.1 The Flume

Two block surveys totaling 260 acres have been conducted within, or immediately adjacent to, the Flume site (totaling roughly 10 percent of the total area). Both surveys were within Sections 22 and 27, T3S, R2W. NRHP-eligible sites recorded include two historic structural sites (H1 and H2), the Myton Townsite Canal and the Grey Mountain Canal. Both canals border the Flume but are not located within the site.

The GLO plat dated May 31, 1923, based on field surveys conducted from 1919 to 1922, shows a road marked "Victory Highway" which was the first transcontinental road in the United States in Sections 26, 27, 33, and 34, T3S, R2W. Segments of the Victory Highway may be present in the project area. Those that retain integrity are likely to be eligible for the NRHP.

4.15.5.2 *Uresk Drain*

About 50 percent, or 965 acres, of the site has been inventoried to a reconnaissance level. The Myton Townsite Canal is the only NRHP-eligible site, but it borders and is not located within the Uresk Drain site.

The Uresk Drain was built between 1936 and 1939 by the Civilian Conservation Corps and has not been formally documented (SCS 1959, WWS 1998a). It may be eligible for the NRHP, although it has been routinely maintained and also recently modified by the Duchesne County Water Conservancy District.

4.15.5.3 *Riverdell North/South*

Four surveys have been conducted within the Riverdell North/South site, all of which have been on the Riverdell North property. In all, approximately 223 acres of the 2,190-acre site (10 percent) have been examined. The Riverdell Canal (42DC373) is the only site formally recorded; it has been officially determined to be eligible to the NRHP.

4.15.5.4 *Ted's Flat*

Previous cultural resource inventory projects within, or adjacent to, the Ted's Flat site documented the Ouray School Canal and the Myton Townsite Canal (Stalheim 1983). Because no acreage was provided in the canal survey report, it is difficult to determine the total area surveyed within the 2,073-acre Ted's Flat site. It is estimated that less than 5 percent has been examined for cultural resources. The two historic canals have been officially determined to be eligible for the NRHP. These canals border the site but are not actually located within it.

4.15.6 **Impact Analysis**

Impacts to cultural resources within the project area would occur within the Duchesne River floodplain as depicted on Figure 1-2. Impacts that would occur as a result of construction and operation of the project include filling and flooding irrigation features and planting desirable vegetation within the floodplain.

4.15.6.1 *Significance Criteria*

Determination of effects on eligible cultural resources is guided by federal implementing regulation 36 CFR 800, which states that cultural resource assessments of federal "undertakings" on eligible properties should result in one of three determinations: (1) no effect, (2) no adverse effect (i.e., one or more historic properties would be affected but the historic qualities making them significant will not be harmed), or (3) adverse effect (i.e., the undertakings would cause harm to one or more historic properties). These guidelines are used to determine effects and possible effects on eligible cultural resources associated with the Proposed Action and alternatives. Impacts on historic and prehistoric sites not eligible for the NRHP are not considered an effect on cultural resources. Cultural resources are regarded as significant if they meet the eligibility criteria for nomination to the NRHP (36 CFR 60).

Since cultural resources surveys of the impact area of influence have not been comprehensive, the location and extent of potential impacts on these resources is unknown. Under the LDWP, it is understood that more complete cultural and paleontological surveys may need to be undertaken as the project proceeds (see

Appendix F). The Tribe, in conjunction with the federal lead agencies, would outline who would be responsible for the survey and would facilitate the process for the identification, evaluation and treatment of historic properties that may be impacted under the Proposed Action or alternatives.

4.15.6.2 Proposed Action

Table 4-72 lists the known historic sites within the LDWP under the Proposed Action and alternatives, their location in relation to the LDWP project area and their NRHP status.

The Proposed Action project area borders the Myton Townsite and Ouray School Canals, but would not affect either canal. No impacts would occur to standing historic structures as they are located outside of the areas planned for wetlands or planting. The Uresk Drain would be partially filled and flooded, but more comprehensive cultural work would be completed, if necessary, prior to project implementation to mitigate any impacts on the Drain.

| Table 4-72. Known Historic Sites within the LDWP Area under the Proposed Action and Alternatives. | | | |
|--|--------------------|---|------------------------------|
| Site | NRHP Status | General Location | Potential Impact |
| Grey Mountain Canal | Eligible | Borders portions of the Flume site | None |
| Ouray School Canal | Eligible | Borders Ted's Flat site on the north side of the river | None |
| Myton Townsite Canal | Eligible | Borders portions of the Flume, Uresk Drain and Ted's Flat South sites | None |
| Riverdell Canal | Eligible | Within the Riverdell North Property | None |
| Uresk Drain | Unknown | Within the Uresk Drain site | Partially filled and flooded |

4.15.6.3 Pahcease Alternative

The NRHP-eligible Grey Mountain, Myton Townsite and Riverdell Canals either border, or are within, the Pahcease Alternative project area, but would not be affected by the project. The Riverdell Canal is being rebuilt under the related RWIP and the effects and appropriate mitigation would be handled by that project.

The Uresk Drain would be partially filled and flooded, but more comprehensive cultural work would be completed, if necessary, prior to project implementation.

Potential impacts to Victory Highway are unknown and would be addressed under the Pahcease Alternative, if subsequent Class III surveys identify that portions of the historic highway exist within the Flume site.

4.15.6.4 Topanotes Alternative

The NRHP-eligible Ouray School, Grey Mountain and Myton Townsite Canals border the Topanotes Alternative, but would not be affected by the project. Potential impacts to the Uresk Drain and Victory Highway would be as described for the Pahcease Alternative.

4.15.6.5 No Action Alternative

The No Action Alternative would have no effect on cultural resources. Baseline conditions would continue as described in section 4.15.5.

4.16 NATIVE AMERICAN RESTRICTED/TRUST RESOURCES

The United States, through treaties and acts of Congress, holds title to lands and natural resources for the use and benefit of Native American Tribes and individual Tribal members. Because of this fiduciary obligation, the United States as Trustee must insure that these trust resources are maximized to the greatest extent possible for the benefit of the Native American owners. These trust resources can be real property, physical assets or intangible property rights. Examples of trust resources are lands, minerals, hunting and fishing rights and water rights. Regardless of the trust resource, all federal agencies have an obligation to carry out the trust responsibility the United States has assumed for Native American Tribes and individual Tribal members.

The Proposed Action would occur on portions of the Uintah and Ouray Indian Reservation and would utilize land and water rights of the Ute Tribe. The Tribe would be compensated for placing an easement on its land and leasing its water to the project. The Tribe would also receive the benefit of increased wetland-wildlife resources.

Lands within the Proposed Action and alternatives would be operated as a special use wetland-wildlife area under the Proclamation of the Tribal Wildlife Advisory Boards and the Business Committee. A Comprehensive Conservation and Management Plan would be developed by the Tribe that specifies allowable uses and access conditions. The Management Plan may impose restrictions on access if necessary to meet Tribal wildlife goals. Access restrictions for wildlife management purposes are consistent with existing Tribal wildlife management policies and would only occur with Tribal development and approval of the LDWP Management Plan.

The Tribe is a project partner on this project for planning purposes. The Tribe has developed the conceptual project plans and would manage the wetland-wildlife area. The BIA, the trustee responsible for protection of Tribal Trust resources, is a cooperating agency on the project and has been included in the planning process. The BIA has prepared a trust resources letter documenting their conclusions regarding the effects of the project on Tribal Trust resources per the Government-to-Government Consultation Policy (BIA 2000b). Appendix I contains a copy of this letter.

4.17 ENVIRONMENTAL JUSTICE

Executive Order 12898 and its accompanying memorandum have the primary purpose of ensuring that “each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations . . .” By definition, American Indians are considered minorities. Low income is defined by using federal poverty guidelines.

When determining whether effects are adverse and disproportionately high, agencies are to consider whether or not there is or would be an impact on the natural or physical environment that adversely affects a minority or low-income population.

Sixty-seven percent of the land in the project area is under Tribal ownership (including both Tribal Trust and allotted lands). Forty-eight percent of the Ute Tribe is unemployed, with an average annual income of \$14,600. Thus, the local population is mostly classified as both a minority and a low-income population.

The CUWCD (2002) identified that there are 250 Tribal members in the Uinta Basin that would be interested in work on a construction project. Under the Proposed Action, construction would occur over a seven-year period generating temporary, seasonal jobs for up to 30 local residents. Construction contractors would be required to give preference to qualified Ute Indians in hiring and income would be generated for

some individual Ute Indians during project construction.

The project would be operated by the Tribe. Employment would be provided for an estimated regular staff of three personnel with periodic needs for temporary workers to meet O & M needs. The Tribe could decide to select one or more non-Tribal members to manage the project during the initial project operation if such expertise were necessary, but it is anticipated that over the long-term, all project management will be done by Tribal members.

Both project employment opportunities and increased wetland-wildlife resources would provide a positive impact on the Ute Indian Tribe (a minority and low-income population) without adversely affecting the health and safety of local residents or adversely affecting the local economy (see sections 4.9 and 4.10). None of the alternatives would disproportionately affect low-income or minority communities.

4.18 MITIGATION

4.18.1 Introduction

This section describes proposed mitigation for significant impacts caused by the Proposed Action and alternatives. Mitigation measures are proposed where feasible and practicable for resources that would incur significant adverse impacts after the implementation of the SOPs listed in Appendix A. SOPs would be followed during construction and maintenance of the project to avoid, or minimize, adverse impacts to people and natural resources.

4.18.2 Public Health and Safety

Potential mosquito breeding habitat was identified at a large scale to identify the magnitude and nature of effects of the LDWP. The LDWP Management Plan and Final Design will include greater detail on mosquito management, such as access routes for mosquito staff (use of berms as necessary, retention of interior roads) and specific areas of control emphasis. The monitoring and control program outlined in Appendix G would be initiated during the design phase for each site to ensure preparation for post-project conditions.

4.18.3 Cultural Resources

An inventory has been completed for resources of cultural significance and no resources of cultural significance were found (Alpine Archeology 2002). Before construction, a complete inventory of prehistoric and historic resources would be completed at all sites in the project area where ground disturbance would occur. The inventory would be completed in accordance with the Programmatic Agreement among the Tribe, DOI, Mitigation Commission and Utah State Historic Preservation Officer (Appendix F). This Programmatic Agreement ensures that all potentially significant impacts on cultural resources are identified, eligibility of historic resources for the National Register of Historic Places is determined and that appropriate mitigation is implemented. Mitigation for impacts to sites eligible for the National Register of Historic Places would consist of Historic American Building Survey/Historic American Engineering Record (HABS/HAER) documentation, excavation or other appropriate measures.

4.18.4 Weed Control

Noxious weed control would take place during all phases of the project, from preconstruction and construction to operation and maintenance (O&M). Weed control would include the following main components:

- Mapping of weed-dominated areas,
- Treatment of weeds before and during construction, and
- Ongoing monitoring and control during the O&M phase.

Refer to Appendix B.

4.19 UNAVOIDABLE ADVERSE IMPACTS

4.19.1 Introduction

This section describes unavoidable adverse impacts that would occur under the Proposed Action and alternatives. These impacts, presented by resource, are adverse impacts that remain after both implementation of the SOPs listed in Appendix A and the mitigation measures described in section 4.18.

There would be no unavoidable adverse impacts under the Proposed Action and alternatives for the following resources as they either did not have any adverse impacts or no adverse impacts remained after mitigation.

- Wetlands
- Threatened, Endangered and Candidate Species
- Water Resources

- Water Quality
- Recreation
- Transportation

4.19.2 Wildlife Resources

There would be some temporary loss of upland habitat (for three to five years), which would represent a temporary impact to some upland songbirds and upland-associated raptors.

4.19.3 Agriculture and Land Use

Under the Proposed Action, individual ranchers and lessees would have to alter agricultural practices within the project area due to the restrictions on grazing. There would be a reduction of 0.1 percent in the marketable alfalfa yield for the two-county area and a reduction of 0.1 percent in livestock cash receipts.

Under the Pahcease and Topanotes alternatives, agricultural practices within the project area would be modified by both restrictions on grazing and reservation of 20 percent of crop yields for wildlife use. There would be a reduction of 0.1 to 0.2 percent in the marketable alfalfa yield for the two-county area and a reduction of 0.2 percent in livestock cash receipts.

All alternatives except the No Action could conflict with a number of items in two counties' land use plans: the call for protection of private land from coerced government acquisition; protection of private property rights during CUPCA implementation; and allowing private property owners the right to dispose of their land as they see fit.

There would be a conversion of private land to federal ownership within the project area for the Pahcease and Topanotes alternatives. This would result in a conflict with Duchesne and Uintah Counties' land use plans policy of "no net increase" in public land.

4.19.4 Socioeconomics

The Proposed Action and alternatives would initiate permanent impacts to the county tax base due to removal of certain residences from the tax rolls (all alternatives) and tax losses as fee land is converted to federal ownership (Pahcease and Topanotes Alternatives). Under the Proposed Action, there would be a tax loss of up to \$1,632 in the two-county area. Under the Pahcease Alternative, there would be an annual tax loss of \$7,918 in the two-county area. Under the Topanotes Alternative, there would be an annual tax loss of \$7,043 in the two-county area.

4.19.5 Soil Resources

There would be a potential change in soil productivity for cropland on 10 acres of Ravola soils under the Proposed Action. Under the Pahcease and Topanotes alternatives there would be a potential change in soil productivity for cropland on 10 acres of Ravola soils and 23 acres of well drained Green River loam.

4.19.6 Public Health and Safety

Under the Proposed Action, there would be a net increase of 497 acres of potential mosquito-producing habitats, of which 271 acres would be SP habitat and 226 acres would be FW habitat, an increase of 0.4

percent within the Uinta Basin. Potential mosquito-producing habitat near Myton would increase by 124 acres, of which 68 acres would be SP habitat and 56 acres would be FW habitat.

Under the Pahcease and Topanotes alternatives, there would be a net increase of 776 to 849 acres of potential mosquito-producing habitats, of which 441 acres would be SP habitat and 334 to 408 acres would be FW habitat, an increase of 1 percent within the Uinta Basin. Potential mosquito-producing habitat near Myton would increase by 668 acres, of which 330 acres would be SP habitat and 358 acres would be FW habitat.

4.19.7 Air Quality

Nitrogen oxides, sulfur oxides and particulate matter from vehicle emissions would increase during construction. Dust emissions would increase during construction.

4.19.8 Noise

Noise levels would exceed significance criteria for people within about 50 feet of construction sites. There would be some noise impacts to residences during the construction period, but noise levels would generally remain below unacceptable levels according to EPA guidelines.

4.19.9 Cultural Resources

Complete surveys for cultural resources in the impact area of influence have not been completed, so the location and extent of potential unavoidable adverse impacts on these resources is unknown.

4.20 IRRETRIEVABLE AND IRREVERSIBLE COMMITMENT OF RESOURCES

4.20.1 Introduction

This section describes the irreversible and irretrievable commitment of resources that would occur under the Proposed Action and alternatives. There would be no irreversible and irretrievable commitment of resources under the Proposed Action and alternatives for the following resources:

- Wetlands
- Wildlife Resources
- Threatened, Endangered and Candidate Species
- Water Resources
- Water Quality
- Soils
- Public Health and Safety
- Recreation
- Transportation
- Noise
- Air Quality
- Cultural Resources

4.20.2 Proposed Action

Materials used during construction of the Proposed Action would be permanently committed to the project. Table 2.5 in section 2.1.5 lists materials to be used during construction.

Construction of the Proposed Action would require 82,800 gallons of gasoline for

vehicles and equipment. Additional traffic after construction would use more fuel but the amount is not readily quantifiable.

Up to 4,749 acres of land currently being grazed or available for grazing would be removed from grazing. However, grazing could be returned to the land in the future, thus reversing the commitment.

Funds used for the construction and operation of the Proposed Action would be permanently committed to the project and would not be available for other purposes.

4.20.3 Pahcease Alternative

The irreversible and irretrievable commitment of resources under the Pahcease Alternative would be generally similar to that for the Proposed Action.

Construction of the Pahcease Alternative would require 82,800 gallons of gasoline for vehicles and equipment. Additional traffic after construction would use more fuel but the amount is not readily quantifiable.

Up to 5,439 acres of land currently being grazed or available for grazing would be removed from grazing.

4.20.4 Topanotes Alternative

The irreversible and irretrievable commitment of resources under the Topanotes Alternative would be generally similar to that for the Proposed Action.

Construction of the Topanotes Alternative would require 82,800 gallons of gasoline for vehicles and equipment. Additional traffic after construction would use more fuel but the amount is not readily quantifiable.

Up to 6,292 acres of land currently being grazed or available for grazing would be removed from grazing. However, grazing could be returned to the land in future.

4.21 CUMULATIVE IMPACTS

Section 1.7 describes past, present or reasonably foreseeable, projects for which cumulative impacts need to be addressed. The related projects are listed in Table 4-73 along with a summary of resources to be addressed in the cumulative impact analysis for all alternatives.

Table 3-1 summarizes the impacts of the Proposed Action and alternatives. Cumulative impacts are discussed below for each resource that would be impacted by the LDWP. The determination of cumulative impacts is based on net impacts, or those impacts remaining after mitigation has been applied. Both beneficial and adverse impacts are addressed in the cumulative impact analysis.

According to NEPA guidelines, cumulative impacts must be addressed for all identified impacts, regardless of their significance. Cumulative impacts are not discussed for resources in which the condition under the Proposed Action or the alternatives would not be substantially different from the baseline condition. The resources for which no measurable change would occur under the Proposed Action and the action alternatives and for which no cumulative impact analysis was conducted are:

- Threatened, Endangered and Candidate Species
- Water Resources

- Recreation
- Transportation
- Noise
- Cultural Resources

Although the LDWP would slightly increase air emissions, there are no related projects that affect air quality, so this resource is not addressed in the cumulative impact analysis. Likewise, the LDWP could affect soil productivity on up to 38 acres, but there are no related projects that address this issue. Therefore, it is not addressed in the cumulative impact analysis.

Under the No Action Alternative, there would be no measurable change from baseline conditions for most resources except Wetland and Riparian Habitats and Wildlife Resources (Table 4-74). Therefore, cumulative impacts for the No Action Alternative are discussed only for these two resources.

The cumulative impact analysis is based on existing and readily available data for the related projects. Cumulative impacts are discussed quantitatively where the appropriate data for related projects exists. Where quantitative data for a project does not exist in a readily available format, the cumulative impacts are discussed qualitatively.

Table 4-73. Summary of Resources Affected by the LDWP Alternatives and Related Projects.

| Resource | General LDWP Impacts (Proposed Action and/or alternatives) | Resources Potentially Impacted by Related Projects | | | | | | |
|------------------------------|--|--|---|-----------------|-------|------|---------------------|-----|
| | | Past Water Resource Development Projects | Colorado River Salinity Control Program | Mallard Springs | DRACR | RWIP | Section 203(a) UBRP | RIP |
| ACTION ALTERNATIVES | | | | | | | | |
| Wetland/Riparian | Net increase in acres; some temporary loss of habitat | √ | √ | √ | √ | √ | √ | |
| Wildlife | Net increase in habitat; some temporary loss of habitat | √ | √ | √ | √ | √ | √ | |
| Water Quality | +115 to 1,275 tons of salts annually | √ | √ | | | | √ | |
| Agriculture/ Land Use | Reduction in livestock and crop production; change in fee land status (Pahcease and Topanotes only) | √ | | | √ | | √ | √ |
| Socioeconomics | Decreases in tax revenues and agricultural income; increase in personal income and Tribal employment | √ | | | √ | | √ | |
| Public Health and Safety | Increase in potential mosquito habitat | √ | | √ | √ | | | |
| NO ACTION ALTERNATIVE | | | | | | | | |
| Wetland/Riparian | Long-term loss of native species and wetlands; increase in invasive species | √ | √ | √ | √ | √ | √ | |
| Wildlife | Long-term loss of riparian habitat | √ | √ | √ | √ | √ | | |

4.21.1 Cumulative Impacts of the Proposed Action

4.21.1.1 Wetland and Riparian Resources

The Proposed Action would restore 1,025 acres of wetland and riparian habitats and enhance an additional 1,656 acres of wetland and riparian habitats. There would be temporary impacts to 11.5 acres of native, non-riparian wetlands and 2.6 acres of cottonwood forest. These habitats would be restored but there would be a loss of habitat functions for a period of approximately three to five years for herbaceous wetlands and up to 30 years for cottonwood forest.

Related projects that would initially result in losses of wetland and riparian habitats include past water resource development projects, the Colorado River Salinity Control Program (estimated 211 acres of wetlands in Duchesne County), RWIP (estimated 4.3 acres impacts to cottonwood forest and yet to be quantified impacts to wetlands within the Duchesne River corridor) and Section 203(a) UBRP (approximately five acres of temporary and five acres of permanent wetland impacts along the Lake Fork River upstream of the project area). The Colorado River Salinity Control Program, RIP and Section 203(a) UBRP would mitigate for their impacts, resulting in no net permanent loss of wetlands. Past water resource development projects resulted in a significant loss of wetland and riparian resources described in greater detail in Section 1.3.3. The LDWP provides partial mitigation for impacts resulting from construction and operation of CUP.

Mitigation for some of the Colorado River Salinity Control Program impacts has been

completed at the state-owned Mallard Springs. At Mallard Springs, an estimated 75 acres of wetlands have been developed to offset losses elsewhere associated with canal lining. Although this mitigation does not result in a net change in wetland acres, its location within the LDWP project area results in a local increase in wetlands.

The LDWP provides partial mitigation for prior significant losses of wetland and riparian habitats resulting from past water resource development projects.

The DRACR mitigation, as identified in 1982, is to replace 390 wetland-wildlife habitat units through creation of 450 acres of wetlands.

Cumulatively, there would be a net total of 3,131 acres of wetland and riparian habitats created, restored or enhanced within the Duchesne River corridor.

4.21.1.2 Wildlife Resources

The Proposed Action would improve habitat for all nine major wildlife species evaluated. There would be a net loss of 531 acres of upland habitat which would be offset by enhancements on the remaining upland habitat for nesting and feeding. There would be a temporary loss of 11.5 acres of native wetland and 2.6 acres of riparian habitat, and a permanent loss of 7.3 acres of wetland. This loss would be more than offset by the creation, restoration and enhancement of 1,548 acres of wetland and 1,133 acres of riparian habitat.

Related projects that have or would impact wildlife resources include past water resource development projects, the Colorado River Salinity Control Program, RWIP, DRACR

and Section 203(a) UBRP. Past water resource development projects resulted in a significant loss of wildlife habitats as described in greater detail in Section 1.3.3. The Colorado River Salinity Control Program impacts an estimated 211 acres of wetlands in Duchesne County that provide habitat for three of the wildlife groups evaluated (shorebirds, waterfowl and furbearing animals). The development of an estimated 75 acres of wetlands at Mallard Springs represents mitigation for some of these impacts.

RWIP is expected to impact approximately 4.3 acres of mostly riparian cottonwood habitat that provides habitat for three of the major wildlife groups evaluated (migratory songbird, raptors and big game). The associated DRACR project would provide 450 acres of wetlands, most likely targeted toward shorebirds, waterfowl and furbearing animals.

Section 203(a) UBRP would temporarily impact 5 acres of habitat and permanently impact 5 acres of habitat for shorebirds, waterfowl and furbearers. Section 203(a) UBRP would permanently impact 351 acres of desert shrub and temporarily impact 27 acres of desert shrub habitat. Given the mitigation in place for these projects, no permanent loss of habitat is expected from implementation of these projects (i.e., no net loss is expected). However, when combined with the LDWP, there would be a temporary loss of 909 acres of upland habitat including desert shrub, grassland and annual weed/fallow, and a temporary loss of 227.5 acres of wetland and 6.9 acres of riparian habitat

Cumulatively, there would be an increase of 1,998 acres of waterfowl, furbearer and

shorebird habitat and 1,133 acres of migratory songbird and big game habitat with significant prior losses of these habitats resulting from past water resource development projects.

4.21.1.3 Water Quality

The Proposed Action would increase the salt load to the Duchesne River by a range estimated as 115 to 829 tons annually, with a value of 161 tons (derived from the site-specific mixing model) used for the cumulative impact analysis. There would also be a reduction of the surface water return flow TDS concentration by 9.4 percent and an average decrease of 0.6 ppm in Duchesne River TDS concentrations at the Randlett gage. No other related projects have addressed changes in the Duchesne River TDS at Randlett. As a result, the change in the Duchesne River salt load is the only water quality item included in the LDWP cumulative impact analysis.

The Section 203(a) UBRP project estimates a salt loading reduction of 4,700 tons. As of the 2005 water year, the Colorado River Salinity Control project has reduced the salt load to the Duchesne River by 162,630 tons per year. Cumulatively, the Colorado River Salinity Control Project, the Section 203(a) UBRP and the Proposed Action would result in an annual salt load reduction of 167,169 tons per year.

4.21.1.4 Agriculture/Land Use

4.21.1.4.1 Agricultural Practices and Production

There would be changes in agricultural practices within the LDWP project area, with a reduction of marketable crop production on 58 acres and a removal of grazing from 4,749

acres of land (1,899 acres of irrigated pasture [average 2.5 AUMs] and 2,850 acres of other land [average of less than 0.1 AUM]).

Cumulative impacts to land use and agriculture in the project area would result from the operation of Section 203(a) UBRP, the Upper Colorado River Endangered Fish Recovery Program (*RIP*), in conjunction with the Proposed Action.

Past water resource development projects resulted in a significant increase in agricultural production within the cumulative impact area of influence. Draining of wetlands, clearing of bottom lands and modern irrigation practices made possible through water resource development resulted in agricultural production becoming historically the primary focus of economic activity within the Uintah Basin, along with mineral extraction.

The Section 203(a) UBRP would have both positive and negative effects on agricultural output in the project area. Additional “project water” from enhanced storage in Big Sand Wash Reservoir could potentially be used for agriculture on eligible lands. Additionally, the Section 203(a) UBRP would facilitate more reliable delivery of late season irrigation water to certain farms and enhance agricultural output during dry years. In contrast, the retirement of 340 acres of land may reduce agricultural output depending on the current use of those lands.

The Upper Colorado River Endangered Fish Recovery Program (*RIP*) is in the process of acquiring flood easements on properties along the Green River in Uintah County. However, these easements prohibit the building of dikes to protect agricultural lands and also allow the breaching of existing dikes where necessary.

Accordingly, it is possible that agricultural output on these properties could be reduced in years when flooding occurs, although it is not possible to calculate or predict such reductions.

Because there is no information on the specific agricultural use or production on lands affected by the related projects, the cumulative assessment is based on total changes in agricultural land. Cumulatively with the Proposed Action, there would be a change in agricultural production on 5,147 acres of land.

4.21.1.4.2 Fee Land Status

There would be no conversion of fee land to federal land status under the Proposed Action. Therefore, there would be no cumulative impacts associated with the conversion of fee to non-fee land status.

4.21.1.5 Socioeconomics

Under the Proposed Action, there would be changes in tax revenue associated with changes in portions of some parcels from residential to greenbelt use, but there would be no change in overall fee status of the land. There would also be decreases in agricultural income and increases in personal income and employment. The related Section 203(a) UBRP would affect these items; however, the socioeconomic impacts of the Section 203(a) UBRP were not evaluated quantitatively in the 203(a) Environmental Assessment, so cumulative effects in conjunction with the Proposed Action can not be addressed.

4.21.1.6 Public Health and Safety

The Proposed Action would result in an increase of 497 acres of potential mosquito-

producing habitat, of which 271 acres would be SP habitat and 226 would be FW habitat.

Related projects that have or could affect the amount of mosquito-producing habitat include past water resource development projects, and Mallard Springs mitigation, which adds an additional 75 acres of wetland in the vicinity of Myton and the DRACR project which would create 450 acres of wetland, with the type of wetland habitat unknown.

The largest mosquito producing habitats within the cumulative impact area of influence is are from irrigated grasslands. Irrigated grasslands primarily provide habitat for non-West Nile Virus mosquitoes in Utah but also provide habitats for the type that carries the West Nile Virus, *Culex tarsalis*, in low areas, depressions and irrigation ditches (see Section 4.10.5.2)

Cumulatively with the Mallard Springs and DRACR wetlands, there would be an increase of 1,022 acres of potential mosquito-producing habitat that would be offset with increase mosquito control efforts on the LDWP (see Appendix G).

4.21.2 Cumulative Impacts of the Pahcease Alternative

4.21.2.1 Wetland and Riparian Resources

The Pahcease Alternative would restore 2,125 acres of wetland and riparian habitats and enhance an additional 930 acres of wetland and riparian habitats. There would be temporary impacts to 13.4 acres of native wetlands, with no impacts to riparian habitat. These habitats would be restored but there would be a loss of habitat functions for a period of approximately three to five years.

As described for the Proposed Action, the related Colorado River Salinity Control Program, RWIP and Section 203(a) UBRP would mitigate for wetland impacts, resulting in no net permanent loss of wetlands

Mitigation for some of the Colorado River Salinity Control Program impacts has been completed at the state-owned Mallard Springs. At Mallard Springs, an estimated 75 acres of wetlands have been developed to offset losses elsewhere associated with canal lining. Although this mitigation does not result in a net change in wetland acres, its location within the LDWP project area results in a local increase in wetlands.

The DRACR mitigation, as identified in 1982, is to replace 390 wetland-wildlife habitat units through creation of 450 acres of wetlands.

Cumulatively, there would be a total of 3,505 acres of wetland and riparian habitats created, restored or enhanced within the Duchesne River corridor. The LDWP provides partial mitigation for prior significant losses of wetland and riparian habitats resulting from past water resource development projects.

4.21.2.2 Wildlife Resources

The Pahcease Alternative would improve habitat for all nine major wildlife species evaluated. There would be a net loss of 774 acres of upland habitat which would be offset by enhancements on the remaining upland habitat for nesting and feeding. There would be a temporary loss of 13.4 acres of native wetland habitat and a permanent loss of 13.5 acres of wetland. This loss would be more than offset by the creation, restoration and enhancement of 1,923 acres of wetland and 1,132 acres of riparian habitat.

Related projects that would initially impact wildlife resources include the Colorado River Salinity Control Program, RWIP, DRACR and Section 203(a) UBRP. The wildlife impacts of these projects are described in section 4.21.1.2. When combined with the Pahcease Alternative, there would be a cumulative temporary loss of 1,152 acres of upland habitat including desert shrub, grassland and annual weed/fallow, and a cumulative temporary loss of 229.4 acres of wetland habitat.

Cumulatively, there would be an increase of 2,373 acres of waterfowl, furbearer and shorebird habitat and 1,132 acres of migratory songbird and big game habitat.

4.21.2.3 Water Quality

The Pahcease Alternative would increase the salt load to the Duchesne River by a range estimated as 579 to 1,275 tons annually, with a value of 633 tons (derived from the site-specific mixing model) used for the cumulative impact analysis.

As of the 2005 water year, the Colorado River Salinity Control project has reduced the salt load to the Duchesne River by 162,630 tons per year. Cumulatively, the Colorado River Salinity Control Project, the Section 203(a) UBRP and the Pahcease Alternative would result in an annual salt load reduction of 166,697 tons per year.

4.21.2.4 Agriculture/Land Use

4.21.2.4.1 Agricultural Practices and Production

There would be changes in agricultural practices within the Pahcease Alternative project area, with a reduction of marketable

crop production on 239 acres and a removal of grazing from 5,439 acres of land (2,427 acres of irrigated pasture [average 2.5 to 3.0 AUMs] and 3,012 acres of other land [average of less than 0.87 AUMs]).

Cumulative impacts to land use and agriculture in the project area have and would result from past water resource development projects, the operation of Section 203(a) UBRP, the Upper Colorado River Endangered Fish Recovery Program (*RIP*), in conjunction with the Pahcease Alternative. The effects of these related projects on agricultural practices and production are described in section 4.21.1.4.

Past water resource development projects resulted in a significant increase in agricultural production within the cumulative impact area of influence. Draining of wetlands, clearing of bottom lands and modern irrigation practices made possible through water resource development resulted in agricultural production becoming historically the primary focus of economic activity within the Uintah Basin, along with mineral extraction.

The Pahcease Alternative does not accomplish the required wetland mitigation for DRACR, so it is anticipated that an additional 1,087 acres of land in either Duchesne or Uintah Counties would need to be acquired for this purpose. It is likely that these lands would be privately owned and be used for some type of agricultural production.

Because there is no information on the specific agricultural use or production on lands affected by the related projects, the cumulative assessment is based on total changes in agricultural land. Cumulatively with the Pahcease Alternative, there would be

a change in agricultural production on 7,105 acres of land.

4.21.2.4.2 Fee Land Status

Under the Pahcease Alternative, 1,787 acres of private land would be acquired and transferred to federal ownership, thereby transferring this land out of fee status.

The related Section 203(a) UBRP would require the fee title acquisition of 340 acres of private land and transfer that land to the Moon Lake Water Users Association (MLWUA). Under the RIP program, flood easements would be acquired but the title would remain with the owner so that there would be no net loss of fee land under this project.

The Pahcease Alternative does not accomplish required wetland mitigation for the DRACR, so it is anticipated that an additional 1,087 acres of land in either Duchesne or Uintah counties would need to be acquired for this purpose. Cumulatively, Section 203(a) UBRP, the DRACR mitigation and the LDWP under the Pahcease Alternative would acquire 3,214 acres of fee land that would be placed in public ownership.

4.21.2.5 Socioeconomics

Under the Pahcease Alternative, there would be changes in both the tax revenues associated with changes in portions of some parcels from residential to greenbelt use, and the change from fee to non-fee status on 2,015 acres of land (associated annual tax loss of \$3,808). As for the Proposed Action, there would also be decreases in agricultural income and increases in personal income and employment. The related Section 203(a)

UBRP would also affect these items. However, the socioeconomic impacts of the Section 203(a) UBRP were not evaluated quantitatively in the 203(a) Environmental Assessment, so cumulative socioeconomic effects in conjunction with the Pahcease Alternative can only be addressed for the tax revenues associated with the acquisition of 340 acres of fee land.

The additional purchase of 1,087 acres of fee land to compensate for the use of the DRACR property for Pahcease Alternative would also reduce county property taxes, depending on the use of the land at the time of purchase. Assuming that land with a moderate valuation such as irrigated pasture is purchased, this would result in the potential loss of \$2,143 in property taxes. Tax revenue losses would be lower if dry pasture were purchased and higher if cropland were acquired. Using the same formula, there would be an estimated tax revenue loss of \$670 associated with the 203(a) UBRP project.

There would be an estimated cumulative total of \$6,621 of annual tax revenues associated with conversion of fee land to public land lost within Duchesne and Uintah counties under the Pahcease Alternative.

4.21.2.6 Public Health and Safety

The Pahcease Alternative would result in an increase of 849 acres of potential mosquito-producing habitat, of which 441 acres would be SP habitat and 408 would be FW habitat.

Related projects that have or could affect the amount of mosquito-producing habitat include past water resource development projects, and Mallard Springs mitigation, which adds an additional 75 acres of wetland in the vicinity of Myton and the DRACR project which

would create 450 acres of wetland, with the type of wetland habitat unknown.

The largest mosquito producing habitats within the cumulative impact area of influence is are from irrigated grasslands. Irrigated grasslands primarily provide habitat for non-West Nile Virus mosquitoes in Utah but also provide habitats for the type that carries the West Nile Virus, *Culex tarsalis*, in low areas, depressions and irrigation ditches (see Section 4.10.5.2)

Cumulatively with the Mallard Springs and DRACR wetlands, there would be an increase of 1,374 acres of potential mosquito-producing habitat that would be offset with increase mosquito control efforts (see Appendix G).

4.21.3 Cumulative Impacts of the Topanotes Alternative

4.21.3.1 Wetland and Riparian Resources

The Topanotes Alternative would restore 1,461 acres of wetland and riparian habitats and enhance an additional 1,714 acres of wetland and riparian habitats. There would be temporary impacts to 16.1 acres of native, non-riparian wetlands and 2.6 acres of cottonwood forest. These habitats would be restored but there would be a loss of habitat functions for a period of approximately three to five years for herbaceous wetlands and up to 30 years for cottonwood forest. As described for the Proposed Action, the related Colorado River Salinity Control Program, RWIP and Section 203(a) UBRP would mitigate for wetland impacts, resulting in no net permanent loss of wetlands, but cumulatively with the LDWP would result in

a temporary loss of at least 232.1 acres of wetlands and 6.9 acres of cottonwood forest.

Mitigation for some of the Colorado River Salinity Control Program impacts has been completed at the state-owned Mallard Springs. At Mallard Springs, an estimated 75 acres of wetlands have been developed to offset losses elsewhere associated with canal lining. Although this mitigation does not result in a net change in wetland acres, its location within the LDWP project area results in a local increase in wetlands.

The DRACR mitigation, as identified in 1982, is to replace 390 wetland-wildlife habitat units through creation of 450 acres of wetlands.

Cumulatively, there would be a total of 3,625 acres of wetland and riparian habitats created, restored or enhanced within the Duchesne River corridor. The LDWP provides for partial mitigation of the significant impacts on wetlands and riparian resources resulting from past water resource development projects.

4.21.3.2 Wildlife Resources

The Topanotes Alternative would improve habitat for all nine major wildlife species evaluated. There would be a net loss of 693 acres of upland habitat which would be offset by enhancements on the remaining upland habitat for nesting and feeding. There would be a temporary loss of 16.1 acres of native wetland and 2.6 acres of riparian habitat, and a permanent loss of 8.2 acres of wetland. This loss would be more than offset by the creation, restoration and enhancement of 1,938 acres of wetland and 1,237 acres of riparian habitat.

Related projects that would initially impact wildlife resources include the Colorado River Salinity Control Program, RWIP, DRACR and Section 203(a) UBRP. The wildlife impacts of these projects are described in section 4.21.1.2.

When combined with the Topanotes Alternative, there would be a cumulative temporary loss of 1,071 acres of upland habitat including desert shrub, grassland and annual weed/fallow, and a cumulative temporary loss of 232.1 acres of wetland habitat.

Cumulatively, there would be an increase of 2,388 acres of waterfowl, furbearer and shorebird habitat and 1,237 acres of migratory songbird and big game habitat. The LDWP would provide partial mitigation of significant impacts on wildlife habitats resulting from past water resource development projects.

4.21.3.3 Water Quality

The Topanotes Alternative would increase the salt load to the Duchesne River by a range estimated as 429 to 1,125 tons annually, with a value of 731 tons (derived from the site-specific mixing model) used for the cumulative impact analysis.

As of the 2005 water year, the Colorado River Salinity Control project has reduced the salt load to the Duchesne River by 162,630 tons per year. Cumulatively, the Colorado River Salinity Control Project, the Section 203(a) UBRP and the Topanotes Alternative would result in an annual salt load reduction of 166,599 tons per year.

4.21.3.4 Agriculture/Land Use

4.21.3.4.1 Agricultural Practices and Production

There would be changes in agricultural practices within the Topanotes Alternative project area, with a reduction of marketable crop production on 356 acres and a removal of grazing from 6,292 acres of land (2,221 acres of irrigated pasture [average 2.5 to 3.0 AUMs] and 4,071 acres of other land [average of less than 0.87 AUMs]).

Cumulative impacts to land use and agriculture in the project area would result from past water resource development projects, operation of Section 203(a) UBRP, and the Upper Colorado River Endangered Fish Recovery Program, in conjunction with the Topanotes Alternative. Effects of these related projects on agricultural practices and production are described in section 4.21.1.4.

Past water resource development projects resulted in a significant increase in agricultural production within the cumulative impact area of influence. Draining of wetlands, clearing of bottom lands and modern irrigation practices made possible through water resource development resulted in agricultural production becoming historically the primary focus of economic activity within the Uintah Basin, along with mineral extraction.

Because there is no information on the specific agricultural use or production on lands affected by the related projects, the cumulative assessment is based on total changes in agricultural land. Cumulatively with the Topanotes Alternative, there would be a change in agricultural production on 6,988 acres of land.

4.21.3.4.2 Fee Land Status

Under the Topanotes Alternative, 2,240 acres of private land would be acquired and transferred to federal ownership, thereby transferring this land out of fee status.

The related Section 203(a) UBRP would require the fee title acquisition of 340 acres of private land and transfer that land to the Moon Lake Water Users Association (MLWUA). Under the RIP program, flood easements would be acquired but the title would remain with the owner so that there would be no net loss of fee land under this project.

Cumulatively, Section 203(a) UBRP, RIP and the LDWP under the Topanotes Alternative would acquire 2,580 acres of fee land that would be placed in public ownership.

4.21.3.5 Socioeconomics

Under the Topanotes Alternative, there would be changes in both the tax revenues associated with changes in portions of some parcels from residential to greenbelt use, and the change from fee to non-fee status on 2,850 acres of land (associated annual tax loss of \$3,364). As for the Proposed Action, there would also be decreases in agricultural income and increases in personal income and employment. The related Section 203(a) UBRP would also affect these items. However, the socioeconomic impacts of the Section 203(a) UBRP were not evaluated quantitatively in the 203(a) Environmental Assessment, so cumulative socioeconomic effects in conjunction with the Topanotes Alternative can only be addressed for the tax revenues associated with the acquisition of 340 acres of fee land (estimated annual loss of tax revenue of \$670).

There would be an estimated cumulative total of \$4,034 of annual tax revenues associated with conversion of fee land to public land lost within Duchesne and Uintah counties under the Pahcease Alternative.

4.21.3.6 Public Health and Safety

The Topanotes Alternative would result in an increase of 776 acres of potential mosquito-producing habitat, of which 442 acres would be SP habitat and 334 would be FW habitat.

Related projects that could also affect the amount of mosquito-producing habitat include the Mallard Springs mitigation, which adds an additional 75 acres of wetland in the vicinity of Myton and the DRACR project, which would create 450 acres of wetland, with the type of wetland habitat unknown.

The largest mosquito producing habitats within the cumulative impact area of influence are from irrigated grasslands. Irrigated grasslands primarily provide habitat for non-West Nile Virus mosquitoes in Utah but also provide habitats for the type that carries the West Nile Virus, *Culex tarsalis*, in low areas, depressions and irrigation ditches (see Section 4.10.5.2).

Cumulatively with the Mallard Springs and DRACR wetlands, there would be an increase of 1,301 acres of potential mosquito-producing habitat. The LDWP would offset this impact by providing mosquito control on LDWP lands.

4.21.4 Cumulative Impacts of the No Action Alternative

4.21.4.1 Wetland and Riparian Resources

Under the No Action Alternative, wetland and riparian habitats would be lost over the long-term as cottonwoods die and are replaced by noxious and/or invasive weeds, wetlands are dried up or native species in wetlands are replaced by invasive weeds. There is no data to predict the rate at which this loss would occur, but at least 339 to 801 acres of noxious weeds would persist and likely expand under the No Action Alternative.

Of the five related projects that also affect wetland and riparian habitats, only one project has addressed invasive species control. The RWIP would prevent invasive weeds from expanding on the Riverdell North property and also attempt to reduce existing invasions.

There is no information regarding how the other related projects would address invasive species control. Cumulatively, it is likely that the RWIP would control expansion of invasive weeds, but that at least 339 to 801 acres of invasive weeds would persist and expand elsewhere within the project area.

4.21.4.2 Wildlife Resources

Under the No Action Alternative, there would be a long-term loss of riparian habitat due to native riparian species mortality and subsequent replacement by invasive species. This would affect the riparian-associated wildlife species listed in section 4.3. There is no data to predict the rate at which the loss of native riparian species would occur. No other related projects have addressed the long-term loss of native riparian species and associated wildlife habitat along the Duchesne River. Cumulatively, under the No Action Alternative, there would be a net loss of migratory bird, raptor and big game habitat.

| Table 4-74. Summary of Cumulative Impacts. | | | | |
|---|--|--|---------------------------------|----------------------------------|
| Resource | General LDWP Impacts (Proposed Action and/or alternatives) | Cumulative Impacts by Alternative | | |
| | | Proposed Action | Pahcease Alternative | Topanotes Alternative |
| ACTION ALTERNATIVES | | | | |
| Wetland/Riparian and Wildlife Habitat | Net increase in wetlands (acres) | +1,498 | +2,373 | +2,298 |
| | Net increase in riparian habitat (acres) | +1,133 | +1,132 | +1,237 |
| | Total increase wetland/riparian habitat (acres). LDWP provides partial mitigation of significant and unquantified impacts of past water resource development projects. | +3,131 | +3,505 | +3,625 |
| | Temporary loss of wetland habitat (acres) | -227.5 | -229.4 | -232.1 |
| | Temporary loss of riparian habitat (acres) | -6.9 | 0 | -6.9 |
| | Temporary loss of upland habitat (acres) | -909 | -1,152 | -1,071 |
| Water Quality | +115 to 1,275 tons of salts annually | -167,169 | -166,697 | -166,599 |
| Agriculture/ Land Use | Changes in agricultural production (acres) Past water resource development projects provided unquantified agriculture production. | 5,147 | 7,105 | 6,988 |
| | Change in fee land status (acres) | 0 | 3,214 | 2,580 |
| Socioeconomics | Decreases in tax revenues from fee land conversion | 0 | -\$6,621 | -\$4,034 |
| | Decreases in tax revenues from changes from residential to greenbelt use | Cumulative impacts not quantifiable as related projects that affect these items do not provide data on their impacts | | |
| | Decreases in agricultural income | | | |
| | Increase in personal income, employment | | | |
| Public Health and Safety | Increase in potential mosquito habitat mitigated through increased mosquito control not provided under baseline. Past water resource development projects significantly increased mosquito habitat through irrigation. | +1,022 | +1,374 | +1,301 |
| NO ACTION ALTERNATIVE not able to be quantified as related projects do not provide data on long term impacts | | | | |

**Lower Duchesne River
Wetlands Mitigation Project**

Final Environmental Impact Statement

CHAPTER 5

CONSULTATION AND COORDINATION

CHAPTER 5: CONSULTATION AND COORDINATION

5.1 INTRODUCTION

National Environmental Policy Act regulations, provided by the Council on Environmental Quality (CEQ), allow both interested agencies and the general public to review and comment on EISs. Public review is intended to improve the accuracy of NEPA documents and improve the quality of federal decisions regarding actions that may affect the human environment. This chapter describes the consultation and coordination that occurred with agencies and the public throughout project planning and development of the LDWP FEIS.

The Joint Lead Agencies and the Tribe initiated and managed the consultation and coordination for the LDWP FEIS. Because the majority of the project would occur on Tribal Trust lands and mitigation for Tribal resource losses was a key project need, Tribal members and leaders provided input on all stages of the project. The Tribe also involved other agencies that had related responsibilities in the early stages of the project. The Tribe provided updates and information about the proposed project to local interested parties. The following describes the process of agency and public involvement for the LDWP.

5.2 PROJECT PLANNING

Project planning began in 1995 with preparation of a series of project feasibility reports (WWS 1997, 1998 and 2000). During the feasibility analysis, public input was sought by several methods. Landowners

within the proposed project area were approached individually to describe the project, identify any landowner concerns and also assess the likelihood of individual landowners to be willing sellers of their land and associated water rights to the project.

Concurrently, the Tribe prepared a survey and distributed it to Tribal members requesting input. Twenty-six Tribal members completed the survey. The majority of respondents showed strong interest in developing a Tribal wildlife management area, with high interest in wildlife viewing and nature education. Survey results compiled by the Tribe were submitted to the Mitigation Commission as a separate report in 1998. Other local public input was solicited through a series of presentations made by the Tribe to area high schools and at Tribal Council meetings.

During the feasibility analyses, many agencies were contacted to solicit input and obtain pertinent existing data on the project vicinity. These agencies included:

- Utah Division of Wildlife Resources
- Utah Agricultural Statistics Service
- Utah Department of Community and Economic Development
- Central Utah Water Conservancy District
- Natural Resources Conservation Service
- U.S. Bureau of Reclamation
- U.S. Fish and Wildlife Service offices in Salt Lake City, Vernal and at the Ouray National Wildlife Refuge

- U.S. Bureau of Land Management staff at Pariette Wetlands
- U.S. Bureau of Indian Affairs
- U.S. Army Corps of Engineers
- USDA Forest Service
- U.S. Geological Survey
- Ute Indian Tribe Cultural Resources and Fish and Wildlife Departments

Private individuals who provided technical information on wetlands, wildlife and water resources included Elizabeth Ammon (ornithology, Great Basin Bird Observatory), Mary Landin (restoration costs, Army Corps of Engineers National Mitigation Team Leader), David Cooper (cottonwood ages, University of Colorado) and Jack Schmidt (Duchesne River geomorphic history, Utah State University).

Early in the planning process, the lead federal agencies appointed representatives to be involved in a project Planning Team (Table 5-1). The first Planning Team meeting was held on April 15, 1997 in Salt Lake City. Between April 1997 and the initiation of the DEIS with Public Scoping Meetings, 18 additional Planning Team meetings were held, either in Salt Lake City, Heber or Fort Duchesne. The

Tribal Project Director communicated regularly with the Tribal Business Committee, the Tribal Natural Resources Director and the Tribal Fish and Wildlife Advisory Board. Tribal Business Committee members were invited to attend several Planning Team meetings held between April 1997 and the May 2001 scoping meetings.

Field tours were conducted by the Tribe on July 28-29, 1997; October 29, 1997; and May 16-17, 2001 for members of the Planning Team, interested Tribal members and interested individuals. Comments were solicited from all parties during the field tours and the wildlife personnel from the Ouray National Wildlife Refuge provided key input on the alternative conceptual plans. On April 17, 2001, U.S. Fish and Wildlife personnel conducted a field tour of the Refuge for the LDWP Planning Team, providing technical information on wildlife management strategies that had been the most cost-effective at the Refuge and ways to avoid more costly management strategies.

Public presentations were made in Salt Lake City on March 5, 2000, and February 27, 2001, to update the Mitigation Commission and the interested public on the project and to solicit comments.

| Table 5-1. LDWP DEIS Planning Team Members | |
|---|--|
| Agency/Organization | Representative(s) |
| Ute Indian Tribe | Ron Groves, Harley Cambridge, Kelly Cambridge |
| Mitigation Commission | Catherine Quinn, Mark Holden, Richard Mingo |
| U.S. Department of the Interior | Ralph Swanson |
| U.S. Fish and Wildlife Service | Lucy Jordan, Curtis Nelms, Ted Koehler, Larry Zeigenfuss |
| U.S. Bureau of Indian Affairs | Lynn Hansen |
| U.S. Bureau of Reclamation | Kerry Schwartz, Russ Findlay |

5.3 SCOPING PROCESS

A Notice of Intent (NOI) to prepare an EIS was published in the Federal Register on April 25, 2001. Public notices announcing the initiation of public scoping on the project were also published in the Salt Lake Tribune (May 11, 2001) and the Vernal Express (May 9, 2001). In addition to the public notice, the Salt Lake Tribune published a separate article on the proposed project in May 2001. Flyers publicizing the meeting were also posted in conspicuous locations throughout the Uinta Basin in May 2001. Announcements regarding the Uinta Basin meetings were made on two local radio stations (KNEU and KUEL). All relevant agency representatives, including those who participated on the Planning Team, local governments and landowners and others on the project mailing list received invitations to the scoping meetings.

“Scoping” is the initial public involvement process required by the CEQ regulations to help federal agencies determine issues and alternatives to be analyzed in the EIS. Results of the scoping meetings and comments received during the scoping process were used to establish the scope of the DEIS and focus the environmental analysis on important

issues and concerns. Public scoping meetings were held in Fort Duchesne on May 15, 2001 (11 people in attendance), in Roosevelt on May 15, 2001 (15 people in attendance), and on May 16, 2001, in Salt Lake City (11 people in attendance). Information on the project purpose, needs and specific goals, location of the project, alternatives that had been reviewed for feasibility during the planning process, and the types of activities and project features being considered was presented at these meetings. The meetings were recorded and all oral comments entered into the official record. Forms for written comments were provided both in the scoping invitations and at the public meetings. Thirty oral comments were received during the public meetings. Written comments were received from Duchesne County Water Conservancy District, Duchesne County Commission, Great Salt Lake Audubon, Utah Waters and the Stonefly Society of Trout Unlimited.

The DEIS Planning Team met on May 26 and June 5, 2001 to review all of the comments received and summarize issues and concerns raised by the public that would be considered during the NEPA impact analyses. These issues and concerns were restated as questions in the DEIS and used to identify impact topics and methodologies for analyzing impacts on

the resources. The questions are listed in each resource section and answered by the impact analyses presented in Chapter 4.

Issues and concerns raised during public scoping are summarized below by resource category. Individual comments that were similar were combined into a single summary statement.

5.3.1 Project Purpose and Need

- Identify the Tribal goals and the alternative that most appeals to the Tribe,
- The basis for the project size needs to be clarified. The width and length of the river corridor examined needs to be stated and the location of the project area in relation to the impact area explained,
- There is strong support for completion of the mitigation commitment made in 1965. State and federal agencies should make completion of the project a high priority, as SACS has been completed and supplying water to agricultural lands, but the mitigation obligations have lagged far behind. If the mitigation is not completed in a timely manner, all SACS diversions should be halted until the mitigation is completed, and
- The alternatives that rewater oxbows appear to provide the greatest wildlife benefits, but an alternative combining some elements of the riparian flow alternative should be developed.

5.3.2 Project Description

- The timing and duration of construction needs to be explained,
- The project budget and how costs were developed needs to be clarified,
- The location of each of the sites is hard to read on the maps provided. More landmarks are needed on the maps for people to understand where the project is located on the ground,
- The relationship of the project to the state-owned Mallard Springs area needs clarification,
- What is the relationship of this project to other water projects in the Uinta Basin? Will this project affect completion of other CUP water resource projects? What is the relationship of this project to other CUP mitigation projects, and can the different mitigation projects be coordinated or combined? Adding additional partners to the project would benefit the wetland resources by allowing an expanded project area,
- Any changes in access to public lands or the Duchesne River need to be disclosed, and
- Planning and funding for the long-term management of the project need to be presented in the NEPA document to allow comparison of the true long-term costs among alternatives.

5.3.3 Biological Resources

- The magnitude of the impacts on wetland and riparian habitats should be quantified and the values of both the impacted wetlands and the proposed mitigation wetlands evaluated,

- Acquisition of land within the Duchesne River floodplain, and providing flows sufficient for riparian benefit seem to most closely match the habitats and values that were lost due to the operation of SACS,
- All wildlife should be considered, not just waterfowl,
- Oxbow rewatering has provided substantial wildlife benefits on other projects and should be encouraged on this project to produce high-value wildlife habitat restoration,
- Connections between oxbows and the Duchesne River should be encouraged to provide nursery fish habitat,
- Active management of the project lands needs to be included to prevent weed proliferation, and
- Mosquito control is an issue that needs to be addressed.

5.3.4 Water Resources

- Water requirements for each alternative need to be displayed and compared to water availability to determine if there is sufficient water for the project. Water rights need to be evaluated,
- Effects of the project on Duchesne River flows need to be evaluated. Increases, decreases and any effects of altered flows on infrastructure or houses should be examined. Effects of any changes in flows on the Colorado River system should also be analyzed,
- The feasibility of the Riparian Flow Alternative should be reconsidered based on water rights, water availability and water costs, and

- The project may affect salinity input to the Duchesne River. Some alternatives, such as the large ponds, may increase Duchesne River salinity through both substantial depletions and evaporation and concentration of salts. Other alternatives may reduce salinity, particularly if land is retired. Effects of each alternative on salinity inputs to the Duchesne River need to be considered.

5.3.5 Land Use and Socioeconomics

- Economic benefits of the projects need to be displayed, including any increases in jobs and/or benefits to Tribal members,
- Payment in lieu of taxes doesn't adequately compensate the county for loss of tax revenue if private land is purchased. Effects of the land acquisition portion of the project on the tax revenues of Duchesne and Uintah counties needs to be evaluated,
- The counties generally support mitigating losses to Tribal resources as a result of SACS, but acquisition of private property for the project conflicts with county goals of no net loss of private land,
- Would a conservation easement be considered a net loss of private land,
- How will land acquisition be accomplished? Explain what options will be used for land acquisition – willing seller only, condemnation or land exchanges with other Tribal property. Will all land within the area boundary be acquired or will some individuals be allowed to remain on their property within the project area boundary,

- The analysis needs to look at the economic impacts of retiring agricultural land, if that will occur, as land retirement may have an economic impact on Duchesne and Uintah counties, and
- Effects of the project on both agricultural income and lifestyle needs to be considered.

Seven categories of issues and concerns were mentioned more often than others. These were: potential economic impacts, acquisition of private land by the federal government, long-term financing, mosquito and weed control, wildlife benefits and recognition of SACS impacts on wetlands with strong support for immediate completion of the mitigation obligation.

5.4 COORDINATION DURING DEIS DEVELOPMENT

The DEIS was developed through continued coordination between the Planning Team and the specialists on the Technical Team who prepared individual sections and analyses. Team members consisted of representatives of the Joint Lead agencies, cooperating agencies, and private consultants. Regular meetings were held with the entire Planning Team and representatives of the Technical Team. Small group working sessions were scheduled as necessary with specialists and appropriate members of the Planning Team. These small group working sessions were used specifically to guide wildlife, water resources and land ownership analyses.

A draft project description was submitted to Planning Team members on November 8, 2001, with written comments on the project description received from the Mitigation

Commission, DOI, Reclamation and the Tribe Business Committee. An Administrative DEIS was prepared with a revised project description and submitted to Planning Team members and other cooperating agencies on April 5, 2002. Written comments on the Administrative DEIS were received from the Mitigation Commission, DOI and the Tribe Business Committee. A Preliminary DEIS (PDEIS) was initiated in January 2003 and distributed to all cooperating and lead agencies, including Planning Team members, on April 30, 2003 for review and comment. Comments on the PDEIS were used to prepare the DEIS. The following agencies participated in the PDEIS review:

- U.S. Department of the Interior
- U.S. Bureau of Indian Affairs
- U.S. Fish and Wildlife Service
- U.S. Bureau of Reclamation
- Ute Indian Tribe Business Committee
- Ute Indian Tribe Fish and Wildlife Advisory Board
- Utah Reclamation Mitigation and Conservation Commission

The DEIS was filed with EPA on November 17, 2003, and a Notice of Availability (NOA) published in the Federal Register on November 24, 2003 (68 FR 65943). Public meetings were announced in the Federal Register NOA. The public comment period remained open until January 16, 2004. In response to requests, the comment period was extended for an additional 30 days by additional notice in the Federal Register on February 5, 2004 (69 FR 5567).

Subsequent to the DEIS release, Executive Order 13352 was issued on August 24, 2004,

and implementing regulations associated with this Executive Order were issued on June 6, 2005. These documents provide that local governments with resource jurisdiction or special expertise be afforded, upon request, cooperating agency status. Uintah and Duchesne counties expressed interest in participating more closely in the planning effort and were extended offers (September

15, 2006) to participate as cooperating agencies during the FEIS preparation. Subsequently, both counties agreed to join as cooperating agencies. Table 5-2 lists the LDWP Planning Team members for the FEIS preparation.

| Agency/Organization | Role | Representative(s) |
|---------------------------------|------------------------------------|---|
| Ute Indian Tribe | Cooperating Agency/Project Partner | Ron Groves, Harley Cambridge, Kelly Cambridge |
| Mitigation Commission | Joint Lead Agency | Mark Holden, Richard Mingo |
| U.S. Department of the Interior | Joint Lead Agency | Ralph Swanson |
| U.S. Fish and Wildlife Service | Cooperating Agency | Lucy Jordan, Larry Zeigenfuss |
| U.S. Bureau of Indian Affairs | Cooperating Agency | Lynn Hansen |
| U.S. Bureau of Reclamation | Cooperating Agency | Russ Findlay |
| Duchesne County | Cooperating Agency | Mike Hyde |
| Uintah County | Cooperating Agency | Mike McKee, Darlene Burns |

5.5 RELATED STUDIES

Related studies required by law or executive order have been prepared and integrated with this FEIS. The following sections briefly review these studies.

5.5.1 Fish and Wildlife Coordination Act (18 USC 661-667e)

The lead federal agencies consulted with FWS on fish and wildlife resources and habitats that would be affected by the LDWP. Consultation meetings were held periodically with FWS to discuss requirements for wildlife assessments and the schedule to complete the Fish and Wildlife Coordination Act Report. FWS submitted a draft Fish and Wildlife Coordination Act (FWCA) report on the DEIS to comply with requirements of the Fish and Wildlife Coordination Act. A subsequent

final FWCA report, addressing project changes displayed in the FEIS, will be prepared and submitted concurrent with release of the FEIS.

5.5.2 Endangered Species Act of 1973 (16 USC 1531 et. seq.)

The project partners consulted with FWS on threatened, endangered and candidate species and received a list of species in the impact area of influence. Section 4.4 of this FEIS was prepared by FWS and serves as a Biological Assessment for the LDWP.

5.5.3 National Historic Preservation Act (16 USC 470-470t)

The project partners consulted with the Utah State Historic Preservation Office (SHPO) on cultural resources that could be affected by the LDWP. A Programmatic Memorandum of Agreement (MOA) has been developed (Appendix F) authorizing the plan for survey, collection and documentation of cultural resources that would be affected by construction of the LDWP. A Final Cultural Resources Technical Report (Alpine Archeology 2002), prepared as a support document to this FEIS, is available from the Mitigation Commission or Tribe upon request.

5.5.4 Clean Air Act (42 USC 7401 et. seq.)

An air quality analysis has been conducted and integrated with this FEIS (see section 4.13 of this FEIS).

5.5.5 Executive Order 11988, Floodplain Management

Protection of floodplains and their

management has been included in the environmental analysis and integrated with this FEIS (see section 4.2 of this FEIS).

5.5.6 Safe Drinking Water Act and Clean Water Act of 1977 (33 USC 1251 et. seq.)

A detailed water quality analysis has been conducted and integrated with this FEIS (see section 4.6 of this FEIS).

5.5.7 Executive Order 11990, Protection of Wetlands

A detailed wetlands analysis has been conducted and integrated with this FEIS (see section 4.2 of this FEIS).

5.5.8 Executive Order 13186, Protection of Migratory Bird Habitat

A detailed analysis of wildlife habitat, including migratory bird habitat, has been conducted and integrated with this FEIS (see sections 4.2 and 4.3 of this FEIS).

5.5.9 Executive Order 13112, Invasive Species

A detailed analysis of invasive species has been conducted and integrated with this FEIS (see section 4.2 of this FEIS).

5.6 DEIS COORDINATION

This section describes coordination that was conducted during public review of the DEIS. The DEIS was filed with the Environmental Protection Agency on November 17, 2003, and made available to the public on that date.

Notices announcing the release of the DEIS were published in the Salt Lake Tribune (December 12, 2003), Uinta Basin Standard (December 16, 2003), Vernal Express (December 10, 2003) and Daily Herald (Provo) (December 11, 2003). Flyers publicizing the DEIS release and announcing dates, times and locations of public meetings were posted in conspicuous locations throughout the Uinta Basin in November 2003. Announcements regarding the Uinta Basin public meetings were made on two local radio stations (KNEU and KUEL). All relevant agency representatives, including those who participated on the Planning Team, local governments, landowners and others on the project mailing list received copies of the DEIS, which included an invitation to the public meetings.

5.6.1 Request for Official Comments

Approximately 200 copies of the DEIS were distributed by mail or provided electronically to federal and state resource agencies, individuals and organizations for official review and comment. DEIS copies were also available at public meetings for all individuals attending. Seven individuals picked up a copy of the DEIS at the public meetings. The following agencies and organizations received the DEIS for review:

- U.S. Department of the Interior
- U.S. Bureau of Indian Affairs
- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Department of Agriculture-Natural Resources Conservation Service
- U.S. Bureau of Reclamation

- Ute Indian Tribe Business Committee
- Ute Indian Tribe Fish and Wildlife Advisory Board
- Utah Department of Natural Resources
- Utah Division of Wildlife Resources
- Utah Division of Water Rights
- Utah Reclamation Mitigation and Conservation Commission
- Duchesne County Commission
- Duchesne County Water Conservancy District
- Uintah County Commission
- Duchesne County Mosquito Abatement District
- Uintah County Mosquito Abatement District
- Audubon Society
- Stonefly Society of Trout Unlimited
- Utah Waters
- Private individuals who requested a copy
- Other interested agencies

A complete mailing list of all agencies, organizations and individuals that received the DEIS, or picked the DEIS up at public meetings, is available upon request from:

Ute Indian Tribe, Wetlands-Fish and Wildlife
 PO Box 190
 Fort Duchesne, UT 84026

5.6.2 Public Meetings

Three public meetings were held on the DEIS; one in Fort Duchesne, one in Roosevelt and one in Salt Lake City. The hearing dates, times and locations were as follows:

Fort Duchesne DEIS Public Meeting

Date: December 16, 2003
Time: 6:00 p.m.
Location: West Junior High
East Highway 40
Fort Duchesne, Utah

Roosevelt DEIS Public Meetings

Date: December 17, 2003
Time: 6:00 p.m.
Location: Crossroads Senior Center
192 South 100 East
Roosevelt, Utah

Salt Lake City DEIS Public Meeting

Date: December 18, 2003
Time: 6:00 p.m.
Location: Bureau of Land Management
Salt Lake Field Office
324 South State Street
Salt Lake City, Utah

Oral comments were recorded at each of the meetings by both an official note taker and on tape. Informal comments were recorded on notepads during break-out sessions. Written comments were accepted until February 17, 2004.

5.7 RESULTS OF THE PUBLIC REVIEW OF THE DEIS

5.7.1 Introduction

This FEIS section describes the results of the DEIS public review process. The Public meetings consisted of three parts:

- Presentation by the project partners, which provided an overview of the project purpose and need, differences among alternatives presented in the DEIS, a summary of key issues addressed in the DEIS, and information on how to provide comments on the DEIS, obtain copies of the DEIS or obtain copies of technical reports,
- Break-out session in which the public was allowed to ask questions of individual team members and also provide informal comments. Informal comments were not labeled as to commenter, but were compiled to ensure that all comments provided informally were captured and addressed in the FEIS preparation, and
- A formal comment session in which the public was invited to make formal oral, or submit formal written, comments on the project and DEIS.

Oral comments were recorded at each of the meetings by both an official note taker and on tape. A total of 59 individuals attended the public meetings. Eighteen individuals provided oral comments (some provided oral comments at more than one meeting for a total of 20 sets of oral comments). Informal comments were recorded on notepads provided during the break-out sessions. Informal comments were not labeled as to commenter, but were compiled to ensure that all comments provided informally were addressed in the FEIS preparation.

In addition to the testimony received at the public meetings, the project partners received letters from 39 entities or individuals addressing the LDWP DEIS during the comment period.

5.7.2 Comment Letters and Responses

Each of the 39 comment letters was assigned a reference number (see Table 5-3) and each comment in the letter was identified with a number. The response to each comment is printed on the opposite page from the comment letter and is numbered with the corresponding number on the comment letter. All comment letters have been reprinted and are presented along with the comment responses at the end of this chapter.

Responses were presented for all substantive comments (those that presented new data,

raised new issues, or disagreed with the impact conclusions). When appropriate, DEIS sections were revised in the FEIS. Those comments presenting exclusively opinions about the proposed project were also recognized.

The responses either explain how/where the DEIS text was revised to incorporate the recommended change in the FEIS or to explain why a change was unnecessary. The responses to the comments that resulted in revising sections of the DEIS provide the location (FEIS chapter and section number) of the revised text.

| Last Name | First Name | Agency | Letter ID# |
|--------------------------------|-------------------------------|--|-------------------|
| Weight | James K. | Duchesne County Mosquito Abatement District | 1 |
| Romney | Steven V. | Uintah County Mosquito Abatement District | 2 |
| Ross Stradinger Peatross | Larry S. Lorna Kent R. | Duchesne County Commission | 3 |
| Haslem Abegglen McKee | David J. Jim Michael J. | Uintah County Commission | 4 |
| Shawcroft | Gene | Central Utah Water Conservancy District | 5 |
| Fowler | Kalecia | City of Myton | 6 |
| Nelson | Dale | Dry Gulch Irrigation Co. | 7 |
| Crozier | Randy | Duchesne County Water Conservancy District | 8 |
| Johnson | Ron | Duchesne County Weed Department | 9 |
| Taylor | Art | Duchesne-Strawberry River Water Users Association | 10 |
| Mortenson | Keith | Moon Lake Water Users Assoc. | 11 |
| Perceval | Paul | Natural Resources Conservation Service | 12 |
| Adams | Carl | State of Utah, Division of Water Quality | 13 |
| Harja | John | State of Utah, Resource Development Coordinating Council | 14 |
| Reimherr | Fred | Stonefly Society Chapter Trout Unlimited | 15 |
| Degiorgio | Joan | The Nature Conservancy | 16 |
| | | TriCounty Health Department | 17 |
| Kang | Nancy | U.S. Army Corps of Engineers | 18 |
| Heffernan | Beverley | U.S. Bureau of Reclamation | 19 |
| Ruiter | Dave | U.S. EPA - 8EPR-EP | 20 |
| Parker | Jill | U.S. Fish & Wildlife Service | 21 |
| Henderson | Wayne | Uintah Basin Irrigation Company | 22 |
| Snow | Gawain | Uintah County Farm Bureau | 23 |
| Merkley | Errol | Uintah County Soil Conservation District | 24 |
| Johnson | Bill | Uintah County-Vernal City Economic Development | 25 |
| Urie | Wayne | Utah Farm Bureau Federation | 26 |
| Wechsler | James A. | Utah Waters | 27 |
| Hadden | Gary | | 28 |
| Hanberg | Steve | | 29 |
| Jones | Gloria | | 30 |
| Justice | Lawerence | | 31 |
| Kettle | James | | 32 |
| Kettle | Dick | | 33 |
| Kettle | Jean & Dick | | 34 |
| Mathisen | Wendell | | 35 |
| Pike | Stewart | | 36 |
| Richens | Ken | | 37 |
| Thayne | Guy & Joyce | | 38 |
| Uresk | Daniel | | 39 |

5.7.3 Public Meeting Comments and Responses

5.7.3.1 Introduction

As shown in Table 5-4, 18 people (20 sets of comments) provided verbal comments on the

LDWP DEIS during the three public meetings. Each comment is presented, followed by a response. Comments are printed as recorded, where possible. For speakers who were inaudible on the tape, comments were paraphrased based on notes taken during the meeting. Comments that provided input on the scope of the analysis,

disagreed with the results of the analysis, suggested new data or analysis methods, or provided an opinion about the proposed project are included. Comments not pertaining

to the project are not printed below but can be reviewed on the audio tapes. The audio tapes, transcripts and official notes may be reviewed at the Ute Tribe-Wetlands office in Fort Duchesne, Utah.

| Table 5-4. DEIS Public Meetings. | | | |
|---|-------------------|----------------------|----------------------------------|
| Location | Date | Attendees (#) | Speakers/New Speakers (#) |
| Fort Duchesne | December 16, 2003 | 23 | 6 |
| Roosevelt | December 17, 2003 | 35 | 14/12 ¹ |
| Salt Lake City | December 18, 2003 | 1 | 0 |
| | Total | 59 | 20/18 |

¹ Fourteen individuals spoke at this hearing, of which two speakers also presented comments the previous evening.

Tables 5-5 and 5-6 list the commenters, their comments and comment responses for the public meetings in Fort Duchesne and Roosevelt, respectively. In most cases, the verbal comments expressed the same points raised in written comments and the reader is directed to the appropriate comment response prepared for the letters in section 5.7.2. Verbal comments that raise new issues are responded to within tables 5-5 and 5-6.

5.7.3.2 Fort Duchesne Verbal Comments

Six speakers provided verbal comments during the December 16, 2003, public hearing in Fort Duchesne, Utah. Twenty-two discrete comments were provided (see Table 5-5). All but two of these comments expressed the same points raised in written comments, which are addressed in detail in section 5.7.2.

Table 5-5. Public Meeting Comments at Fort Duchesne, Utah, December 16, 2003 ¹

| Commenter | Affiliation | Comment | Response |
|-----------------|------------------------|---|--|
| Kay Waite | MAD of Duchesne County | <p>“When this (the project) was first brought up and they came and talked to us, at the time we could see that there was no problem. However, there have been a lot of things that have developed in mosquito control and with mosquitoes in the last year or so – the advent of West Nile virus.”</p> <p>“And it’s on our doorsteps, it’s here (West Nile virus). It’s not something that’s going to wait until two or three years down the road; it’s here and it’s going to be here with us for a while. It’s something that’s bigger than we thought it was going to.”</p> | Please refer to the response to comment 1.1. |
| | | <p>“Now, as far as mosquitoes are concerned, we plan to run an integrated pest management program, one of which is to reduce sources and to take and use chemicals as little as we had to, but we are limited to a lot of things that we had that are real advantageous as far as controlling mosquitoes. Some of the mosquitoes have become resistant to a lot of the chemicals that we had to use in the past.”</p> | Please refer to the response to comment 37.3. |
| | | <p>“So, if we have all these extra sources and all these extra habitats for us to take and have to treat, we’ve got to be free to take and roam and get in there and take care of the mosquito problems as we deem necessary, to knock down the health threat that will be to the constituents in both counties ... we have to take and treat them, and we always have gone in, and we’ve been able to take it and go on any ground ... and treat. ... But we are limited ... and to actually take and treat or get on the ground and treat it is going to limit our ability to take and treat and take care of this.”</p> <p>“I don’t think that anybody knows exactly yet how they can control it. But we have got to do everything we can to minimize these effects that we have.”</p> | Please refer to the responses to comments 1.3, 1.4 and 39.7. |
| | | <p>“Birds are the reservoirs for the West Nile virus. ... They figured that birds had traveled and migrated across the United States and that’s how the virus is spread from east to west. It started in 1999 By providing more wetlands, it will also bring in more migratory birds, which also are carriers. Birds are the hosts of the virus. And the mosquitoes that feed on those birds, usually in our area ... in early spring ... then they start feeding on mammals ... and that’s where we come in as far as getting the virus ... and that’s what began showing up this year.”</p> | Please refer to the response to comment 1.2. |
| Brenda Goodrich | Individual | “And I just don’t get it, I guess. ...” | Please refer to the response to comment 3b.3. |

Table 5-5. Public Meeting Comments at Fort Duchesne, Utah, December 16, 2003 ¹

| Commenter | Affiliation | Comment | Response |
|-------------------------------|--------------------|--|--|
| Norman Cambridge ¹ | Individual | There are minerals that will be impacted by this. The current status doesn't provide for drilling. There should be compensation to deal with that. | Please refer to the response to comment 4a.17. |
| | | The DEIS does not include enough information on how private landowners will be able to access their property under the project. There could be serious impacts to individuals in terms of receiving services, obtaining loans, and taking care of their land. Changing access can affect both the Tribe and individual landowners. | Please refer to the response to comment 8a.8. |
| | | We need to understand how leases will be handled under the project. | Please refer to the response to comment 4a.6. |
| | | Acquisition of lands by the federal government precludes acquisition by Tribe and is against the Tribe's land use policy. The federal government needs to ensure that it fulfills its trust responsibilities to the Tribe in this project as it acquires land. | Please refer to the response to comment 36.1. |
| | | "Another concern I have is with water rights. Those lands, some of them are Class 1 water rights. ... Once those lands are inundated with water ... wetlands classifications, changes their classifications ... not sure how that's going to count as far as changing classification over because it will impact developers ... agriculture...." | Please refer to the response to comment 8a.2. |
| | | I am mainly concerned with the future of the people who have little or no influence. Some of the problems will not be fixable. | Please refer to the response to comment 4a.8. |
| Mike Montoya ¹ | Individual | This mitigation needs to be respected as it was an obligation incurred by the Central Utah Project. | Thank you for your comment. |
| Floyd Cox | Individual | "I don't want to be affected by this. ... It's really going to affect us in many, many ways if this goes through." | Thank you for your comment. Please also refer to the response to comment 4a.8. |
| | | "... We've just got to take a look at this thing and see if it's good for everybody and not just one bunch of people." | |
| | | "What about my mineral rights if this becomes law ... and I can't build on it no more?" | Please refer to the response to comment 4a.17. |
| | | "... I talked with my neighbors and the way it stands, we have no boundaries. We don't even know where we're at, we have no roads or anything showing us where our boundaries are. We don't know anything about it, really." | Please refer to the response to comment 4b.12. |

Table 5-5. Public Meeting Comments at Fort Duchesne, Utah, December 16, 2003 ¹

| Commenter | Affiliation | Comment | Response |
|-----------------------------|--------------------|--|---|
| Floyd Cox | Individual | “We had nothing to do with this project. We had nothing to say about it.” | Please refer to the response to comment 4a.1. |
| | | When you say that the salinity of things that are going to take place. When they build these ponds and things ... it’s going to affect the river; a lot more is going down the Colorado River.” | Thank you for your comment. Please also refer to the response to comment 3a.5. |
| Steven Hanberg ¹ | Individual | There’s going to be an increased wildlife depredation. | Please refer to the response to comment 29.2. |
| | | “Also, there’s going to be severe restrictions on lands ... but there’s no mention of restrictions on adjacent lands. ... We don’t know what restrictions will be required of us” | There will be no restrictions placed on adjacent lands. Section 2.1.1.7 of the FEIS has been revised to clarify this point. |
| | | “Water used. In the draft it refers to the fact that there’s adequate water on these properties.... Now it’s my understanding ... water that’s under Indian water rights has to be used where it belongs ... on the land.” | Please refer to the response to comment 5.3. |
| | | What happens if the project changes or if more land is acquired than needed? Will private land be returned to its previous owners? | Please refer to the response to comment 11.4. |
| | | We can’t afford to give up a portion of our income due to reduced operations. | Please refer to the response to comments 26.4 and 29.1. |

¹ Tape not audible. Some comments paraphrased based on the written notes taken during the public meeting. Paraphrased comments are not encased in quotation marks.

5.7.3.3 Roosevelt Verbal Comments

Fourteen speakers provided verbal comments during the December 17, 2003, public hearing in Roosevelt, Utah. Two of these speakers had previously provided comments during the December 16 hearing in Fort Duchesne. Fifty-one discrete comments were provided (see Table 5-6). All but two of these comments expressed the same points raised in written comments, which are addressed in detail in section 5.7.2.

5.7.3.4 Salt Lake City Verbal Comments

No verbal comments were provided during the December 18, 2003, public hearing in Salt Lake City, Utah.

5.7.3.5 Break-Out Session Informal Comments

Fifty-two comments were recorded during the informal break-out sessions conducted for all three public meetings. All but one of the issues raised in the informal comments were addressed in either the written or the formal verbal comments. The one issue raised during the break-out session that was not addressed in the written or verbal comments is addressed below.

Issue: Impacts on the Myton grain mill are not addressed. Will it be forced to close as a result of this project?

Response: The Proposed Action does not include any land upon which grains are currently produced. Therefore, the LDWP would have no impact on the Myton grain mill.

Table 5-6. Public Meeting Comments at Roosevelt, Utah, December 17, 2003

| Commenter | Affiliation | Comment | Response |
|---------------|----------------------|---|--|
| Steve Romney | MAD of Uintah County | <p>“One of the questions was this concept of mosquitoes being 2 miles from Myton and Myton being impacted by those mosquitoes. Well the fact of the matter is, even with a vector of West Nile virus, it is very well documented that that beast will travel 10 miles.”</p> | <p>Please refer to the response to comment 2.1.</p> |
| | | <p>“Oxbows on the Green River and the Duchesne River are unequivocally, of my opinion, ... the finest mosquito habitat in all of western North America. It produces a phenomenon called maximum carrying capacity in which the spring breed would sub up and/or overflow type situation. It can produce as many as 10 million mosquitoes per acre.”</p> | <p>Please refer to the response to comment 2.3.</p> |
| | | <p>“There was a commentary (that) when the vector is detected in the area then we may be able to use, quote, unquote, ‘stronger chemicals.’ First of all, the vector is already here. It is a little creature, we think, so far, from what we are able to get from CDC and other people, we think it is going to be the only important vector or carrier of West Nile virus in Uintah and Duchesne counties. It’s already here. I go through computer readouts virtually every day on the state of Colorado and what is going on over there this year it is just incredible. They have topped 2,600 human cases of mosquito-borne West Nile virus in human beings. They had 50 fatalities from meningitis, encephalitis, and various others equally that come along with this particular ailment when it fires up and goes full-blast.”</p> | <p>Please refer to the response to comment 1.1.</p> |
| | | <p>“Second strategy: special use permits to allow abatements to control mosquitoes. Apparently, I would have to ask permission to enter upon that property and monitor the mosquito population and then get a special use permit to do that.”</p> | <p>Please refer to the responses to comments 1.3, 1.4. and 39.7.</p> |
| | | <p>“(M)osquito control is extremely expensive. There are essentially no revenues for the area.”</p> | <p>Please refer to the response to comment 1.5.</p> |
| Clyde Killian | Individual | <p>“The farmer and the rancher is the best friends of wildlife that we can get. The better the farmer and the rancher the better the wildlife. And I think that going to down these drains and making wetlands out of it will deplete about 50 or 60 years of progress. My land has improved for at least 60 years. If the drains couldn’t be dammed off and go into wetlands, the wildlife’s not getting the water and they will move up into the farm ground.”</p> | <p>Please refer to the response to comment 29.2.</p> |
| Randy Crozier | DCWCD | <p>“As I went through the document, I think there is some inconsistencies that probably need to be looked at quite seriously in there. One of the things I would like to see you do in your mapping, if it could be possible, is actually go in and identify the water rights that are associated with each parcel of land that is identified in it.”</p> | <p>Please refer to the response to comment 8a.2.</p> |

Table 5-6. Public Meeting Comments at Roosevelt, Utah, December 17, 2003

| Commenter | Affiliation | Comment | Response |
|---------------|-------------|---|---|
| Randy Crozier | DCWCD | <p>“I went over to the BIA with their map in irrigation and found discrepancies on land ownership as well as, if you scale it out, it doesn’t match up. It needs to be put on to quad maps or something so you can follow it much better because I think that it’s an injustice to not be able to follow it through the section in that lower piece of a half-mile that we could not locate. Whether it’s part of the project or just does not exist, I don’t know, but we could not identify it with their maps matching up with the allotments and what-not that are showing on the map.”</p> | <p>Please refer to the response to comment 8a.1.</p> |
| | | <p>“On your points of diversion, I understand that supposedly there would not be shifts at points of diversion. That in order to take that out of the oxbow where you are showing the track coming out of it, that water is presently diverted through the Grey Mountain Canal. So, to me, there’s got to be a point of diversion change there. If you are bringing the water up from Ted’s Flat and diverting it up higher, I think that there is some real implications there if we are shifting point of diversions. I’m not sure just what takes place there.”</p> | <p>Please refer to the response to comment 8a.3.</p> |
| | | <p>“On your economic impacts, I am not sure that the added value has been addressed. That the product, after it leaves the farm on down, there is an added-on value, I don’t know exactly what that is but it’s probably from four to five, somewhere in that range of impacts that occur because of non-production of a base agricultural product, which I believe needs to be addressed and looked at quite extensively.”</p> | <p>Please refer to the responses to comments 3a.6 and 4a.9.</p> |
| | | <p>“It talks of salt load of returning basically eleven hundred extra tons back to the river. In this area you are in a 2.58 salt load per ton of return flow water back to the river. That would account that there would only be 400-acre feet of additional water returning back to the river, basically. I have a hard time believing that’s always going to return. I think that needs to be looked at extensively.”</p> | <p>Please refer to the response to comment 8a.12.</p> |
| | | <p>“And the depletion amount, where you’re changing from agriculture to wetland, probably needs to be looked at because there’s a depletion amount tied to a water right, not only a diversion right.”</p> | <p>Please refer to the responses to comments 5.2 and 5.3.</p> |
| | | <p>“(I)t shows a pipe that goes through Mallard Springs, which is also a portion of a mitigation project associated with the Bureau of Reclamation control project.... I don’t understand exactly what we are trying to do with piping through there, but I think that needs to be understood if the attempt is to dry that mitigation, it’s already taken place or just what the intent of that is.”</p> | <p>Please refer to the response to comment 8a.14.</p> |

Table 5-6. Public Meeting Comments at Roosevelt, Utah, December 17, 2003

| Commenter | Affiliation | Comment | Response |
|------------|-------------|--|---|
| Art Taylor | DCWCD | <p>“I would first like to address the Dude Young property: the Riverdell situation. Mark covered it quite well that that property was purchased for two reasons. We had three canals left on the canal rehabilitation program to do on the Duchesne River. ... And the other situation was that we needed mitigation for the problems that we caused on the Duchesne River by lining canals, and so, that place was designated to take care of that mitigation work. So the Riverdell North, that’s what it was for. And so I don’t like to see that incorporated in any way in with the rest of the project. ... I think that that land has already been committed. And so in no way should that be connected to the mitigation problems of the Strawberry Collections System.”</p> | <p>Please refer to the response to comment 8a.16.</p> |
| | | <p>“Another thing that I was quite concerned about was the fact that the powers-that-be have decided that all the mitigation for the Strawberry Collections System, which would take place out here in the Basin. Why not some if it in Wasatch County? Why not some it up in Salt Lake County? Why not some up in Utah County where some of the problems were created? Why do we need to take that impact all out here in the Uintah Basin?”</p> | <p>Please refer to the response to comment 3c.1.</p> |
| | | <p>“I was very disappointed ... in these maps that are in this book. There is nothing to tie it to. Even county roads are not on the map. Section lines aren’t on the map.”</p> | <p>Please refer to the response to comment 8a.1.</p> |
| | | <p>“Another issue I want to address and I’ve been associated with the Farm Bureau and that is on the taking of private property. I don’t know of any and I might be wrong on this. ... I am opposed to the forcing of private property sale. It says in here and they’ve indicated that they want to take private property from willing sellers. I, myself, know that they can make willing sellers out of you.”</p> | <p>Please refer to the responses to comments 8a.1 and 8a.7.</p> |
| | | <p>“In 2001 when the hearing was held over at Moon Lake building, it was brought up with the fact that the county had a plan that calls for no net loss of private property in the county. This was brought up, but I notice in here it indicates that this program doesn’t have to abide by that land because the commitment was made before that plan went into effect.”</p> | <p>Please refer to the response to comment 7.2.</p> |
| | | <p>“When we talked in 2001 it was suggested that chance of exchange of property. If the Tribe wanted to purchase or take over property we would follow the guidelines for the area they could exchange, but I know that nothing has been said on that in here. It might be something to look at.”</p> | <p>Please refer to the response to comments 29.3 and 35.3.</p> |

Table 5-6. Public Meeting Comments at Roosevelt, Utah, December 17, 2003

| Commenter | Affiliation | Comment | Response |
|------------|-----------------|--|---|
| Art Taylor | DCWCD | <p>“I am opposed to the forcing of private property sale. ... I don’t know of any single ranch total that is included in this. I don’t know of any single ranch that is part of a ranch for a lot of people. To take that is like breaking up a set. And how much is it worth to that individual to break up a set? Just to take a piece of their property, is it going to run him out of business? I think that needs to be considered.”</p> | <p>Minor adjustments have been made to boundaries. Also, determination of “Fair Market Value,” whether for willing seller or eminent domain, considers “damages” to any remaining property and if so, what the FMV is.</p> |
| | | <p>“Another thing that the Farm Bureau, if the county has a policy that they want to condemn property. In here it says they will pay the value, the appraised value. There is no line-item, cash line-item, on an appraisal sheet for the attachment that you have as an individual for the sentimental value that you have as an individual for that property. And the Farm Bureau passed a policy that if it is condemned, it ought to be 200 percent of the appraised value of what you get.”</p> | <p>We recognize the sentimental value landowners have to their land. However, under federal law we are required to compensate landowners for the market value of the highest and best use of their property but not for intangibles such as sentimental value. As federal agencies, the Department of the Interior and the Mitigation Commission must comply with federal law and not the Farm Bureau’s policies.</p> |
| Larry Ross | Duchesne County | <p>“Duchesne County was not included in the discussions to either initiate the plan or what went in to the plan. We were not asked for comments or neither invited to the table. We think that in today’s world that is not appropriate. The county should be a cooperating agency in these kinds of things, so the people’s representatives are at the table. And any future discussions about this the counties need to be invited to the meeting.”</p> <p>“It is my understanding that notification of the meeting schedule was minimal and not adequately advertised in the proper time frames.”</p> | <p>Please refer to the responses to comments 3a.1 and 3b.1.</p> |

Table 5-6. Public Meeting Comments at Roosevelt, Utah, December 17, 2003

| Commenter | Affiliation | Comment | Response |
|------------|-----------------|---|--|
| Larry Ross | Duchesne County | <p>“I expressed my concerns along with what Art has said about the loss of private lands to public ownership. The document indicates that the planning process or the Central Utah Project started back in 1965, and then in ‘82 there was legislation, and then in ‘88 and ‘92, again putting the mitigation program into place. Uintah County’s land use plan went into effect in 1996; Duchesne County’s in 1997. Both of those plans were in place and have the statements as to no net loss prior to when this plan was started by (UBOS). And so the county asserts that you have improperly put this plan into place without the involvement with the people of Duchesne County.”</p> <p>“I don’t know if I said this properly so you can understand what I just said about no net loss. No net loss from private ownership to federal or state ownership to government ownership. Our plan calls for, in that case, the same amount of acres, a similar type of acreage would be then purchased or sold back into private ownership so there is no net loss to private ownership in Duchesne County.”</p> | Please refer to the response to comment 3a.2. |
| | | <p>“I believe that there is an adverse effect on the salinity program. This thing, organization, the Bureau of Reclamation, has worked closely with agricultural and farmers and ranchers to help private land to initiate and to put in place salinity control programs. This program, in my opinion, and this project is the reverse of what we have been doing for the last several years. More salt will now enter the Duchesne River than what the contracts call for.”</p> | Please refer to the response to comment 3a.5. |
| | | <p>“According to my calculations this project, with enhanced mosquito opportunity, would affect over 10,000 people in Duchesne and Uintah counties. Mosquitoes will fly 20 miles that will take in Randlett, Fort Duchesne, Roosevelt, Myton and all the rural communities that takes in almost both the eastern and western sides of Duchesne County’s whole population. That’s a problem.”</p> <p>“The document calls for some six or 700 acres of new mosquito habitat that would be created. My calculations call for about 3,000 acres because present habitat that has new water and additional water that gets bigger and bigger, therefore, we have many more acres of water, standing water, than what the document calls for.”</p> | Please refer to the responses to comments 2.1 and 2.3. |
| | | <p>“The document says that 2.8 percent of the cattle production will be reduced by this project in the counties. When we turn that 2.8 percent into money that has an additional factor of turning over four to five times, we get into a large amount of money. It affects business, it affects the schools, it affects the operations and the social climate in the whole area of Uintah and Duchesne counties.”</p> | Please refer to the response to comment 4a.9. |
| | | <p>“Eliminating grazing on 6,212 acres; that’s a serious problem for agriculture.”</p> | |

Table 5-6. Public Meeting Comments at Roosevelt, Utah, December 17, 2003

| Commenter | Affiliation | Comment | Response |
|------------------|--------------------|--|---|
| Ken Richens | Individual | “I do not know why I was not invited to this meeting. I had to find out through the back door.” | Please refer to the responses to comments 3a.1 and 37.1. |
| | | “I am a little upset because it is going to affect my income drastically. If this happens, I am out of the cattle business. The lion’s share of my money comes from the ground that you are talking about.” | Please refer to the response to comment 37.4. |
| | | “The weed problem, tall white top. ... I don’t have a lot of faith in weed control (any) more than mosquito control.” | Please refer to the responses to comments 3a.7, 7.7, 9.1 and 11.5. |
| | | “This goes against everything I’ve tried to do. I’ve tried to control water ... the salt; I thought we were trying to keep the salt out of the Colorado. And now we turn around and bring the water back in.” | Please refer to the response to comment 3a.5. |
| | | “I don’t like it. I am against the whole thing. It will definitely have an impact on my lifestyle and my family’s lifestyle, as it will others.” | Please refer to the response to comment 4a.8. |
| Newell Richens | Individual | “It will be taking 80 acres to get into this project if it goes through and it affects me quite a lot. On your tax base, I don’t know where you got your tax information, but on my 80 acres and my home I pay more than \$699.” | Please refer to the response to comment 6.5. |
| | | “I’d be willing to make a trade if the Ute Tribe wants to trade for that 80 acres, that would be something similar to it. ... I think (land trades are something) you ought to look at.” | Please refer to the response to comment 29.3. |
| | | The mosquitoes you’ll never control; there’s no way. And weed control; it won’t be done. Let’s see if you can control those Russian olives.” | Please refer to the responses to comments 1.3, 3a.7, 7.7, 9.1 and 11.5. |
| John Swasey | Individual | <p>“The first introductory in the summary, the project is to respond to fulfill mitigation commitments made to the Ute Tribe as a result of the development of the Bonneville Unit. I didn’t read what those commitments were in this book. What commitments was made to the Ute Tribe?</p> <p>“Second page on the summary, dealing with Ute Tribe again; what hunting and wildlife and the important stuff of the tribe was taken away from? I didn’t see that in the book either.”</p> | Please refer to the response to comment 4a.3. |

Table 5-6. Public Meeting Comments at Roosevelt, Utah, December 17, 2003

| Commenter | Affiliation | Comment | Response |
|-------------|-------------|--|---|
| John Swasey | Individual | <p>“What I can see here happening is the junior water rights on the Duchesne River will be impacted greatly, because you’re going to use a whole lot more water putting this wetland together than has been used prior to this. And your comments is, ‘Well, they can just get a little more water from the CUP.’ That is impossible. It is impossible because many of the junior water rights are not project lands and they will simply lose.”</p> | <p>Please refer to the response to comment 4b.9.</p> |
| | | <p>“Another concern of mine is all types of recreational use will be somewhat limited by the requirement of having to obtain a Tribal permit. I think if we ever give land and have to get a permit to access it is really bad. The fee land should be left open to the people who give it up and all the rest of the people just like it was public land.”</p> | <p>Please refer to the responses to comments 4a.21 and 8.9.</p> |
| | | <p>“(T)he very reason we needed to have a county plan was so the county could be at the table... I think that’s something the federal government ought to be reminded of quite often. ... agree that the mitigation should be done on the Wasatch Front.”</p> | <p>Please refer to the response to comment 4b.1.</p> |
| Lee Moon | Individual | <p>“When I came to this meeting I was wondering if this was just all an exercise in futility. In other words, you just go through the process, take the comments, and then still do what you want. And I would like to know whether or not we have any recourse or whatever, if we have any recourse to prevent some of these things that are taking place that we disagree with.”</p> | <p>The project partners have considered all public comments, both written and oral, and have modified the Proposed Action significantly in response to the public comments. Unfortunately, it is not possible to meet the Purpose and Need for the project without implementing some measures that some may find objectionable. For instance, the acquisition of private land is a necessary part of the project in order to meet minimum mitigation goals. Here again, adjustments have been made in response to public comment.</p> |

Table 5-6. Public Meeting Comments at Roosevelt, Utah, December 17, 2003

| Commenter | Affiliation | Comment | Response |
|-----------|-------------|---|--|
| Lee Moon | Individual | | During implementation, every effort will be made to avoid or minimize adverse effects on people, businesses, lands, and other activities in the project area. |
| | | “I feel that you throw out these figures that like the AUMs would only be reduced like 2.8 percent. As Larry Ross indicated, over some 6,000 acres that will be taken out of livestock production, which probably translates to probably 3,000-some-odd cows.” | Please refer to the response to comment 4a.9. |
| | | “Well, just on the selling of those cows alone, that’s 1.6 million dollars right there alone, besides the revolving effect and the turnover effect.” | Please refer to the responses to comments 3a.6 and 4a.9. |
| | | “So we are talking about millions of dollars here that will be lost in economic to the county and to this area all in exchange for perhaps what -- three jobs? In the end when this thing is all done after the construction and it would supply three jobs to three individuals to maintain it. I don’t see that as a very good square and as a very good tradeoff.” | Please refer to the response to comment 31.2. |
| | | “I feel like the mosquito problem is a very serious one, especially with the West Nile that is going to affect us all.” | Please refer to the response to comment 1.1. |
| Floyd Cox | Individual | “I’d like to say a few things about my land. (This project) will break me. My cows, I run over 200 head and that takes all my land away from me that I can run anything on.” | Please refer to the response to comment 3a.3. |
| | | “I would like to read some reports out of this. ‘Fee land acquired by the federal government from private land owners will be owned by the United States and subsequently managed by the Tribe under an operating agreement to be negotiated.’ We have no idea what’s going to be negotiated.” | Section 2.1.4.3 of the DEIS listed the items to be included in operating agreements. This section has been updated for the FEIS and additional details provided for mosquito and weed control plans. |

Table 5-6. Public Meeting Comments at Roosevelt, Utah, December 17, 2003

| Commenter | Affiliation | Comment | Response |
|-------------------------------|--------------------|---|--|
| Louise Sainsberry | Uintah Co. | “There are some ... very serious problems with this document. Commissioner Ross addressed many of them, which we support. We were not at the table. We do have a county plan, consistency needs to be met, and we do want the people who live on this side of the county to know that we are concerned about the economic impacts that this will have both on you and our county. The health issues from the West Nile virus, as well as how it will affect our water rights, and how we can continue to develop our county.” | Thank you for your comment. Please also refer to the responses to comments 4a.1, 4.2 and comments 1.1 through 1.5. |
| Kathleen Cooper | Myton | “We oppose this project because it will have a drastic impact on the mosquito population in Myton City.” | Please refer to the responses to comments 1.1 through 1.6. |
| | | “It will (adversely) affect the ... economy.” | Please refer to the response to comment 4a.9. |
| Norman Cambridge ¹ | Individual | The plan needs to address access; mineral development and land exchange should be considered | Please refer to the responses to comments 4a.17 and 8a.8. |

¹ Tape not audible. Some comments paraphrased based on the written notes taken during the public meeting. Paraphrased comments are not encased in quotation marks.

Comment Letters and Responses
(refer to Section 5.7.2)

Comment Letter No. 1

Comment Letter# 1

From: Duchesne County Mosquito Abatement District
P.O. Box 1951
Roosevelt, Utah 84066
Tuesday Dec 16th 2003

MITIGATION COMMISSION
OFFICIAL FILE COPY
CLASSIFICATION
PROJECT

DEC 19 2003

To: Utah Reclamation Mitigation
And Conservation Commission

| DATE | INITIALS |
|----------|----------|
| 12/16/03 | MS |
| | |

Reference to- Lower Duchesne River Wetlands Mitigation
Project

It is the Feelling of the Duchesne County Mosquito Abatement District that the impact on the public in and around the Myton area and along the whole corridor of the project, was a little understated in the (DEIS). Since this project was put together there have been some significant changes as far as Health risks to the public to whom this project would effect. West Nile Virus Has emerged as a bigger problem than at first anticipated and poses a great health threat to us all. This past year we have had one Human case in Utah and wouldn't you know it was on the reservation of all places, there were 35 confirmed cases of west Nile virus in Horses in the state. It is felt that Migratory birds are the carriers of the Virus and this is how it is carried across the country. By creating more habitat for migratory birds it increases the risk of the virus moving at a faster rate. This also creates habttat for more Mosquito to breed and hatch off.

1.1

1.2

Some of the concerns of the Mosquito abatement District is one of who will regulate the access to these areas of concern , and as addressed in the (DEIS) it said that a conditional use permit to conduct our work on these wetlands would be issued and that the use of BTI would be allowed , and that Golden Bear Oil would be the two pesticides of choice to take care of the problems with mosquito Larva. We feel that to be limited

1.3

Responses to Comment Letter No. 1

1.1 The project partners agree that West Nile Virus (WNV) impacts were understated in the DEIS. WNV had not been detected in Utah prior to the publication of the DEIS and had not been identified as a large issue during discussions with the Duchesne County MAD. Section 4.10 of the FEIS has been expanded to include additional discussion of WNV.

1.2 The commenter is correct in that at least 284 species of migratory birds have been found to carry the WNV. However, the role of migratory birds in disease transmission and spread is still being debated. For example, the CDC (2003) states that “the contribution of migrating birds to natural transmission cycles of dispersal of both WNV and SLE viruses is poorly understood.” Marra et al. (2004) identify that “Multiple dispersal agents were probably involved in the movement of the [West Nile] virus, including infectious migratory and resident birds, dispersing mosquitoes, and human-assisted mosquito movement... conclusive data implicating viremic birds as major dispersal agents of WNV in North America are currently not available”.

There are many reasons why the role of migratory birds in WNV is being questioned. Although many bird species have been found to carry WNV, only a small subset of the total number of birds that can carry the virus are able to pass it on to mosquito vectors. Mallards are an example of a migratory bird species that has been shown to carry the WNV without being able to transmit the disease. Another subset of birds that can both carry and have the ability to pass the virus on are peri-domestic birds, or birds that have adapted to living in close proximity with humans such as blue jays, common grackles, house finches, American crows, and house sparrows (Marra et al. 2004).

Under the Proposed Action, habitat for migratory peri-domestic birds will be decreased and habitat for neo-tropical migratory species increased. It is too speculative to suggest that the LDWP will either reduce or increase the rate of WNV spread as a result of increasing habitat for some migratory bird species while decreasing it for other (mostly peri-domestic) migratory species.

1.3 The intent of section 2.1.4.5 of the LDWP DEIS was not to identify new restrictions on mosquito control but to emphasize wetland larvicide treatments over broad-scale adulticide use. This matches the treatment protocol currently being used by the Duchesne County MAD. The LDWP would fund the Tribal mosquito control department for treatment within the LDWP project boundaries. Section 2.1.4.5 of the LDWP FEIS has been revised to include this information and a mosquito control plan has been added to Appendix G.

to these two chemicals as the primary pesticides would limit us to control the problems that could get out of hand, if these were the only options that the commission allowed. We have not had to have conditional use permits to take care of the problems along this stretch in the past, and would pose a restriction, that would not be in the best interest of the health of the constituents we have to serve in our county.

1.4

With this new habitat to take care of it means that we would have to look at more budget money from the county's we serve and the people we serve. It is our feeling from talking to constituents in the county they are taxed to death anyway and to add the burden of taking care of more wetlands that would only benefit a very few would be more than they can take at this time. Could the Ute Indian Tribe budget and come up with more money to take care of this problem that they want to create? It is a burden of both financial and manpower put upon us as a mosquito abatement district. With West Nile hitting us as hard as it has in other states is a burden that we don't want to take upon ourselves or tax our constituents for this project.

1.5

In this past year alone the Center of Disease Control has documented as of Dec 10th the following information on the activity of West Nile in the surrounding states like Colorado, New Mexico, and Wyoming the following— In Colorado there were 2477 cases of Human West Nile and 45 Deaths. New Mexico there was 202 cases of Human West Nile and 4 Deaths. In Wyoming there were 368 Human Cases and 9 Deaths now these are our neighbors and with whom we share common borders and interest, in the future we feel that this could pose quite some risk to us here in this area of this state. This year there have been 8734 cases of Human West Nile Virus, and a Death count of 208 with almost one quarter of all deaths coming from these neighboring states Colorado being

1.4 Please refer to the response to comment 1.3.

1.5 Under the Proposed Action, the LDWP would fund an expansion of the existing Tribal mosquito control program that is specific to the LDWP project area. This would be funded by a combination of the Tribal mosquito control program and federal funds associated with the LDWP O&M budget. This information has been added to section 4.10.6.2 of the LDWP FEIS.

the hardest hit this past year. This is close to home and is a concern of all Mosquito Abatement Districts in the Utah area, and to have more wet lands to create more problems for the spread of this sometimes fatal Virus poses the utmost concern.

Now that you are proposing these new wetlands, on our doorstep we have some serious concerns in Duchesne County. Wetlands are beautiful and provide some great habitat for wildlife, but the downside of this is it also creates more problems for Mosquito control. As reported these are just the Human Cases of West Nile Virus. There were 4426 horse cases in the country this past year and we had 35 cases in this state with most of the cases coming from the counties of Duchesne and Uintah. So we have the makings of a real epidemic of which we have not seen the likes for quite some time. For this reason we would ask you to reconsider your proposals on these wetlands at this time.

1.6

Respectfully


Mr. James K. Weight Director and Mg. DCMAD

1.6 As a mosquito-borne disease new to the US, the degree to which WNV would become an epidemic locally was unknown in 2003. WNV was first detected in UT in late 2003 and was predicted to cause an epidemic in 2004. The epidemic was predicted to occur and spread regardless of whether or not the LDWP was constructed. The DEIS stated that the LDWP would not initiate construction until the spring of 2007. This date has been revised in the FEIS to a likely construction start of spring 2009. Therefore, the LDWP would not result in either the introduction of WNV into the project area, nor cause the outbreak of an epidemic.

The predicted epidemic of 2,000 or more human cases and 45 fatalities per year in Utah did not occur. In the four growing seasons between 2003 and 2006, there were a total of 26 human cases of WNV in Duchesne and Uintah counties, with the greatest number of cases recorded in 2005. This is much less than predicted

Regardless of the degree to which WNV has become the predicted epidemic or not, the project partners agree that WNV must be addressed in greater detail than in the LDWP DEIS. To this end, section 4.10 has been revised to provide expanded discussion of the WNV and a mosquito control plan has been added to Appendix G.

Uintah Mosquito Abatement District

Director
Steven V. Romney

P.O. Box 983
Vernal, Utah 84078

Phone: 435-789-4105
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1/13/04

Ron Groves
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026

Dear Mr. Groves:

Below are my comments regarding the Lower Duchesne River Wetlands Mitigation Project Draft Environmental Impact Statement.

I am deeply concerned with the greatly increased mosquito production which would result from the proposed action as described in the draft EIS summary dated November, 2003. An immediate and most urgent concern is that of the coming huge increase in the number of mosquito-borne human and equine West Nile Virus (WNV) infections in Utah in 2004 and thereafter. In 2003, the state of Colorado (map with viral epidemiology and statistics enclosed) was severely impacted with over 2,500 human WNV infections including 47 fatalities and an alarmingly high incidence of associated WNV meningitis and WNV encephalitis. Since the introduction of WNV to North America in 1999 (New York City), the virus has rapidly spread westward to where in the late summer and autumn of 2004, WNV infections in one human being (Fort Duchesne) and some 30 horses were first recorded in Utah. Further Utah infections were prevented by the onset of colder temperatures and the cessation of mosquito biting activity. With the example of Colorado in 2003, there is every reason to anticipate a similar outcome for the Uintah Basin and other parts of Utah in 2004. Once here, WNV will become permanently established as a very serious human and veterinary health threat. With due consideration for the potential mosquito-related adverse effects upon local public health, ranching, agriculture, outdoor recreation and tourism, I believe that now is a very poor time to consider the future implementation of the project as proposed.

2.1

A serious additional concern lies in the substantial funding which would be required for chemical mosquito control throughout the site as proposed. Due to the sheer size and remote location of the area, the primary means of control would have to be accomplished by way of very large scale and expensive applications of pesticides by aircraft (provided the proposed development of EIS special use permits were to truly come to pass and they indeed actually allowed for the use of such pesticides). All budgetary monies used by the abatement district come exclusively from Uintah County property taxes. The tribal lands in question would therefore generate no funds whatever for use by the district for the very costly control of mosquitoes upon the same. This presents a very real funding problem for which I can see no satisfactory or immediate solution.

2.2

Responses to Comment Letter No. 2

2.1 Please refer to the response to comment 1.6.

2.2 Please refer to the response to comment 1.5.

Comment Letter No. 2

I have carefully considered the issues regarding mosquito production in the region to be affected by the proposed Mitigation Project. I have also read the "two different strategies" for reducing the number of mosquitoes produced, the mosquito habitat to be created as well as eliminated, the biology, ecology, disease vector potential and anticipated/hoped for behavior of some of the mosquito species involved, etc., as set forth in the EIS by the wetlands biologists or specialists who may have been assigned to the project. As based upon my 29 years of very practical, on-location experience in public health mosquito control in Uintah County, Utah, I see in those EIS statements an incredibly superficial, if indeed any grasp at all of the hard realities common to real world mosquitoes and their prevention and control. Those good intentions and wishful thinking as set forth in the document would, I believe, prove grossly inadequate as especially when so very much is at stake.

2.3

Thank you, sincerely for your interest and consideration in this important matter.

Respectfully,



Steven V. Romney, Ph.D., Director

2.3 Please refer to sections 2.1.4.5 and 4a.10.6.1 of the LDWP DEIS in which both chemical treatments to be used for mosquito control and design considerations were described. It is unclear what the “two different strategies” referred to by the comment refers to, as two levels of chemical mosquito control, three design considerations and several aspects of a mosquito control plan were addressed in these sections. The DEIS clearly states on page 2-30 that chemical controls would be used, and that “certain other biological or physical control procedures could be used to reduce mosquito populations,” but it does not state that these other controls would be the primary control measures. To the contrary, water management and biological controls were identified as components of a larger mosquito control program, which is the approach recommended by the US Center for Disease Control (CDC). According to the CDC, “Prevention and control of arboviral diseases is accomplished most effectively through a comprehensive, integrated mosquito management program using sound integrated pest management (IPM) principles. IPM is based on an understanding of the underlying biology of the transmission system, and utilizes regular monitoring to determine if and when interventions are needed to keep pest numbers below levels at which intolerable levels of damage, annoyance, or disease occur. IPM-based systems employ a variety of physical, mechanical, cultural, biological and educational measures, singly or in appropriate combination, to attain the desired pest population control.” (CDC 2003, p.27). The FEIS has been revised to clarify that the LDWP would use all recommended US Public Health Department IPM components for mosquito control and have added a mosquito control plan to Appendix G that describes all of the proposed IPM components.

It is unclear from the commenter’s letter what specific areas of mosquito ecology and behavior are being questioned. However, the commenter did identify the following areas of concern during verbal comments at the Roosevelt public meeting on December 17, 2003:

- Average and not maximum mosquito flight distances were reported in the LDWP DEIS; *Culex tarsalis* is a stronger flier than noted
- The degree to which reflooded oxbows would provide mosquito habitat was understated; oxbows provide the “best” mosquito habitat; regardless of the water depth, [the LDWP] will still have a fringe of mosquito habitat along the edges
- Each acre of land in the project area contains 10 million (overwintering) mosquitoes that will hatch in the spring; Pasture broods overwinter as eggs that will hatch as soon as irrigation is turned on in the spring or when water subs up

Flight distances. The commenter is correct that only average mosquito flight distances were reported in the DEIS. The average distances cited were based on data provided by reputable sources such as the American Mosquito Control Association, the Utah Mosquito Abatement Association and the US Center for Disease Control. This is because the average flight distances are generally more meaningful than maximum flight ranges, as most mosquitoes do not fly far from their hatch sites (Marra et al. 2004). Typically, 90 percent of all adult mosquitoes disperse from 0.5 to 2-3 miles from their hatch site (Knight et al. 2003). However, some mosquitoes do disperse farther than the average. Romney (March 25, 1996) reported in the Vernal Express, flight distances of up to 20 miles (species and source of data unknown). In published literature, *Culex tarsalis* has been documented as flying 8 to 10 miles in two evenings and has been trapped up to 25 miles from breeding sites (Moore et al. 1993). The LDWP FEIS has been revised to include both average and maximum recorded flight ranges for the dominant mosquito species in the project area.

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Oxbows provide the best mosquito habitat. It is unclear what “best” habitat means. “Many land uses provide habitat for mosquito development. Irrigated agriculture, ruderal lands with shallow, isolated pools, dump sites, and ephemeral wetland areas all may serve as significant mosquito breeding habitat” (Knight et al. 2003). Additionally, mosquitoes can be classified into two general groups based on their egg-laying and hatching behavior (Knight et al 2003), each of which occupies different habitats. These groups were referred to as temporary pool and permanent water mosquitoes in the LDWP DEIS. This terminology has been revised in the FEIS to reflect more recent classification into either floodwater mosquitoes or permanent/semipermanent aquatic habitat mosquitoes.

The project partners agree that “regardless of the water depth, [the LDWP] will still have a fringe of mosquito habitat along the edges.” Section 4-10 of the LDWP DEIS identified that there would be a net increase in mosquito habitat under the Proposed Action. The habitat discussion in section 4.10 of the LDWP FEIS has been revised to emphasize this point.

Although the LDWP DEIS did identify the two main ecological groups of mosquitoes, the mosquito habitat analysis treated all potential mosquito habitat as equal. The assumption was that all irrigated pasture, wet meadow and shallow marsh habitat could provide potential mosquito breeding habitat. The analysis did not attempt to separate edge habitat, shallow water habitat and open water habitat. This analysis has been modified in section 4.10 of the LDWP FEIS to include a discussion of the differences in mosquito breeding habitat by wetland type.

Overwintering pasture broods (10 million eggs/acre) will hatch in the spring. As noted above, there are two general groups of mosquitoes in Utah: floodwater mosquitoes and permanent/semipermanent aquatic habitat mosquitoes. The Project partners acknowledge that “pasture broods overwinter as eggs that will hatch as soon as irrigation is turned on in the spring or when water subs up,” and that densities of 10 million (overwintering) mosquito eggs per acre of land subject to irrigation floodwater can be reached. However, these overwintering eggs are from floodwater mosquitoes which are not disease vectors in Utah. Additionally, these densities occur right now in irrigated pastures and would continue to occur under the LDWP.

The number of eggs laid in the soil over winter is irrelevant to disease transmission by *Culex tarsalis*, a permanent water mosquito and the only known WNV vector in the Uinta Basin. *Culex* eggs are laid in open water and do not overwinter.



DUCHEсне COUNTY COMMISSION

Larry S. Ross, Chairman; Lorna Stradinger, Member; Kent R. Peatross, Member
P.O. Box 270
Duchesne, Utah 84021-0270
Phone (435) 738-1100
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December 19, 2003

Mitigation Commission
Attn: Mark Holden
102 West 500 South #315
Salt Lake City, UT 84101-2328

CC: Ron Groves, Ute Indian Tribe

RE: Lower Duchesne River Wetlands Mitigation Project (LDWP)

The following comments are a representation of the Duchesne County Commission viewpoint as they relate to the Draft Environmental Impact Statement on the lower Duchesne River.

The Central Utah Project created a drastic change in flows of the Duchesne River. Where there was year round stream flows, the project has reduced the normal flows to less than 5% of normal, which of course has changed the riparian habitat in the stream channel. The historical water is now being diverted to the Wasatch Front by large construction and collection projects that have taken 102,000 acre-feet of water that normally flowed in the river. The project failed to consider any new growth water for Duchesne County. All the water collected and delivered to the front is new growth water for the front. All the mitigation that is required in the draft document is for Wasatch Front benefit with the exception of several canal projects east of Duchesne City.

The Bureau of Reclamation and Mitigation Commission have previously purchased conservation easements in perpetuity, have made outright purchases and have exercised its eminent domain authority on the river systems of the Duchesne, Rock Creek and Strawberry Rivers. The trans-basin diversion has harmed the tribal lands as well as private landowners. Your concern for private property and its owner/owners is not treated at all in this document. Your main focus is for SACS mitigation and the tribe's interests. This draft plan is inappropriate because the owners of 2154 acres of private land were not contacted nor were they noticed as individuals that this plan would seriously affect their lives and their well-being.

3a.1

We fail to see or understand the benefits to any landowner including the tribe. This project retires up to 7000 acres of tribal, private and federal lands for purposes without

Responses to Comment Letter No. 3a

3a.1 While it is correct that private landowners were not members of the Federal-Tribal planning team that developed the Proposed Action and project alternatives, private landowners were made aware of the planning process through numerous mechanisms. As stated in section 5.2 of the LDWP DEIS, during the LDWP feasibility analysis period (1995-2000), public input was sought by the Tribe through individual landowner contact. Landowners within the proposed project area were approached individually by Tribal representatives to describe the project, identify any landowner concerns and also assess the likelihood of individual landowners to be willing sellers of their land and associated water rights to the project.

Landowners were invited to comment both orally and in writing through public scoping notifications and public meetings in May 2001, and the public review of the DEIS in 2003. The mailing list for the public review of the DEIS included many, although not all, private landowners in the project area. These individuals received a copy of the DEIS for review and comment. Additional copies of the DEIS were available at the public hearings for any individuals not receiving DEIS copies prior to the public hearing.

The public review and comment period on the DEIS was widely advertised in an effort to provide landowners an opportunity to review the DEIS, evaluate the proposed land acquisition plans and provide written and oral comment on the project. Many private landowners attended the public scoping meetings and the public meetings on the DEIS and several landowners provided written comments on the DEIS. The public review period for the DEIS was extended, by request, for an additional 30 days to give all interested parties the opportunity to submit written comments.

All relevant comments received on the LDWP DEIS were reviewed and considered, and if possible, incorporated into the revised Proposed Action and the FEIS. As a result, a revised Proposed Action was developed that reduced most of impacts identified during the public review process. Section S.3 of the FEIS has been revised to include a summary of the revisions made to the Proposed Action as a result of public comments.

Comment Letter No. 3a

value either to the owner or the economy. The only benefit derived from this project is to meet the definition for mitigation of the CUP.

The county commission has identified negatives to the project that are adverse to fee land owners and the public. Property owners do not want to sell or be affected by any loss of property. The farmers and ranchers have worked hard and long to build an income operation that suffices for both themselves and their children. Their operations have an economic benefit not only for themselves but also for everyone in the community. If these ranches are eliminated or reduced the effects are far reaching.

At the beginning of the draft process all parties involved were aware of the county's adopted land use policy that no net loss from private to public ownership would occur. We do not have an opinion as to how or to whom an owner sells his land. The land use policy only states that if a government entity purchases private property, the government will sell like acres of quality and quantity into the private sector. Comments in the draft state that the policies were not drafted in time to be considered. The county stands firm and states our position that the policies drafted and implemented in 1996 for Uintah County and 1997 for Duchesne County were in place well before this draft document was started. The No Net Loss Policy is a public policy and should be incorporated into this draft. The State of Utah accepts the county policy and communicates openly when it is considering land transactions. On page S-5 acquisition of private property s.3.1 describes again the reasons for mitigation. At the end of the column on page S-6, the draft states that the plan may impose eminent domain; we strongly oppose such an action. The project is well below the value of such an imposition to the farmers, ranchers and the community as a whole.

3a.2

3a.3

The proposal to build burms, dams and retaining ponds is widely opposed because of increased mosquito habitat. The very problem of transmitting infectious diseases by mosquitoes is in itself adequate to stop this project. Both counties and the tribe spend all the money we can on insect control. For the people to accept this project would probably inflict either the threat of disease or experience an enhancement of a new disease the "West Nile Virus". We cannot value this project to override the health of people or animals. This project considering the good will of the people will not be constructed as proposed.

3a.4

Another issue with this project is one of salinity control. The Bureau of Reclamation, irrigation companies, other federal and state agencies have been working closely with land owners in the two counties to control and hold salt in the soil and subsoil rather than sending the salt down stream in the Colorado River. This project is not a salt retaining project. Standing water will push the salt into a porous subsoil and then be transported underground to the river. As a county, we continue to support policies of salt containment. This project conflicts with the county's position.

3a.5

Prior to settlement of the basin the river itself was the wetlands, oxbows and shorelines were flooded during spring runoff. The adjoining lands were dry. Farming and ranching have created wetlands away from the riverbank. It is quite ironic that the landowner that created the wetlands and pasture areas are being penalized for their good works. Statements in the draft document as to economic effect upon the community are false

3a2 Sections S.3, 2.1.3.2 and 4.8.6.2.2 of the DEIS describe the conflict with the counties' "no net loss of private land" policy and the mandate given by Congress through the passage of Public Law 102-575 to complete the outstanding mitigation requirements of the CUP. The project partners must comply with the federal mandate to complete the mitigation requirements. Section 4.8.6.2.2 of the DEIS provides a full consistency review of the LDWP with the two counties' land use plans, noting areas of both consistency and inconsistency. The main area of inconsistency noted in the DEIS was that the LDWP would result in a net loss of private land.

Under the revised Proposed Action, all private land acquired on a willing seller basis would be transferred to the Tribe as fee title owner, consistent with the counties' "no net loss of private land" policy. Sections 2.1.3.2 and 4.8.6.2.2 of the FEIS provide details of this revision.

Every reasonable effort will also be made to acquire lands on a willing seller basis. However, since the success of the project is contingent upon acquisition of those properties the authority to use eminent domain will be retained. Eminent Domain would only be used as a last resort, after all reasonable efforts to acquire the property on a willing seller basis have failed. Second, the project boundaries have been adjusted where possible to avoid partial acquisitions that would leave landowners with uneconomical remainders. The Flume site has been deleted from the project, reducing the amount of private land acquisition by 363 acres. Other modifications have been made to the remaining sites further reducing the amount of private land acquisition.

3a3 The Tribe, Mitigation Commission and the DOI are aware of the concerns about the use of eminent domain for land acquisition. Eminent domain as a mechanism for acquisition is usually counterproductive and is often more expensive than equitable purchase arrangements with willing sellers. The project partners will make every reasonable effort to avoid eminent domain and deal with willing sellers during implementation of this project. The full range of available land acquisition flexibility allowed under law will be explored with landowners to ensure, to the extent reasonable, that project goals can be achieved by means of land acquisitions that are mutually agreeable.

Please also refer to the response to comment 3a.2.

3a4 Please refer to the responses to comments 1.5 and 1.6.

3a5 Salinity impacts from the Proposed Action and alternatives, including No Action, were analyzed in section 4.6.6 of the LDWP DEIS and in Swanson (2003) which was available to the public with the DEIS. The DEIS acknowledged that the Proposed Action and the action alternatives would contribute an additional 1,125 tons of salt per year to the Colorado River system. The Proposed Action has been revised for the FEIS and this new alternative would contribute between 115 and 829 tons of salt per year.

Section 1.7.1 of the FEIS and the associated technical report summarize the federal interagency program for salinity reduction in the Colorado River Basin and describes the long-term plans and goals for substantial reductions in salinity in the system as measured at Imperial Dam on the lower Colorado River. These federal plans are specifically designed and intended to offset and

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otherwise compensate for the many separate water resource development projects planned throughout the basin that may, individually, increase salinity loads in the system. The US government works continuously with the government of Mexico to monitor progress on salinity control and reduction projects and the resulting effects on the quality of Colorado River water that flows into Mexico.

Comment Letter No. 3a

statements. The loss of grazing areas, the loss of AUM's combined with the far reaching effects upon business and the economy will total far beyond your statements of effect. The loss of tax dollars is much greater than represented in the document. It appears that you only attempt to treat property tax; all other taxes that will be lost should be represented as a loss to the basin, state and federal economies. After all economic effects are identified this becomes a very expensive project for the Uintah Basin.

3a.6

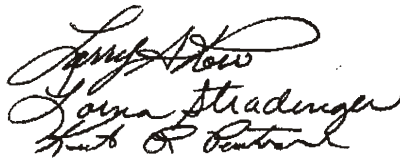
Duchesne County has a very serious weed problem, Tall White Top, Russian Napweed and Russian Olive are just a few of the species that are very prolific in this area, and are included on the State of Utah and Duchesne County noxious weed list. The proposed project would provide a seedbed for noxious weeds that could pollute the entire Colorado River System; not to mention the effect it would have on the Uintah Basin. It is nearly impossible to access riparian areas with equipment, so weed control would need to be done on foot, which would make it very expensive and not nearly as effective. Operation Rules and Water Quality Regulations could eliminate the ability to have any control at all over noxious weeds.

3a.7

When we, the people of Duchesne County, consider all the attributes and conditions of this project, we conclude that we cannot identify any positive influence upon our lifestyle. We have identified many negative impacts that have far reaching effects upon our well-being. We are saddened by the total negative effect of the Central Utah Project upon our county. The Bureau of Reclamation and the Mitigation Commission is reminded that Duchesne County never agreed to mitigation of the Bonneville Unit in Duchesne County. Your impositions continue to negatively impact quality growth and quality of life.

We are concerned that neither the county government nor the landowners were invited to assist in preparing the plan. When a government process directly affects a property owner he is entitled to be recognized. Duchesne County may present other comment and evidence supporting its position.

Sincerely,



Duchesne County Commission

LSR/KRP/aa

LDWP Draft Comments

3

3a.6 Under the revised Proposed Action, there would be no change in the tax base as acquired fee land would be retained as fee land, except in the case of condemnation where lands would remain in the name of the United States. Section 2.1.3.2 of the LDWP FEIS has been revised accordingly.

Other tax impacts from implementation of the Proposed Action and alternatives have been revised in section 4.9.6 of the LDWP FEIS. Based on requests received, both Uintah and Duchesne counties are cooperating agencies in the preparation of the LDWP FEIS. Staff from both counties have reviewed economic and tax impacts and provided information to improve these sections of the FEIS.

Please also refer to the response to comment 4a.9.

3a.7 Project partners agree that noxious and other invasive weeds are a serious problem in the Uinta Basin and identify weed concerns as an issue in section 4.2 and Appendix B of the LDWP DEIS. These sections identify Russian olive, tamarisk and pepperweed (tall white top) as species of greatest concern in the LDWP project area under baseline conditions. However, the weed control plan presented in Appendix B has been expanded to include information about other weeds, such as Russian knapweed, which occur in the project vicinity.

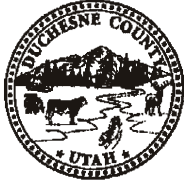
The project partners disagree that the project would “provide a seedbed for noxious weeds that could pollute the entire Colorado River system.” Tamarisk and Russian olive are already widespread in the Colorado River system. Pepperweed is widespread along the Green River and is establishing and expanding along the Duchesne River. Between 1997-2006, pepperweed expanded dramatically in the LDWP project area, particularly along irrigation ditches. Under the Proposed Action an aggressive program of weed control would be implemented. First, 339 acres of tamarisk and Russian olive would be controlled through repeat treatments. Second, pepperweed and other noxious weeds would be treated prior to construction and on an ongoing basis. If the LDWP is not implemented, noxious weeds would remain substantially uncontrolled on these areas with a greater threat to the Duchesne River than under project conditions.

The suggestion that operation rules and water quality regulations would eliminate control over noxious weeds in wetland and riparian areas is incorrect. There are a number of herbicides that are approved for wetland and streamside use that are effective in controlling weeds in these areas. For example, 2-4,D, Garlon, Renovate and Rodeo have formulations approved for use in or near surface water. Additionally, other herbicides such as Telar, Banvel and Escort, can be used in seasonally inundated or saturated wetlands following the seasonal water table decline as long as proper precautions are followed.

There are a number of techniques currently used in riparian areas to control tamarisk, Russian olive and other riparian weeds, including hand cutting of trees followed by immediate application of herbicide, mechanical removal of all roots and stems, foliar sprays and biocontrol. These techniques, their efficiency and their precision are continually being improved (Christy et al. 2006, Carrithers et al. 2006, Lee 2006) with corresponding reductions in treatment cost. The LDWP would use the most current and cost-effective methods available to treat riparian weeds. Although manual labor may be necessary to treat these species, such efforts have been quite successful and cost-effective on other CUP mitigation projects. Please refer to the response to comment 15.16 for additional discussion of noxious weed control on other CUP projects.

Comment Letter No. 3b

Comment Letter #3b



DUCHEсне COUNTY COMMISSION

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MITIGATION COMMISSION
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| PROJECT |

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January 15, 2004

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| MC05 | |
| MC01 | |

Mitigation Commission
Attn: Mark Holden
102 West 500 South #315
Salt Lake City, UT 84101-2328

CC: Ron Groves, Ute Indian Tribe

Gentlemen:

The Draft Environmental Impact Statement on the Lower Duchesne River Wetlands Mitigation Project does not meet the rules of procedure on this federally funded project. Neither local government nor the public has been substantially involved as required by NEPA and FLPMA. County governments, by law, are offered participation in constructing a document of this nature and importance.

3b.1

The representations of fact in the document have not received adequate consideration to be representative of impacts and benefits to all parties involved. Comments and figures used to define economics, mosquito control, salinity, water use and effects on land and homeowners are not sufficient for a logical decision.

Duchesne County requests an extension of 90 (ninety) days or longer for reconstruction of the document using input from interested parties and persons. Duchesne County recommends that any loss to the tribe be mitigated on tribal lands and loss of riparian and wetlands relative to the Bonneville Unit should be mitigated on the counties benefited.

3b.2

3b.3

Our request is based upon the law and our intent is to assist with accurate information. A general observation and information letter is attached.

3b.4

Sincerely,

Larry S. Ross
Lorna Stradinger
Kent R. Peatross

Duchesne County Commission

Responses to Comment Letter 3b

3b.1 The project partners believe the preparation and review process for this Environmental Impact Statement meet all applicable provisions of law under the National Environmental Policy Act. The Federal Land Policy Management Act (FLMPA) referenced in the comment does not pertain to the planning of this project or the preparation of this NEPA document. Please refer to the response to comment 4a.1 for further discussion.

In response to several comments received and in conformance with recently revised guidelines of the Department of the Interior, Duchesne County was formally offered the opportunity to become a Cooperating Agency in the completion of this NEPA document. Section 5.6 of the LDWP FEIS has been revised to include this information.

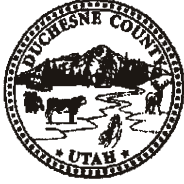
3b.2 The request for an extension of the public comment period was accommodated by means of a 30-day extension of the public review period. Notice to this effect was published in the Federal Register February 5, 2004 (69 FR 5567). In addition, separate notices were sent to all entities on the project mailing list. Public comments were accepted for 90 days, between November 17, 2003 and February 17, 2004.

3b.3 The Proposed Action addresses the environmental impacts of the CUP, specifically SACS, that occurred, in large part, on Tribal Trust lands in the Uinta Basin. These were losses of riparian areas, including wetlands, and associated wildlife species and habitats that resulted from diversion of water from the Uinta Basin to the Wasatch Front. The nature and location of SACS impacts were described in sections 1.1 and 1.3.3 of the LDWP DEIS and the location of the impacts depicted on Figure 1-1 of the LDWP DEIS. It is logical and appropriate that plans for replacement of these resources be developed in the Uinta Basin on lands of, or near, the Tribal Trust lands where losses occurred. Only in this way can similar resources be restored or enhanced. Efforts to develop suitable mitigation activities on lands located along the Wasatch Front would not replace resources of the type lost in the Uinta Basin. Moreover, such actions, even if successful, would be far removed from Tribal Trust lands, pose difficult problems of management, and not be in accordance with the needs and desires of the Tribe.

The project partners have made efforts to concentrate the project on lands of the Uintah and Ouray Reservation. Table 2-3 of the LDWP DEIS summarizes the land ownership proposed for use by the project. Tribal Trust lands are too interspersed with private lands or other lands in the project areas to make a project using entirely Tribal Trust lands feasible. Thus, acquisition of some additional land is needed to accomplish some project features such as: rewatering continuous oxbow systems and providing wildlife habitat connectivity that is essential to success of the project.

Regarding your comment that impacts of the Bonneville Unit should be mitigated in the counties benefitted, the project partners believe that Duchesne County has received and will continue to receive substantial benefits from the Bonneville Unit. Please refer to the response to comment 6.1 for a detailed discussion of those benefits.

3b.4 Please refer to the response to comment 3b.1.



DUCHEсне COUNTY COMMISSION

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February 9, 2004

Mr. Ron Groves, Director
PO Box 190
Ft. Duchesne, UT 84026

RE: Lower Duchesne River Wetlands Mitigation Project (LDWP)

CC: Mike Weyland, Mitigation Commission

Duchesne County has previously submitted comments on the LDWP, we now add additional opinion with recommendations. Statements relating to economics, health, taxation, water rights, salinity and other related subjects as published in the draft are without factual evidence. Therefore, limited information and inaccurate statements prevent a conclusive dialog on such an important project. Further discussions require a process of gathering information that is representative of the consequences of the project.

Duchesne County agrees that the mitigation commission has a congressional mandate to mitigate for the loss of wetlands and other environmental disruptions as a result of construction of the Bonneville Unit. We disagree with the commission that the chosen Duchesne River Corridor is the proper and best place for the mitigation. We are unable to find any landowners, or anyone in surrounding communities, that believe there exists any substantial benefit within this proposed project. All discussions move quickly to the negatives of the project. The draft identifies two reasons for a mitigation project, the first is to satisfy the SACS requirement, and the second is to mitigate damages to the tribe. The document does not adequately represent those damages nor does it represent damages to all other landowners and residents. Because the project and the process are unacceptable, Duchesne County proposes an alternative in a separate location.

3c.1

Because wetlands are of little value to the economy and are contradictory to farming and ranching operations, we can only conclude that the private landowner will be damaged from this project. We further conclude that this project in the proposed location will obviously threaten the population with increased mosquitoes bearing diseases. When all factors are openly and adequately considered, we find the project as proposed is in the

Responses to Comment Letter No. 3c

3c.1 Section 1.2 of the LDWP DEIS describes the purpose and need for the project and section 1.3 describes the history and background. Both of these sections describe the underlying need for the project to mitigate for the impacts on Tribal wetlands and wildlife habitat in the Duchesne River corridor. Diversion of flows from the Duchesne River from the operation of the Strawberry Aqueduct and Collection System now approach 80 percent, severely impacting the value and function of wetlands and riparian habitats on the Duchesne River.

In addition to the mandate to mitigate for impacts to wetlands and other environmental resources, the Mitigation Commission is also required to fulfill the commitments made in 1965 by the United States to develop waterfowl/wetland management areas for the Tribe. For these reasons the project partners believe the Duchesne River corridor is the appropriate place for the LDWP project.

The Proposed Action and the other alternatives, except the No Action Alternative, all accomplish those needs.

Please also refer to the response to comment 3b.3.

Comment Letter No. 3c

wrong location. Such a project should be far removed from human and domesticated animal populations.

Duchesne County's proposal is to locate the project either in or next to the Green River Corridor on Bureau of Land Management's (BLM) property. Put the project on federal land for a federally mandated purpose. The Duchesne County Water Conservancy District, Uintah County Water Conservancy District and the state own water rights in the Green River. The water could be used with some compensation to the owner. A depletion formula determined by the state engineer may be incorporated into a legal document.

A second alternative would be a water exchange between the Duchesne County Water Conservancy District and the Bureau of Reclamation, whereas the mitigation commission would use the districts Green River water and the district would receive an allocation of water at Starvation Reservoir. A conversation defining the bureau's ability to enter into an exchange would be interesting. If the Green River location is viable and a water exchange or purchase could be worked out, substantial benefit would be derived for all property owners on the Duchesne River system.

3c.2

Duchesne County is adamantly opposed to the project in the Duchesne River Corridor as proposed. We do believe that some mitigation may take place in the existing river channel, such as ox bows. We believe our proposal has obvious merits that will meet the mitigation commission's mandate. We are prepared to discuss these alternatives with interested persons and will recommend to the Duchesne County Water Conservancy District they give consideration to our proposal.

3c.3

Sincerely,



Duchesne County Commission

LSR/aa

3c.2 The interdisciplinary team considered your suggestion to complete the wetlands mitigation project in or adjacent to the Green River corridor on BLM land. You suggested that it would be more appropriate to have this federally mandated project on federal lands. We found this alternative is not viable for several reasons and therefore did not consider it for detailed analysis. Section 1.2 of the LDWP DEIS describes the purpose and need for the project and section 1.3 describes the history and background. Both of these sections describe the underlying need for the project to mitigate for the impacts on Tribal wetland and wildlife habitat in the Duchesne River corridor and to fulfill commitments made to the Tribe in 1965 under the Deferral Agreement. Diversion of flows from the Duchesne River from the operation of the Strawberry Aqueduct and Collection System now approach 80 percent, severely impacting the value and function of wetlands and riparian habitats on the Duchesne River. Implementing the project on the Green River would not meet the underlying need to mitigate for these impacts where they occurred on the Duchesne River. Please also refer to the response to comment 3b.3.

Secondly, the project partners have no authority over BLM lands on the Green River and cannot direct how these lands will be managed. The BLM has a separate Resource Management Plan for this area (the Vernal Unit) which does not include wetland mitigation along the Green River downstream of the Duchesne River. Moreover, the BLM is in the process of publishing a new Resource Management Plan for the Vernal Unit, which identifies the Green River at the junction with the White and Duchesne Rivers as an area in which the BLM would like to purchase and/or manage Tribal land specifically for oil and gas leasing. This is not an area in which the BLM plans for wetland mitigation either now or in the foreseeable future (Draft Environmental Impact Statement for the Vernal Resource Management Plan 2005). As a result, the BLM land mentioned in the suggested alternative is not available for the LDWP project.

3c3. Thank you for your comment.

UINTAH COUNTY



STATE OF UTAH

Our past is the nation's future.

COMMISSIONERS:
 David J. Haslem
 Jim Abegglen
 Michael J. McKee
 ASSESSOR - Gayln Casper
 ATTORNEY - JoAnn Surlingham
 CLERK-AUDITOR - Michael W. Wilkins
 RECORDER - Randy J. Simmons
 TREASURER - Donna Richens
 SHERIFF - Rick Hawkins
 SURVEYOR - Robert Kay

January 13, 2004

Mr. Ron Groves
 Ute Indian Tribe
 P.O. Box 190
 Fort Duchesne, UT 84026

Re: Lower Duchesne River Wetlands Mitigation Project
 Draft Environmental Impact Statement (DEIS),
 November 2003

Dear Mr. Groves:

The proposed project will have direct and indirect impacts on the individual citizens of our County and will impact our social and economic well being. Upon review of the DEIS for the proposed LDWP, we have noted a number of serious deficiencies and flaws that need to be addressed. Our comments and concerns need to be addressed before the DEIS goes further. It is Uintah County's position that the DEIS is fatally flawed.

The following are the Uintah County's comments regarding the DEIS. These comments are in addition to the comments provided in our January 14, 2004 letter.

Procedurally the DEIS document is flawed:

- A. On the cover sheet for the DEIS are listed "Counties that Could be Affected" "Duchesne and Uintah, Utah".

Congress recognized the responsibility of local governments to be involved in decisions affecting their citizens and under the provisions of the Federal Land Management and Policy Act (FLPMA) and National Environmental Protection Act (NEPA), Uintah County should have been involved with the development of this project and been included as a cooperating agency. It is unfortunate that the County was not given an opportunity to be a cooperator in the preparation of the document at the beginning. The County has land management expertise and authority over lands within and around the project and have responsibilities for the safety and health of the County residents.

4a.1
 cont



Responses to Comment Letter No. 4a

4a.1 The Federal Land Policy Management Act (FLMPA) is a planning regulation that applies to the Bureau of Land Management and does not apply to the LDWP. However, the project partners recognize that the public involvement provisions of NEPA do apply to the LDWP.

The project partners recognize the counties' jurisdictional responsibilities on adjacent lands and requested input from the two counties during the DEIS preparation. A Notice of Intent to prepare an EIS was published in the Federal Register on April 25, 2001 (66 FR 20827). Public notices announcing the initiation of public scoping on the project were also published in the Salt Lake Tribune (May 11, 2001) and the Vernal Express (May 9, 2001). In addition to the public notice, the Salt Lake Tribune published a separate article on the proposed project in May 2001. Flyers publicizing local scoping meetings were posted at many conspicuous locations throughout the Uinta Basin in May 2001. Announcements regarding the Uinta Basin meetings were made on two local radio stations (KNEU and KUEL).

Local governments, landowners and others on the project mailing list received invitations to the scoping meetings. Uintah County did not send a representative to the scoping meeting and no oral comments were received from either county officials or Uintah County residents. Uintah County did not submit written comments nor request to be a cooperating agency during the initial project scoping (see chapter 5 for complete details of the public involvement process).

The DEIS was filed with the Environmental Protection Agency on November 17, 2003 and made available to the public on that date. Notices regarding the release of the DEIS were published in the Salt Lake Tribune (December 12, 2003), the Daily Herald (Provo) (December 11, 2003), the Uinta Basin Standard (December 16, 2003) and the Vernal Express (December 10, 2003). Flyers publicizing the DEIS release and announcing the dates, times and locations of public hearing meetings on the DEIS were posted in conspicuous locations throughout the Uinta Basin in November 2003. Announcements regarding the Uinta Basin public hearings were made on two local radio stations (KNEU and KUEL). All relevant agency representatives, including those who participated on the Planning Team, local governments and landowners and others on the project mailing list received copies of the DEIS, which included an invitation to the public hearings on the DEIS.

Approximately 200 copies of the DEIS were distributed by mail or provided electronically to various individuals, organizations and government agencies. DEIS copies were also available at the public hearings to all individuals attending. Seven individuals picked up a copy of the DEIS at the public hearings.

Subsequent to the DEIS, Executive Order 13352 was issued on August 24, 2004 and implementing regulations associated with this Executive Order were issued on June 6, 2005. These documents provide that local governments be afforded, upon request, cooperating agency status. Uintah and Duchesne counties expressed interest in participating more closely in the planning effort and were extended offers by letters of September 15, 2006, to participate as cooperating agencies during the FEIS preparation.

The failure to involve the County from the beginning of the development of the DEIS, appears to be a deliberate attempt to ignore the impacts upon the County and it's citizens. Counties are directly affected by the loss of property taxes, sales taxes from products produced on these lands and businessses, and the effects the proposed actions would have due to lost employment and increased needs for social services to the displaced population. As counties that will be affected by the proposed actions of the DEIS, we should have been automatically included as cooperating agencies.

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B. The DEIS ignores County Plans. (S.3.1, 2.1.3, 2.2.3, 2.3.3, 3.3.7, 3.3.8, 4.8, 4.9, etc.)

No where has the document provided adequate consistency review with respect to the Uintah County Plan. The argument used in the DEIS was that this project was started prior to the adoption of County plans in Uintah and Duchesne counties. Using this logic, then there would be no need to recognize NEPA, FLPMA, or any bills passed since 1965. As this is obviously not the case, this proposed action must address Uintah County's plan which deals with more than just the "no net loss" of private lands issue. The entire spectrum of social, economic, and land issues needs to be examined. This broad spectrum of public land issues needs to be addressed. A copy of the Public Lands Section has been attached for your convenience. If further copies are needed, copies of the Uintah County's General Plan Public Lands Section is available at www.co.uintah.ut.us.

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4a.2

Technically the DEIS is flawed:

A. Purpose and Need for this Project. (S.1, S.1.1, 1.2, 1.2.2)

The DEIS proposed action is difficult to follow with respect to the need for the project. Mitigation for the Central Utah Project has been ongoing for decades. Several portions of the CUP has yet to be completed such as the Upalco and Uintah Units. The document needs to include the initial amount of mitigation identified, the amount of mitigation that has currently taken place, and areas already obtained for mitigation less the amount of mitigation for uncompleted units. Additional information needed includes who has benefitted from the project and where the mitigation has or is being proposed to take place.

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4a.3

B. Fails to Provide Adequate Alternatives:

The DEIS basically provides only the Proposed Action Alternative, a combination of the Pahccase and Topanotes Alternatives, and the No-Action Alternative. Within the Land Acquisition (2.1.3.2), no other options were explored other than "willing seller" or eminent domain. The problem with eminent domain for acquisition of the lands for this project is that they do not qualify under Public Law 102-575, Title III, Sec. 301, 6., h.(7) (106Stat.4631) which states "The Commission may acquire and dispose of personal and real property and water rights, and interests therein, through donation, purchase on a willing seller basis, sale, or lease, but not through direct exercisc of the power of eminent domain..."

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4a.4

4a.2 Please refer to the response to comment 3a.2 and also refer to the consistency review already completed in section 4.8.6.2 of the LDWP DEIS, and expanded in the same section in the LDWP FEIS.

4a.3 The initial mitigation obligation is stated and explained in sections 1.2 and 1.3 of the LDWP DEIS. The FEIS section 1.2 has been revised to clarify the project purpose and need. No portion of this mitigation obligation has been completed. This mitigation obligation is separate from and not a part of the mitigation plans for other units of the CUP. The Upalco and Uintah units of the CUP mentioned in the comment are now deauthorized by Congress. A deliberate decision was made in the early planning for the Bonneville Unit of the CUP in 1965 that mitigation for Tribal resources would be required; that mitigation for other fish and wildlife resources identified by the Fish and Wildlife Service under the Fish and Wildlife Coordination Act would be required; and that additional waterfowl/wetland developments for the benefit of the Tribe would be required. The Proposed Action would accomplish all those requirements, none of which have yet been fulfilled. Therefore, for the reasons stated, issues such as mitigation that has already been completed, areas already acquired for other mitigation, or mitigation associated with the unconstructed and deauthorized Uintah and Upalco units of the CUP are not relevant to the planning for the LDWP.

For further information on the status of all mitigation requirements for the Bonneville Unit, please refer to the 2004 Definite Plan Report for the Bonneville Unit available from the DOI-CUPCA completion office.

4a.4 Please refer to the response to comment 3a.3.

The alternative of paying landowners to raise swamp lands, cottonwoods, willows, and native shrubs rather than livestock or crops was not examined.

4a.5

C. Tribal Land Acquisition:

It is clear that the Tribe can commit lands to this project if they so desire. What is questionable is the forced acquisition of allotted lands which make up a considerable portion of this project. It is clear that the inability to acquire these lands would greatly affect the viability of the project as proposed. A determination must be made as to the forced acquisition of allotted lands before this proposal goes further.

4a.6

It appears that a decision has been made to circumvent the problem of a 25 year limit on leasing of trust land by acquiring easements. It is the nature of the use that dictates the type of document used to obtain use or access to lands, not the needs of the project proponent. The document as written is noncommittal as to what document will be used to acquire trust lands. As written, the document fails to fully analyze the project need and impacts.

D. Social and Economic Issues Ignored:

In the proposed acquisition of the desired lands no evaluation was made of the dependence of individual businesses on these lands. Croplands and irrigated pasture and the most productive lands on any farm or ranch operation and are crucial to the survival of the entire operation. In addition, many of these businesses have contracts under the Colorado Salinity Control Program and the loss of their lands could force the rancher/farmer to reimburse the NRCS for the governments share of the costs. Compensation for these loans and improvements must added as part of any monetary compensation package. The evaluation and analysis of these situations needs to be included as part of the DEIS.

4a.7

This proposed project could remove 13 or more businesses and families from their communities. Due to the poor quality and detail of the maps the exact number of businesses and families that will be directly affected by the proposed action are unclear. What is obvious, is that the removal of the heart of each farm/business operation for this proposed action will cause these farms/businesses to fail. Without the water to irrigate crops, without the irrigated pastures, and without the wet meadows these ranchers/ farmers/businesses cannot survive. The landowners affected by this project are not trained for another profession. The loss of their homes and businesses can not be replaced. The costs to re-train these people and care for the elderly among them will fall to the County and local government services. These impacts need to analyzed and included in the DEIS.

4a.8

The economic section 4.9 is totally inadequate and the impact of the project is grossly understated. The impacts from loss of crop and livestock production does not reflect the multiplier effect on the dollars as they pass through local communities. For agriculture this

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4a.5 Section 1.2 of the LDWP DEIS describes the purpose and need for the project and section 1.3 describes the history and background. Both of these sections describe the underlying need for the project to mitigate for the impacts on Tribal wetland and wildlife habitat in the Duchesne River corridor and to fulfill commitments made to the Tribe in 1965 under the Deferral Agreement. This would be accomplished by a variety of measures including rewatering oxbows, connecting oxbows to form contiguous systems, enlarging oxbows to at least their 1936 widths, enhancing water quality in oxbows receiving agricultural return flows, filling drainage ditches to create large marsh complexes, replanting riparian areas with native woody trees and shrubs, removing non-native invasive species and changing land use practices on adjacent uplands to benefit wildlife. We do not believe it is possible to meet these mitigation objectives solely by paying landowners to rewater wetlands and grow native species. Many of these wetland features that will be restored are physically located across many different landowners. For the project to be successful, it will be necessary to control and manage land use activities across this larger geographic area. Therefore, it will be necessary to acquire some private lands within the project boundary with the exception of croplands where easements will be acquired.

4a.6 Allotted land is held in trust by the United States for the benefit of members of the Tribe. It is the role of the United States, as trustee, and the individual Indian allottees to assure that allotted lands are properly protected under the LDWP. There would be no “forced acquisition” of allotments under the LDWP, as allotted lands would be either acquired by the Tribe through its internal land consolidation program or through the use of conservation easements or leases which would allow for use of the allotted lands and appurtenant reserved water rights within the LDWP. As described for fee land acquisition, inclusion of allotted land, whether through conservation easements, leases or the Tribal consolidation program, is a cost accounted for in the LDWP budget.

4a.7 The LDWP DEIS in sections 4.8 and 4.9 included identification and analysis of project impacts on agriculture and land use. Discussion and analysis focused on the livestock industry because it was determined to be the most pertinently affected business on these lands. Acreage devoted to grain, hay and livestock grazing, as well as economic impacts from the Proposed Action and alternatives were quantified in tables in that section. The DEIS emphasized that the project has been designed to minimize economic impacts on agricultural production by (1) avoiding residences, (2) acquiring property on a willing seller basis to the maximum extent possible, (3) avoiding use of eminent domain to secure necessary lands except in instances where all reasonable attempts to acquire land on a willing seller basis have failed and (4) avoiding acquisition of established croplands.

Acquisitions frequently involve lands that have been enrolled in, or otherwise participate in, federal agricultural support programs, including involvement in the federal Salinity Control Program. A variety of means exist for resolving such encumbrances as a part of the acquisition process under federal regulations. On-farm improvements would be reflected in appraised values and be a part of monetary compensation to landowners. A detailed evaluation of specific issues, by land parcel, is not possible at this stage of planning. However, the particular financial impacts of each acquisition would be fully evaluated under federal acquisition guidelines.

Revisions have been made to section 2.1.3.2 of the FEIS to disclose this issue further and reinforce the commitment of the project partners to deal with this matter in an equitable manner with all affected landowners.

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4a.8 Under the revised Proposed Action, impacts to individual farms and homes have been reduced, to the extent practicable. Splitting of individual farms has been minimized by reducing the size of the project area and by eliminating homes and farms from the project area unless necessary to the success of the project. Individual landowners would be compensated for the fair market value of the highest and best use of their property, including any impacts on their remainder properties or ranching operations resulting from the acquisition. Sections 2.1.3.2 and 4.9.6.2 of the LDWP FEIS have been revised to include this information.

4a.9a The project partners disagree that the socioeconomic analysis presented in the DEIS did not reflect the “multiplier effect” as dollars pass through local communities. The economic model used in the DEIS was developed by the Governor’s Office of Planning and Budget (GOPB). This model contained multipliers built into the model, although they were not discussed in detail. This is why the economic impacts from the project expenditure, as well as the jobs created, were greater than the initial figures for expenditures and hired workers. The socioeconomic analysis presented in the FEIS has been updated using the newer IMPLAN (Impact Analysis for Planning) model, which also contains built-in multipliers. This model is explained in more detail in the socioeconomic impact analysis in Section 4.9.6.2 and Appendix D.

Multipliers are an often misunderstood aspect of economic analysis. Multipliers are not numbers arrived at independently and then applied to a set of expenditures; rather, they are derived from observed relationships among industries in the defined economic region. Input-output (I-O) models such as IMPLAN begin by assembling national economic data on all industries in the geographic region of concern, which in this case is the Uinta Basin of Duchesne and Uintah counties. The data is assembled in an inter-industry transactions table that is unique to that particular economic region. This data is then analyzed mathematically to determine how new expenditures in the region will stimulate additional local spending and job creation. The extent of this local economic stimulus is the basis for creating economic multipliers.

Multipliers come in many different forms and sizes depending on what is being measured. The FEIS uses output, income, and employment multipliers in its discussion of socioeconomic impacts from the Proposed Action. The output multiplier discussed in the LDWP analysis measures direct, indirect, and induced effects from the initial project expenditures. The induced effects are derived from the social account matrix and take into account social security, income tax leakage, institutional transfers, and commuting. Accordingly, this type of multiplier provides the most robust and inclusive view of secondary effects in the economy that result from the initial expenditures.

multiplier runs from 4-9 percent depending on the type of crops produced. Also not included is the value added. In the Uintah Basin the primary sale of hay or other forage crops is through livestock. If an operator must reduce or sell livestock as a result of the loss of grazing lands, he or she has also lost the opportunity for sale of the forage crop produced on the remainder of the operation. In some cases the forced sale of critical components of a farming operation could devalue the remainder. Due to drought, low crop and livestock prices, many of the area agricultural related businesses have either been lost or are marginally viable. Further losses in crop or livestock production and sales will have an amplified affect on the viability of those businesses that remain.

A few of the many businesses in the surrounding community that are dependent upon the agricultural community of the combined counties to sustain them include Myton's grain mill, Ballard's livestock auction, Roosevelt's IFA and Agronomy Center, Vernal's IFA, and Ponderosa Feed. If these businesses are lost, then the entire Basin agricultural community will be impacted. For example: The nearest mill would be located in Lehi, Utah; Spanish Fork would be the nearest livestock auction; etc. These indirect impacts need to analyzed and included in the DEIS.

The figures discussing economics within the document are inadequate and inaccurate. The amount of property taxes paid by these farmers/ranchers/businesses is the least of their economic impact. For every 100 agricultural workers there are 40 other jobs created or maintained (Uintah County: Profile and Data Book, P.S. Perlich, Sept. 2003), this holds nearly steady whether in Duchesne or Uintah County. Bill Johnson, Economic Development, has copies of the economic study by Perlich, 2003, and can be contacted at (435) 781-6731.

The document lacks any real analysis of how many AUMS or animals will affected by this proposed project. For example:

Cropland 491 Acres X 3.5 Tons alfalfa/acres x \$75.00/ton alfalfa = \$94,687.50 Cash Revenue
 (2003 price was \$125/ton (average) = \$214,812.50)
 Alfalfa Hay Aftermath (November grazing) (1 AUM/Acre) / 1 month = 491 Animal Units
 Irrigated Pasture (2,327 Acres X 2.5 AUMs/Acre (average)) / 2 (take half leave half) = 29,187.5 AUMs
 29,187.5 AUMs / 6 months grazing = 4,846.5 Animal Units
 Other (4,972 Acres X 1 AUM/Acre (average)) / 2 (take half leave half) = 2,486 AUMs
 2,486AUMs / 6 months grazing = 414.3 Animal Units.
 Animal Units (491 + 4,846.5 + 414.3) X 80% Calf Rate - Replacement Rate (1/7 X AU) = 3,780
 3,780 calves x 500 lbs average weight x \$100 CWT = \$1,890,000 Cash Revenue

Based on these rough calculations, the Uintah Basin economy will loose at least 5,752 cows, \$1,890,000 in calf sales, and over \$94,000 in crop cash revenues. This does not include losses from the dairies, other properties that will be unusable due to the loss of water rights or loss of base property, or secondary products. Neither does this include many of the indirect effects to other businesses within the Uintah Basin that are dependent upon the

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4a.9b The “value added” impact referred to in this comment is accounted for in the IMPLAN model. Inter-industry relationships are included in the model so a change in the livestock sector would result in a change in the feed sector. It is the same concept as multipliers described above, only in this instance, the multiplier is negative.

4a.9c The boundaries of the revised Proposed Action have been modified to minimize the number of farm operations that would be split. In the event that a farming operation is split, landowners will be compensated for the fair market value of the highest and best use of their property, including any impacts on their remainder properties or ranching operations resulting from the acquisition. Sections 2.1.3.2 and 4.9.6.2 of the LDWP FEIS have been revised to include this information.

4a.9d The Proposed Action does not include the grain mill itself or any land upon which grains are currently produced. Therefore, the LDWP would have no impact on the Myton grain mill.

Most of the economic effects presented in the analysis represent less than a 2 percent change in existing conditions, even with multipliers taken into account. Moreover, this represents a worst-case projection, because it is possible that pasturelands taken out of production would be replaced by lands elsewhere. These factors support the conclusion that it is unlikely the project would drive any local business out of the market.

4a.9e The socioeconomic analysis presented in the LDWP FEIS section 4.9.6.2 has been revised to include information on induced employment impacts from the Proposed Action. In this case, the multiplier derived by the IMPLAN model does not differ markedly from the 1.4 induced employment multiplier found in the “Utah Basin Industry Impact Study” (Perlich 2003). For the purposes of socioeconomic modeling, economists generally convert numbers to fractions of percentages. In this manner, the suggested impact stated in the comment “for every 100 agricultural workers there are 40 other jobs created or maintained” equates to a 1.40 multiplier (or 40 percent over the initial job).

4a.9f Livestock production impacts were presented in tables 4-44, 45 of the LDWP DEIS. These tables were updated for the FEIS. The data clearly showed that there would be a change in livestock production as a result of the project. Changes in crop production were also addressed in these tables.

The arithmetic provided in the comment example is not clear and appears to reflect a misunderstanding of the project impacts.

For example, section of the 4.9.6.2 LDWP DEIS identified that 9 out of 500 acres of cropland would be affected by groundwater rise, with the remaining 491 acres placed under conservation easements. Under a conservation easement, payment would have been made for the portion of crop retained for wildlife (typically 20 percent). This would result in a reduction of 0.7 tons of saleable alfalfa/acre or 350 tons. Payment would be made to the landowner, so that there would be no loss of personal income (please refer to the response to comment 26.3 for further explanation of conservation easements), but a loss of total farm receipts to the area of approximately \$35,000 and not the \$94, 687.50 suggested by the comment.

$$491 \text{ acres} * 20 \text{ percent} * 3.5 \text{ tons/acre} * \$100/\text{acre} = \text{Loss of } \$34,370$$

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This analysis was presented in the DEIS. It is important to note that under the revised Proposed Action, the amount of cropland in the project has been substantially reduced and the concept of conservation easements abandoned. Only 58 acres of established cropland would be acquired, therefore there would be only a minimal impact from reduction in crop receipts.

The AUM analysis provided in the remainder of the comment is incorrect and appears to reflect a decimal error:

2,327 acres * 2.5 AUMs/acre divided by 2 = 2908.75AUMs, not 29,187.5AUMs.
Subsequently dividing 2908.75 by 6 months results in 484.8 animal units and not 4846.5 animal units.

Correcting the decimal point error would result in a suggested impact to the local economy that is less than stated in the DEIS.

4a.9g The Proposed Action has been revised to no longer include the acquisition of established dairies and only 58 acres of established croplands. As a result, secondary products from these farms would not be affected. Please refer to the response to comment 4a.12 regarding potential impacts to water rights.

stability of our agricultural community. A revision of the economic section will be necessary.

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The proposed action could create a tremendous amount of ethnic divisiveness within our communities. The removing of lands from the ownership and management of non-tribal individuals and placing the defacto ownership and management into tribal hands will cause

a chasm of resentment within our communities. The 15 (approximate) families and their employees that will loose their homes, businesses, and property will be left unemployed and homeless to provide 3 permanent jobs for tribal members and a swamp/marsh for a few assorted migratory birds and millions of mosquitoes. These issues need to be examined and analyzed within the DEIS.

E. PILT Funds:

With respect to financial impacts to the County a statement was made at the public hearings on December 16 and 17, 2003, that the County could not be compensated with PILT funds as they are receiving the maximum amount now. The County disputes that finding. It is our position that we have not reached the maximum level and that the County must be compensated with PILT funds for loss of revenues as a result of this project.

4a.10

F. Health - Mosquito Control:

It is clear that the West Nile virus was not considered when this document was drafted. This is supported by the lack of analysis of the issue in the document and the fact that mosquito control is not listed as an issue to be addressed in the operating agreement and the management. The County opposes proposals that would lead to an increase in mosquito populations and the increase in risk of West Nile virus infections.

The document fails to examine the impact that West Nile virus will have upon both the human and the bird (wild and domestic) populations. Currently, these ranches/farms/businesses can be easily sprayed to control the numerous mosquito species that breed on these lands. Controlled irrigation and constant human management have allowed the mosquito populations to be held at a livable threshold. The proposed action will raise the water table and make the irrigated pasture lands problematic to treat as the equipment may not be able to access these lands for mosquito treatment. Oxbows and other lands that will be flooded will create tremendous edge effects that are prime for increased mosquito breeding populations. Each increased acre of land will be capable of breeding over 10 million mosquitoes per acre. These mosquitoes are quite capable of traveling over 15 miles to swarm and feed. Uintah County does not wish to return to the days of black clouds of mosquitoes swarming for miles carrying disease and problems for humans and animals alike.

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4a.10 The original statement in the DEIS that the counties have reached a maximum Payment in Lieu of Taxes (PILT) payment is essentially correct. However, the discussion of the PILT program and its relevance to the LDWP has been revised in the FEIS. The importance of PILT payments to the analysis has been reduced considerably because under the revised Proposed Action, acquired fee land would generally be retained in fee status. Therefore, there would be no loss of land tax revenues and the question of PILT revenues is moot. The only lands, if any, that would remain in federal ownership would be lands acquired through eminent domain. These lands would be subject to PILT payments.

Acquired land under the Topanotes and Pahcease alternatives would be owned by the federal government. Under these alternatives, there would be a small reduction in county tax revenues. The PILT program is run by BLM according to formulas established by law. Under these alternatives, changes in federal land ownership within the counties and the effects on the PILT program would be calculated by BLM and payments made accordingly. The Mitigation Commission will report all LDWP land acquisitions to the BLM.

4a.11 Please refer to the responses to comments 1.1, 2.2 and 2.3.

The costs of attempting to treat these additional lands will be excessive and difficult. Access and both physically and politically will be difficult to acquire. This issue needs to be more fully examined. Dr. Steve Romney, Uintah County Mosquito Abatement Program, has indicated that answers to the questions raised of whether or not this proposed project could affect the town of Myton and would there be a significant increase of disease-bearing mosquitoes (S.3.2.1, page S-6) are both a resounding "yes". This year, 2004, will be the year in which a firestorm of West Nile Virus will present in Uintah and Duchesne Counties. During 2003, over 2,600 cases of West Nile were diagnosed with 50 fatalities among the human population. Animals were harder hit by the disease. The County finds that increasing the breeding habitat for mosquitoes that carry West Nile, Western Encephalitis, and St. Louis Encephalitis unacceptable. Additional analysis and impact study needs to be done before this project proceeds.

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Mosquitoes can migrate from 10 to 20 miles from where they were hatched. Within 3 generations, the West Nile Virus mosquito vector can be 30 miles from where the initial infected mosquitoes were hatched. Each hatching takes only a week. Within 4 -6 weeks Duchesne, Roosevelt, Vernal, Ft. Duchesne, Ouray, and communities in between could all see infected populations from this proposed project.

The document indicates that treatment for control of mosquitoes will require special use permits for wetlands. Full blown environmental assessment or environmental impact statements are generally required for special use permits, thus driving the costs of treatment exceptionally high. Logistics, as discussed above, will become nightmarish in trying to accomplish treatment and control. The DEIS proposal is that the County will cover the increased costs for the increased mosquito population control by raising taxes, thus passing the burden onto the local citizenry. This is unacceptable to the County.

Additional costs of West Nile Virus that were not analyzed were the impacts to surrounding property values, economic costs and loss for owners of equines, and the affect on outdoor recreation and tourism that will be significant. These issues need to be resolved before the document and project moves forward.

G. Water Rights and Water Issues:

Land and Water Class Maps from the Central Utah Project or the Bureau of Reclamation for all affected lands need to be included in this document. The lands and water rights proposed for use in this project are Class 1 water rights. Class 1, priority water rights are the best water rights in the State and are very valuable. The value of these water rights are ignored within this document. The effects of the loss of priority water rights to users down stream, people with secondary rights, return flows, and people who have traditionally used other folks run-off water has not been adequately analyzed. Compensation for the loss of Class 1 water rights and lost productivity of associated properties has not been adequately addressed. These issues need to be answered before the document moves forward.

4a.12

4a.12 Neither the Central Utah Project or Bureau of Reclamation land classification maps apply to or depict lands within the LDWP project area which are within the Uintah Indian Irrigation Project, except for the Riverdell North property. The reference to “Class 1” water rights is not understood, however, it is recognized throughout the document that the Tribe’s 1861 reserved water rights are the senior water rights in the Duchesne River system. The project partners recognize the importance of water rights and their administration to local communities. The value of the lost productivity from the harvesting of crops and from the reduction in available pasture for livestock grazing is described in Section 4.9.6 of the LDWP DEIS of the document. Water rights would not be “lost” under LDWP operation, they would be applied to the land for the development of wildlife forage and habitat.

During the baseline period, total diversions from the Duchesne River to lands within the project area averaged 51,466 acre-feet per year. In the three lowest flow years, water diversions to the same lands averaged 48,048 acre-feet per year, or approximately 3,418 acre-feet less per year. Expected project water use under the Proposed Action averages 24.1 percent of total UIIP diversions, resulting in an estimated difference in water availability to junior water right holders of 718 to 827 acre-feet per year, in the lowest flow years. During the baseline period, the frequency of the lowest flows has been once in every six years. In all other years, diversions and correspondent flows would remain at present levels. In all years, diversions would be within the amounts to which LDWP lands are legally entitled under the 1861 reserved water right appurtenant to those lands. Sections 4.5.5.2 and 4.5.6.2 of the FEIS have been revised to include this additional information regarding junior water right holders.

“Downstream” and secondary water rights (water rights junior to the Tribe’s 1861 priority) have no legal right or entitlement to utilize any of the Tribe’s reserved water rights and any economic benefit they may have received from the intermittent availability of that water is too speculative to evaluate. Nor do beneficiaries of tailwater or run-off have a legal right or entitlement to a continuation of that intermittent water supply. Water would continue to be applied to the lands in the LDWP and return flows would continue at a similar rate as under baseline conditions. It is assumed that by “associated properties” the commenter is referring to those lands within the LDWP. All such lands, except the Riverdell North property, are serviced through the Uintah Indian Irrigation Project, and would not lose any of the Tribal reserved water rights appurtenant to those lands.

At the public meetings on December 16 and 17, 2003, the presenters indicated that secondary rights people could apply for CUP water on dry years. Many of these lands are not considered part of the CUP lands and are ineligible for CUP water. Depending on whether the classification of the lands are under Indian water rights or class 6W lands, these lands may not qualify for CUP water. This analysis needs to be completed and added to the document. The impacts to secondary user and the issue and availability of project water must be fully analyzed in the final draft.

4a.13

The draft contains proposals to utilize flood flows in the Duchesne River to water oxbows by way of an excavated channel. This appears to be a new diversion and use of water which is not fully analyzed in the draft. The draft should analyze this proposal with respect to the water source and the ability to establish a new diversion point.

4a.14

H. Salinity:

We do not at this time know the amount of money that has been spent on salinity control within the proposed project area, but we believe it to be substantial. We understand that the Duchesne River bottoms have the highest salinity levels of the entire Duchesne drainage. The severe economic impacts to individuals required to reimburse the government for salinity control if their contract is voided has been discussed above, but bears repeating at this point. It is the County's position that the biological and economic impacts of changing from the current management to wetlands has been inadequately analyzed.

4a.15

I. Maps, Tables, and Figures:

The County is in support of the many public comments regarding the quality of the maps provided in the draft. The maps contain no section lines and with the exception of US 40, no roads. Additionally the accuracy of land ownership was questioned. Existing pipeline and other rights of way as well as irrigation delivery systems are not shown on the maps. This makes it impossible for the reader to accurately assess impacts and to provide meaningful comments.

4a.16

Figures and tables dealing with land ownership fail to include the number of individual land owners being affected. The lack of data on private ownership makes it impossible to adequately assess impacts to our community.

J. Oil, Gas, Utility Corridors, Roads and Rights-of-Way:

The document fails to address the land owners ability to explore for and develop mineral rights once the project has been created.

4a.17

The document does not provide for utility or pipeline corridors across the project area. As an example, access across the project from north to south for an oil or gas pipeline is questionable. Failure to identify existing roads and rights of way make future access and use

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4a.13 As discussed in the response to comment 4a.12, only in very dry years would diversions of 1861 priority water rights increase over baseline conditions. The impact of those increased diversions and corresponding reductions in water availability to junior water rights in very dry years is addressed in section 4.5.6.2 of the LDWP FEIS.

Whether any loss of flow is replaced under contracts for delivery of water from Starvation Reservoir is solely a determination to be made by the contracting parties. However, to the extent additional contract water is delivered from Starvation Reservoir, the Reservoir's operating criteria, as well as environmental baselines utilized in determining available flows for endangered fish, incorporate and account for the full exercise and use of the Tribe's 1861 priority water rights on the lands within the LDWP area.

4a.14 The goal of the LDWP Project with respect to oxbow wetlands is to re-connect existing secondary channels and oxbow wetlands to the Duchesne River where those features have been cut-off from the main river channel by human intervention. Examination of aerial photos and on-the-ground inspection reveals that the Duchesne River floodplain in portions of the LDWP Project area has recently supported vast networks of secondary channels, side channels, interconnected oxbows and other wetland features. Many of those have been altered by human intervention in recent years which now prevents the Duchesne River from providing hydrologic support to those features in all but the very highest water years. Reconnecting these features would not require a physical diversion of water from the Duchesne River; rather, impediments to historic, natural connections would be removed. Oxbows wetlands and side channels allowed to reconnect in this manner would receive water directly from the Duchesne River only during times when flows in the Duchesne River are high.

For example, the oxbow system proposed for reconnection in the Flume area under the Pahcease and Topanotes alternatives would only convey water when river flows exceed about 1,300 cfs with most water not entering the oxbows until river flows approach 2,000 cfs. Neither the Pahcease nor the Topanotes alternatives would modify the present river channel or secondary channel entrance elevations and water would only enter the oxbows when the secondary channel flows exceed 250 to 300 cfs (the side channel would convey about 300 cfs when flows in the Duchesne River are at 2,000 cfs; WWS 1998). The oxbow system proposed for reconnection in the Ted's Flat area, located at the downstream end of the proposed project, would be operated in a similar manner, conveying water naturally only when flow in the Duchesne River exceeds about 1,700 to 2,000 cfs.

There are no major diversions and only two minor diversions downstream of the proposed Ted's Flat oxbow reconnection, and neither would be affected by the routing of natural flows through the oxbow complex upstream, as this would only occur when flows are high in the Duchesne River and all water rights would be satisfied.

All of the water listed in Table 4-31 of the LDWP DEIS depicting the water requirements for the Flume oxbows and the portion of Ted's Flat oxbows north of the Duchesne River would be delivered through the Grey Mountain Canal or the Ouray School Canal; such water deliveries would be

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accomplished through existing turnouts from those canal systems, and the water thus applied would be applied and accounted for under the Tribe's 1861 reserved water rights.

4a.15 Please refer to the response to comment 4a.7.

4a.16 The project partners agree that the existing county and state roads and irrigation canals were not clearly labeled on the maps provided within the DEIS document. However, please note that more detailed maps were available for review at the Tribal wetlands office. The maps and figures within the FEIS have been revised to ensure that paved county roads and major irrigation canals are more clearly depicted. Section lines have been added to the LDWP project maps and the land ownership updated according to the county plat maps.

4a.17 The rights acquired by the United States for this project would generally not include coal, oil, gas or mineral rights. The owner of the mineral rights would retain the authority to use and develop such rights.

4a.18 There are no known oil and gas pipelines, existing oil and gas right-of-ways, or proposed oil and gas right-of-ways within the project area. The project partners agree that the existing county and state roads and irrigation canals were not clearly labeled on the maps provided within the DEIS document. However, please note that more detailed maps were available for review at the Tribal wetlands office. The maps and figures within the FEIS. have been revised to ensure that paved county roads and major irrigation canals are more clearly depicted.

All existing rights-of-way will be maintained for the LDWP. The LDWP will not be closing any county roads or any roads with legal easements. Section 2.1.4.2 of the FEIS has been revised to clarify this point.

It is beyond the scope of this analysis to speculate how future oil and gas pipelines may be developed in the future or develop a plan for future right-of-way management. Please refer to the response to comment 3a.6 regarding socioeconomic impacts.

uncertain. The status of existing roads and rights of way at the completion of the project should be contained in this document. Existing rights of way or easements should be identified and considered for such corridors. Analysis of socio-economic impacts of this project is seriously lacking or non-existent

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4a.18
cont

Continued access to these lands and roads is essential. Proposed management could deny access to the general public, mosquito abatement workers, or county road crews. Development of a wetland could hinder the ability of the County to maintain roads within the proposed project area. These issues need to be addressed before the project moves forward. If the project were to go forward, it is Uintah County's position that we must be fully compensated to move and relocate roads and their right-of-ways.

4a.19

K. Management, Maintenance, and Operating Agreement:

The proposed management for the proposed project lands is unacceptable as currently written. The lack of a current riparian and plant community survey does not allow the reader or manager to learn what noxious weeds are present nor where problem areas lie. There has been no review of the type of current management and land condition of the proposed project lands of the proposed managing entity. This basic research needs to be completed and made available to the affected parties and decision makers.

4a.20

A better proposal would include management of these lands as a contract with Bureau oversight. Then, if project goals are not being obtained, the contract could be cancelled with a new contract or agency contracted to do the work or maintenance. Other alternatives that need to be explored include paying operations to stay in place but to work to manage their lands to the proposed objectives. Individual management in conjunction with a team to manage the property for the stated goals would keep more people in place and allow for a better economic return if people could see a financial incentive for this project.

L. Access for Hunting and Recreation

The proposed project would lump these lands under tribal management. Access to the proposed project lands for the purpose of hunting could be severely restricted to only selected groups or individuals which could cause serious cultural problems and bring charges of discrimination against the Bureau of Reclamation. These issues need to be addressed before this project moves forward.

4a.21

Uintah County supports the statements and letters from the Uintah Mosquito Abatement District (January 12, 2004), Duchesne County Water Conservancy District (January 5, 2004), and Duchesne County Commission (December 19, 2003) on the Lower Duchesne River Wetlands Mitigation Project.

Uintah County wishes to insure their opportunity to provide adequate analysis and meaningful comments on the draft. Given the many unanswered questions and the seriousness of the issues, the

4a.22

4a.19 As noted in the response to comment 4a.18, existing county roads and other roads with legal rights-of-way would be maintained under the LDWP. Therefore, the project would not affect access to individual properties, access for county public works employees, nor cause roads to be relocated. The Tribe would conduct mosquito control, so the issue of access for county Mosquito Abatement District employees does not need further analysis.

4a.20 As stated in section 2.1.4.1 of the LDWP DEIS, a detailed Comprehensive Conservation and Management Plan would be developed after completion of this EIS. This plan would include additional details regarding weed control above and beyond the details listed in Appendix B: Weed Control Plan.

Habitat maps, on file with the Tribe and available for public review (as noted in Appendix D-1) display the location of the major noxious weeds. In addition, Appendix B provides information on the major noxious weeds in the project area and proposed weed management strategies. Appendix B has been expanded in the LDWP FEIS to incorporate your concerns regarding general locations of some major noxious weed problem areas. A comparison of the weed control activities on county, state, federal, private and Tribal lands within the Uinta Basin, as requested by the commenter, is beyond the scope of this EIS.

In response to the questions raised in the second paragraph regarding overall land management, please refer to the response to comment 4a.5.

4a.21 All persons desiring to hunt within the LDWP project area must obtain a hunting permit. Currently, both Tribal and non-Tribal members must have a Tribal permit to hunt on Tribal lands and a state permit to hunt on non-Tribal lands. The LDWP would not change these requirements. Section 2.1.4.2 of the LDWP FEIS has been revised to clarify this point.

4a.22 Please refer to the response to comment 3b.2.


Comment Letter No. 4a

Page 9 of 9

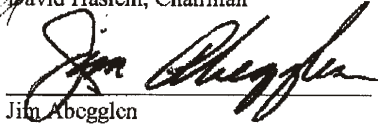
County reiterates our request for a 90 day extension of time to comment on the draft Environmental Impact Statement for the Lower Duchesne River Wetlands Mitigation Project.

Sincerely,

UINTAH COUNTY COMMISSION



David Haslem, Chairman



Jim Abegglen



Michael J. McKee

cc: Public Lands Committee

Attachment: County Policy - Public Lands and Public Lands Implementation Plan

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UINTAH COUNTY



STATE OF UTAH

Our past is the nation's future

COMMISSIONERS:
 David J. Haslem
 Jim Abegglen
 Michael J. McKee

ASSESSOR - Gayla Casper
 ATTORNEY - JoAnn Stringham
 CLERK-AUDITOR - Michael W. Wilkins
 RECORDER - Randy J. Simmons
 TREASURER - Donna Richens
 SHERIFF - Rick Hawkins
 SURVEYOR - Robert Kay

January 14, 2004

Mr. Ron Groves
 Ute Indian Tribe
 P.O. Box 190
 Ft. Duchesne, Utah 84026

Dear Mr. Groves:

The following are Uintah County's comments regarding the Lower Duchesne River Wetlands Mitigation Project. These comments are general comments as to the adequacy of the document and concerns regarding action proposed in it.

Due to the short time Uintah County has had to review the draft it is impossible to provide detailed comments at this time. It is unfortunate that the County was not given an opportunity to be cooperators in the preparation of the document at the beginning. The counties were not provided cooperator status even though they have land management expertise and authority over lands within and around the project and have responsibilities for the safety and health of the county residents. However, it is difficult to provide meaningful input on such a project until the impacts of the action proposed becomes apparent. Uintah County now finds itself in a position of needing to provide meaningful analysis and comments on a project in a short amount of time. It is Uintah County's position that cooperator status should have been provided to them for preparation of this document.

4b.1

A brief review of the document indicates there is a lack of analysis, an omission that indicates serious, if not fatal, flaws.

Uintah County's comments are as follows:

The document provides little of the required consistency reviews with respect to County Plans. In the summary it is implied that such reviews are necessary but further implies that the need for the mitigation predates County Plans. Additionally, it is implied that the passage of CUPCA in 1992 reaffirmed the importance of fulfilling the mitigation objections and mitigation was lagging behind projects development, thus consistency with County Plans is not required.

4b.2
cont

As evidenced by the cover sheet which lists "Counties that could be Affected", it is clear that little thought was given to provide counties opportunity to play their proper role in the development of

Responses to Comment Letter No. 4b

4b.1 Please refer to the response to comment 4a.1.

4b.2 Please refer to the response to comment 3a.2 and also to the consistency review already completed in section 4.8.6.2.2 of the LDWP DEIS, and expanded in the same section in the LDWP FEIS.

Comment Letter No. 4b

this document. Providing consistency with county plans does not mean that mitigation requirements of a project can not be met. The law provides that such projects must be consistent with county and Tribal laws, ordinances, plans and policies. A cursory review of the draft document appears to only address consistency with respect to land acquisition. It should be noted that county plans cover a broad spectrum of public land issues, not just acquisitions. The consistency with other aspects of th County Plans must also be addressed.

↑
4b.2
cont

As written, the proposed action is difficult to follow with respect to the need for the project. The Strawberry Aqueduct and Collection System (SACS) and the Duchesne River Area Canal Rehabilitation Program (DRACR) mitigation needs have been lumped together in the proposal. In alternatives 1 & 2 mitigation for DRACR and SACS have been lumped together even though Riverdell Project (aka Dude Young) has existed for many years.

4b.3

As written, it is not clear that the Riverdell, known to most locals as the Dude Young property, was purchased to provide mitigation for DRACR. To what extent it meets that purpose is questionable. There is considerable history on this property as it was purchased by the United States several years ago and there are current issues regarding need of easements or rights-of-way need to provide water to the property. Given the issues that currently exist with the Riverdell property and that it is confusing to many when combined with other mitigation needs, further analysis of the draft may reveal that it is not adequately addressed in the draft and should be handled separately.

The draft provides that all lands included within the project will be managed by the Tribe in accordance with plans specified in the Project Operating Agreement and Management Plans yet to be negotiated.

The draft at 2.1.4.1 Management Objectives states "The LDWP area would be managed as a special wetland natural resource area under the Proclamation of the Tribal Wildlife Advisory Board and Tribal Business Committee." The authority to provide such management on Tribal and allotted lands has been established. However, the authority of the Tribe to provide this type of management on what will become federal lands is questionable. The Utah Department of Wildlife Resources is strangely absent in the proposed management scheme. This document fails to analyze a full range of alternatives for management and operation other than provided for by Tribal oversight. It is clear that other possibilities exist. As written, it appears that management and operation of this proposed project was predetermined and made without public input.

4b.4

The draft at 2.1.4.3 Operating Agreement proposes that the Tribe and DOI would develop the operating agreement, but only provides for the possibility of involvement of other appropriate entities. Other proposed water related projects in the Basin have failed due to the lack of ability to develop such management and operating agreements.

The management and operation of the LDWP will have impact well beyond the boundaries of the project, thus it is critical that all affected entities participate in the management of the project. This position is supported on page 2-9 by the list of issues the management and operating agreements

4b.5

4b.3 The comment is correct in its characterization of the history and justification supporting the acquisition of the Riverdell North property. The property was acquired by the federal government to be developed and enhanced as a wetland resource for fish and wildlife benefits as mitigation for the Duchesne River Area Canal Rehabilitation Project (DRACR). Although the property was purchased for wetland mitigation, this mitigation has not been completed. Purchase of the property by itself did not complete the mitigation obligation; challenges such as those mentioned in the comment and others have prevented the improvement and management of the property for its intended mitigation purposes at this time.

The LDWP project and FEIS have been revised and do not include the DRACR mitigation requirement as a component of any alternative. Mitigation for DRACR will proceed separately under a different plan and NEPA document to be developed later by the Mitigation Commission and DOI.

The LDWP FEIS has been revised at sections 1.3.2, 1.4.2 and 1.5.4 to reflect this change.

4b.4 The LDWP Project is intended to mitigate for impacts on Tribal wetland-wildlife resources (see sections 1.2 and 1.3 of the LDWP FEIS). This federal commitment under the authority for the Central Utah Project must be completed. The Utah Division of Wildlife Resources has no authority or obligation to mitigate for the Central Utah Project. Although their involvement has been welcome and crucial to the success of many other mitigation components of the Central Utah Project, they are not a cooperating agency on this project because the Ute Indian Tribe will be responsible for fish and wildlife management. The joint lead agencies believe the Ute Indian Tribe is the appropriate management entity for the LDWP Project.

Under the revised Proposed Action Alternative, private lands acquired for the project will be transferred in fee to the Ute Tribe. In the event any lands are acquired through condemnation, those lands would remain in the name of the United States. There are no prohibitions restricting Tribal management of federal lands as suggested in the comment.

4b.5 It is beyond the scope of the FEIS to address each specific component of the Operation and Maintenance agreements in detail. The main aspects of the agreements yet to be developed are described in section 2.1.4.4 of the FEIS in sufficient detail to evaluate environmental impacts. Additional details regarding noxious weed and mosquito control plans are in the Appendices for public review.

Comment Letter No. 4b

would address. It is the County's position that all conditions of the operation and management agreement must be carefully stated in the final document.

The economic impact of the project is grossly understated. The impacts from loss of crop and livestock production does not reflect the multiplier effect on the dollars as they pass through local communities. For agriculture this multiplier runs from 4-9 percent depending on the type of crops produced. Also not included is the value added. In the Uintah Basin the primary sale of hay or other forage crops is through livestock. If an operator must reduce or sell livestock as a result of the loss of grazing lands, he or she has also lost the opportunity for sale of the forage crop produced on the remainder of the operation. In some cases the forced sale of critical components of a farming operation could devalue the remainder. Due to drought, low crop and livestock prices, many of the area agricultural related businesses have either been lost or are marginally viable. Further losses in crop or livestock production and sales will have an amplified affect on the viability of those businesses that remain.

4b.6

It is clear that the West Nile virus was not considered when this document was drafted. This is supported by the lack of analysis of the issue in the document and the fact that mosquito control is not listed as an issue to be addressed in the operating agreement and the management plan.

The proposed alternative is next to the Myton Townsite and covers an area with considerable population of people and livestock. Add to this the fact that mosquitos are capable of traveling up to 20 miles from where they were hatched, the possibility of infecting people and livestock are considerable. At a recent public meeting it was pointed out the impact of the proposed project on mosquito populations was under estimated and that the document left in question the ability to control these populations in question. This position is supported by the counties. Uintah County opposes proposals that would lead to an increase in mosquito populations and the increase in risk of West Nile virus infections.

4b.7

There are no provisions for mosquito control in the draft proposal so it must be assumed that the County must bear this burden. This serves only to increase the cost of the project to the County.

With respect to financial impacts to the County a statement was made that Uintah County could not be compensated with PILT funds as they are receiving the maximum amount now. The County disputes that finding. It is our position that we have not reached the maximum level and that the County must be compensated with PILT funds for loss of revenues as a result of this project.

4b.8

So as not to be repetitive, Uintah County supports the Duchesne County Water Conservancy District's comments regarding the draft, only to add that the impact to water users and water rights were not fully analyzed in the draft. A comment was made at a recent public meeting that CUP water could be used in drought years to make up shortages in the lower Duchesne River area. This is questionable as not all of the users are subscribers to the project water. The impacts to secondary user and the issue and availability of project water must be fully analyzed in the final draft.

4b.9

4b.6 Please refer to the response to comment 4a.9.

4b.7 It is unclear why the commenter believes that mosquito control was not listed in the LDWP DEIS. Section 2.1.4.5, page 2-30 of the LDWP DEIS states that “mosquito control would be an important component of the Proposed Action,” and that mosquito control would be addressed in the Management Plan. Please also refer to the responses to comments 1.1, 1.3, 2.2 and 2.3.

4b.8 Please refer to the response to comment 4a.10

4b.9 Please refer to the response to comment 4a.12.

Comment Letter No. 4b

The draft contains proposals to utilize flood flows in the Duchesne River to water oxbows by way of an excavated channel. This appears to be a new diversion and use of water which is not fully analyzed in the draft. The draft should analyze this proposal with respect to the water source and the ability to establish a new diversion point.

4b.10

Although the draft contains analysis of the impacts on threatened and endangered species within the project, it does not analyze the impact to these species from reduced flows below the project or in drought years when it has been said that downstream flows will be reduced.

4b.11

The County is in support of the many public comments regarding the quality of the maps provided in the draft. The maps contain no section lines and with the exception of US 40, no roads. Additionally the accuracy of land ownership was questioned. Existing pipeline and other rights-of-way as well as irrigation delivery systems are not shown on the maps. This makes it impossible for the reader to accurately assess impacts and to provide meaningful comments.

4b.12

The document does not provide for utility or pipeline corridors across the project area. As an example, access across the project from north to south for an oil or gas pipeline is questionable. Failure to identify existing roads and rights-of-way make future access and use uncertain. The status of existing roads and rights-of-way at the completion of the project should be contained in this document. Existing rights-of-way or easements should be identified and considered for such corridors. Analysis of socio-economic impacts of this project is seriously lacking or non-existent.

It is clear that the Tribe can commit lands to this project if they so desire. What is questionable is the forced acquisition of allotted lands which make up a considerable portion of this project. It is clear that the inability to acquire these lands would greatly affect the viability of the project as proposed. A determination must be made as to the forced acquisition of allotted lands before this proposal goes further. The document fails to address the land owners' ability to explore for and develop mineral rights once the project has been created.

The fact that Tribal and allotted lands make up a majority of the lands proposed to mitigate impact to Tribal resources raises a serious question of environmental justice. An analysis of compliance with environmental justice is lacking and analysis should be included in the final document.

It appears that a decision has been made to circumvent the problem of a 25 year limit on leasing of trust land by acquiring easements. It is the nature of the use that dictates the type of document used to obtain use or access to lands, not the needs of the project proponent. The document as written is noncommittal as to what document will be used to acquire trust lands.

As written, the document fails to fully analyze the project need and impact, does not fully disclose or analyze project management and operation, raises the question of project viability due to land acquisition questions, and fails to analyze a full range of alternatives. Such issues could delay or prevent implementation of the project.

4b.10 Please refer to the response to comment 04.a.14.

4b.11 The LDWP does not state that the project will reduce streamflows. In fact, page 4-75 of the LDWP DEIS stated “Over the course of the irrigation season, the differences in return flow would result in up to a 0.4 cfs increase in streamflow in the Duchesne River ...” which is not a measurable amount.

In adopting flows on the Duchesne River for endangered fish, the full exercise of the Tribe’s 1861 priority water right is incorporated into the analysis and included in the environmental baseline. Table 1 of the Final Biological Opinion, Duchesne River Basin, Utah (6-UT-97-F-007), dated July 29, 1998, recognizes and includes within the Section 7 consultation, depletions of 143,752 acre-feet by the Uintah Indian Irrigation Project. These depletions include the full diversion and depletion of water proposed for the LDWP and the application of that water pursuant to the LDWP’s needs to lands legally entitled to water under the Tribe’s 1861 priority water right. The Biological Opinion at page 8 states:

“In developing the reasonable and prudent alternative the Service has determined that actions required as part of this biological opinion will have minimal impact on tribal trust resources and will not interfere with the tribe’s ability to control and manage its land and water resources. *Implementation of all elements of the reasonable and prudent alternative are the responsibility of the RIP, not the Ute Tribe. . . .* Protection of final flow recommendations for the Duchesne River also will require support of the Ute Tribe.” (Emphasis added)

Additionally, the Management Committee of the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin recognized in, “Determination of Potential Sources of Water” of the “Duchesne River Hydrology and Water Availability Study” by CH2MHill, dated September 1997, Chapter 10, page 10-5, that:

“As the Tribe develops its reserved water rights on the Duchesne River system, less water will be available in the system for junior water uses and endangered fish. If tribal water development results in a change in the stream regime and reduction in outflows from the system, *additional water will be developed through the RIP in quantities sufficient to assure the necessary endangered fish flows* while allowing the Tribe’s development of its water supply to the full extent of its reserved water rights.” (Emphasis added)

Therefore, the impact of any reduced flows resulting from the LDWP have previously been considered and addressed.

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Finally, the joint lead agencies have and will continue to consult with the FWS throughout the planning and implementation of the LDWP regarding threatened and endangered species. Section 4.4.6.2 of the LDWP DEIS disclosed the conclusion by the joint lead agencies that the Proposed Action would have no effect on the endangered fishes of the Colorado River system. The FWS concurred with that conclusion via a letter to the Department of the Interior-Secretary's Office, which can be found in see Appendix E of the LDWP FEIS.

4b.12 Section lines have been added to the LDWP project maps and the land ownership updated according to the county plat maps. Please also refer to the response to comment 4a.18.

Comment Letter No. 4b

Uintah County wishes to insure their opportunity to provide adequate analysis and meaningful comments on the draft. Given the many unanswered questions and the seriousness of the issues, the County hereby requests a 90 day extension of time to comment on the draft Environmental Impact Statement for the Lower Duchesne River Wetlands Mitigation Project.

Your favorable consideration will be appreciated.

Sincerely,

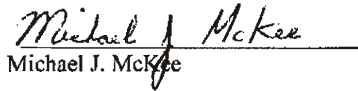
UINTAH COUNTY COMMISSION



David J. Haslem, Chiarman



Jim Abegglen



Michael J. McKee

cc: Public Lands
Duchesne County Commission
Utah Reclamation and Mitigation Commission

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Comment Letter No. 5

Comment Letter #5

Central Utah Water Conservancy District
355 West University Parkway
Orem, Utah 84058-7303
Tel: (801) 226-7100

February 17, 2004

Mr. Ron Groves
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026

Re: Comments on the Lower Duchesne River Wetlands Mitigation Project (LDWP) Draft Environmental Impact Statement (DEIS)

Dear Mr. Groves:

We appreciate the opportunity to review the subject LDWP DEIS. The following information addresses Central Utah Water Conservancy District (District) concerns developed during our review process. Issues addressing the Central Utah Project (CUP) Bonneville Unit's project water supply, project yield, and project operations were the primary foci of the review.

Comments/questions have been developed for DEIS sections discussing the proposed action, although they should also be applied to the Pahcease and/or Topanotes alternatives where applicable.

The section references listed below are in their order of appearance in the DEIS with text quotations included for convenience.

Section S.4.4.2 Threatened, Endangered, and Candidate Species (Listed Species), Impact Analysis, p. S-9, left column, second full paragraph under section heading:

"The construction and operation of the LDWP would not negatively impact any of these listed species, but would in fact benefit several of them. . . . No impacts to either the Colorado pikeminnow or the razorback sucker are expected from the LDWP, which would result in no measurable change in water quality or quantity in the Duchesne River."

Comments/Questions: It is unclear what assumptions are being made with regard to the ". . . no measurable change in water . . . quantity . . ." statement. Is it assumed that there will be no change because project-yield-affecting releases from Starvation Dam will be made in order to keep flows at pre-LDWP levels? Were the new minimum flow recommendations for the lower Duchesne River taken into consideration? Will LDWP flow requirements, endangered fish flow requirements, and irrigation requirements compound at certain times of the year to affect

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b
c
d
5.1

Responses to Comment Letter No. 5

5.1a The LDWP DEIS considered the impacts on water rights and Duchesne River stream flows that would be caused by each of the alternatives. Assumptions and methodology for the analysis were described in the LDWP DEIS (Appendix D, Water Resource Analysis Methods, Assumptions, Section D.5.1). These assumptions have been reviewed and clarified as necessary for the FEIS.

5.1b The statement in the LDWP DEIS, “which may require additional calls on CUP water by junior water right holders,” has been deleted from the Summary, Section S.4.5.2, and other sections of the FEIS. It is deleted because it is not appropriate for the project partners to speculate as to what measures, if any, affected junior water right users may or may not take to compensate for the minor shortages that would occur in some very dry years. Whether additional releases would be made from Starvation Reservoir to those users which have CUP water is a determination to be made among the District, Bureau or Reclamation and those water users who hold contracts for the delivery of water from Starvation Reservoir. Those delivery contracts do not, however, affect the right of the Tribe to divert the full amount of water legally available to lands within the LDWP project area under the Tribe’s 1861 reserved water right.

5.1c Because the new minimum flow recommendations for the lower Duchesne River had not been proposed prior to the publication of the DEIS, they were not taken into consideration. Regardless of the flow recommendations and whether those recommendations become requirements under the Recovery Implementation Plan, the Tribe is not required to provide any of its 1861 priority water rights to meet those flow requirements. Table 1 of the Final Biological Opinion, Duchesne River Basin, Utah (6-UT-97-F-007), dated July 29, 1998, recognizes and includes within the Section 7 consultation, depletions of 143,752 acre-feet by the Uintah Indian Irrigation Project. These depletions include the diversion of water proposed for the LDWP and the application of that water pursuant to the LDWP’s needs to lands legally entitled to water under the Tribe’s 1861 priority water right.

Please refer to the response to comment 4.11.b.

5.1d Please refer to the response to comment 5.1b.

Comment Letter No. 5

diversion facility operation?

Section S.4.5.2 Water Resources, Impact Analysis, p. S-9, right column, first full paragraph under section heading:

“All of the irrigable lands within the project area, except the Riverdell North property which has a junior water right, are supplied by certified 1861 Indian water rights and are authorized for direct diversion from the Duchesne River. These water rights, which will be available for the LDWP, total 17,802 to 20,653 acre-feet, depending on the alternative. Water budgets prepared for the Proposed Action and alternatives predict a water requirement that ranges from 11,325 to 14,785 acre-feet. These numbers include water for water quality control, which ranges from 27 to 50 percent of the total water requirement depending on site characteristics. As these numbers indicate, there are secure water rights available on project lands to fulfill LDWP needs without obtaining water from other sources outside the project area.

“Given that the project lands have sufficient water rights for project needs, the LDWP would not change average canal diversions in the project area over the long-term. There would be no change in water deliveries from Starvation Reservoir to these canals under the LDWP in average or wet years. In dry years, there may be less natural flow water delivered to junior water rights holders in the Duchesne River system than there is under baseline conditions which may require additional calls on CUP water by junior water rights holders.

“There would be no measurable change in streamflow under any alternative.”

Comments/Questions: How much, if any, of the 11,325 to 14,785 acre-feet of water needed for the LDWP is currently being diverted in the project area for irrigation purposes? Is this 11,325 to 14,785 acre-feet of water a new depletion? Have evaporation estimates been included in the water requirements? Can water be diverted with an 1861 priority if it has never been diverted before? Quantitatively, how much more “CUP water” will be needed by the “junior water rights holders” on dry years? How much decrease in CUP project yield will be experienced because of LDWP water requirements coming from a water right with an 1861 priority? Does the “no measurable change” statement (also referenced in Table 3-1 on page 3-3) again assume that Starvation releases will be available to mitigate any deficiencies in the Duchesne River? Will funds for O&M costs be reimbursed to the District for delivering the LDWP water? Have losses between Starvation Dam and the LDWP diversions been calculated and added into LDWP water requirements? Will the LDWP bear those losses?

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Section 2.1.1.8, Water Management, p. 2-19, right column, first partial paragraph and first full paragraph:

“This means that the water budget for each site was increased by 27 to 50 percent over that required to meet the consumptive use of water by wetland plants and evaporation.” (This statement is found in the first partial paragraph.)

“Water would be delivered to the wetlands according to the interim duty schedule currently being implemented within the project area. There would be no change in the amount or timing of diversion water from the Duchesne River.” (This statement is found in the first full

5.2a All amounts identified as potentially required for the LDWP have been diverted for irrigation purposes under baseline conditions. See Table 4-26, Section 4.5.5.2 of the LDWP DEIS which indicates the average and the range of diversions from the Grey Mountain, Myton Townsite and Ouray School canals. The LDWP diversions fall within the existing range of diversions.

5.2b The figures, 11,325 to 14,785 acre-feet, represent the range of LDWP diversions, not depletions, from the Duchesne River under the action alternatives. These amounts are not new diversions or new depletions on the system. They have previously been diverted and applied to lands in the LDWP area. Additionally, the amounts are included in the environmental baseline for endangered fish critical habitat flows on the Duchesne River. (See also response to Comment 5.1.c.) Please note that under the revised Proposed Action that the water requirements for the LDWP have been reduced. The revised water budgets are provided in Table 4-31 of the LDWP FEIS.

5.2c Evaporation estimates were included in the water budgets. See Appendix D, Water Resource Analysis Methods, Assumptions, Section D.5.1, at page D-5 to D-6. However, the evaporation estimates in the DEIS were based on Pelican Lake weather data. These estimates have been reviewed and revised according to the weather data used by the State Engineer (based on Hill 1994) for the Myton area. Section D-5 of the FEIS contains the revised evapotranspiration estimates.

5.2d All water diverted for LDWP purposes has previously been diverted to LDWP lands for irrigation. See Table 4-26, Section 4.5.5.2 of the LDWP DEIS. In addition, water rights reserved for Indian tribes under the reserved water rights doctrine, first announced by the United States Supreme Court in *Winters v. United States*, 207 U.S. 564 (1908), cannot be lost by non-use and may be put to use at any time regardless of whether it has previously been diverted and put to use. That legal right was identified and recognized in that portion of the Duchesne River Hydrology and Water Availability Study quoted above in response to Comment 4b.11 and 5.1.c. However, the Supreme Court ruling is moot in this case as the LDWP uses only water that has previously been diverted and applied to lands within the LDWP Project area.

5.2e Please refer to the response to comment 4a.12. Whether more “CUP water” will be needed by the “junior water right holders” to replace the diversion of the Tribe’s full 1861 priority water right in very dry years is determined by the terms of any applicable contracts between the CUWCD and junior water right holders.

5.2f No loss in CUP yield is expected as a result of operation of the LDWP. Any additional water released from Starvation Reservoir would not be a new depletion on the system as that water is, under baseline conditions, placed into storage and depleted from the natural flow of the system. The diversion of 1861 priority reserved water rights are from the natural flow of the Duchesne River stream system and would not have any impact on CUP storage, carryover storage or block notice requirements. It is understood that the operational program for Starvation Reservoir includes and accounts for the full diversion and depletion of the Tribe’s 1861 water rights. Therefore, the actual diversion and depletion of that water should have no effect on the operational requirements for Starvation Reservoir

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5.2g The only “no measurable change” statement in Table 3-1, page 3-3 of the DEIS applies to “Soil Resources” not “Water Resources.”

5.2h Water diverted by the LDWP would be from natural flows diverted under the Tribe’s 1861 reserved water right priority. To the extent that water flows through Starvation Reservoir, O&M costs are not assessable. To the extent releases from Starvation Reservoir are made by exchange to replace natural flow diversions made upstream of the Reservoir, that is a function of an exchange agreement between the CUP facility and the upstream water users and no O&M is accessible against the water released from Starvation Reservoir to replace and meet the Tribe’s demand for natural flows under its 1861 priority.

5.2i The water rights utilized by the LDWP are natural flow rights diverted under the Tribe’s 1861 reserved water rights priority. Stream “losses” are not attributable to natural flow rights. To the extent releases are made out of Starvation Reservoir by exchange to replace upstream diversions of natural flow, it is the parties to the exchange, not the Tribe nor the LDWP, that is responsible for replacing any “losses.”

5.2j Please refer to the response to comment 5.2i.

Comment Letter No. 5

paragraph.)

Comments/Questions: Are these two statements consistent with each other? How can the increased water budget *not* impact the amount or timing of diversion water from the Duchesne River?

5.3

Section 3.3.4, Water Resources, p. 3-9, right column, first and second full paragraphs under section heading:

“For all alternatives, there is sufficient water associated with land in the project area to supply project water requirements.

“Under all alternatives there may be less natural flow water delivered to junior water rights holders in the Duchesne River system in dry years than there is under baseline conditions. This situation may require additional calls on CUP water by junior water rights holders.”

Comments/Questions: For completeness, this reference was included. The same comments/questions apply as given under the Section S.4.5.2 heading referenced in this letter.

5.4

Section 4.4.5.3.4, Razorback Sucker, p. 4-55, left column, first partial paragraph:

“Researchers believe that razorback sucker primarily use only the part of Duchesne River directly influenced by the Green River (i.e., the lower 2.5 miles). This section may be important for spawning. The lower 2.5 miles of the Duchesne River are designated as critical habitat for the species.”

Comments/Questions: Based upon our involvement with the Upper Colorado Recovery Implementation Program, there is no biological evidence supporting the statement that “This section may be important for spawning.” Please provide evidence supporting this statement or delete it from the DEIS.

5.5

Section 4.4.6.2.4, Colorado Pikeminnow, p. 4-57, right column, second full paragraph under section heading:

“The LDWP would not reduce Duchesne River flows. . . . No impacts to the Colorado pikeminnow are anticipated as a result of the Proposed Action.”

Comments/Questions: For completeness, this reference was included. The same comments/questions apply as given under the Section S.4.4.2 heading referenced in this letter.

Section 4.4.6.2.5, Razorback Sucker, p. 4-58, left column, first full paragraph on page:

“The LDWP would not reduce Duchesne River flows. . . . No impacts to the razorback sucker or its designated critical habitat are anticipated as a result of the Proposed Action.”

5.6

Comments/Questions: For completeness, this reference was included. The same comments/questions apply as given under the Section S.4.4.2 heading referenced in this letter.

5.3 The amount of water diverted from the Duchesne River for each acre of land in the LDWP project area with an appurtenant 1861 reserved water right would remain 4 acre-feet per acre and would not change over baseline conditions. Diversions also would continue to be made in accordance with the delivery schedule applicable to the canals delivering water to LDWP lands. Appendix D.5 of the LDWP FEIS has been revised to clarify the various components of the LDWP water budget. The statement that the “water budget for each site was increased by 27 to 50 percent ...” has been clarified in appendix D.5 and section 4.5.6.2.1 to identify how the salinity control factor would be used within the available water rights for the LDWP.

5.4 Please refer to the responses to comment 5.2.

5.5 Archer et al. (1986) suggested that razorback sucker may spawn in the lower 4.0 Km (2.5 mi) of the Duchesne River. Ripe fish (fish full of eggs and ready to spawn) have been collected at the mouth of the Duchesne River. The lower Duchesne River is believed to be either a staging area prior to spawning and/or a recovery area after spawning, but not an area where spawning occurs (Modde 2004). Even if it is not a spawning area, the fact that it is a staging area prior to spawning makes the site important to the spawning process. Section 4.4.5.3.4 of the LDWP FEIS has been revised to include this information.

5.6 Please refer to the responses to comment 5.2. Additionally, the joint lead agencies have and will continue to consult with the FWS throughout the planning and implementation of the LDWP regarding threatened and endangered species. Section 4.4.6.2 of the LDWP DEIS disclosed the conclusion by the joint lead agencies that the Proposed Action would have no effect on the endangered fishes of the Colorado River system. The FWS concurred with that conclusion via a letter to the Department of the Interior-Secretary’s Office which can be found in Appendix E of the LDWP FEIS.

Comment Letter No. 5

Section 4.4.6.2.5, Razorback Sucker, p. 4-58, left column, second full paragraph on page:

“No other water will be used for the project, nor will any new depletions occur.”

Comments/Questions: How will no new depletions occur when “additional calls on CUP water by junior water rights holders” are going to be required during dry years? Is additional CUP project water not being considered a system depletion? Have Starvation Reservoir carry-over storage requirements been considered? Have U.S. Bureau of Reclamation block notice allotments been reviewed?

5.7

Section 4.5.5.1, Duchesne River Flows, p. 4-62, right column, first full paragraph on page:

“Flows in the Duchesne River have been successfully reduced over time due to both local and inter-basin diversions. . . . The most recent change in the magnitude of water diversions has occurred since 1989 following the closure of Stillwater Reservoir on Rock Creek. For this reason, the period of record chosen for the baseline summary of Duchesne River flows is the period from 1989 to 2002. Although only representing a 14-year period of record, streamflows during this period more accurately reflect the current Duchesne River flow regime.”

Comments/Questions: The values used for the baseline summary of Duchesne River flows for the period of 1989 to 2002 will be unrepresentatively high because of operations at Upper Stillwater Dam during the 1998 and 1999 water years when flows were being released due to Strawberry Reservoir being full (1998) or potentially overflowing (1999). In addition, until the entire Strawberry Aqueduct Collection System, the Diamond Fork System, and the Utah Lake System are in full operation, true baseline values cannot be established.

5.8

Section 4.5.6.2.1, Water Requirements, p. 4-72, left column, first full paragraph on page:

“A maximum of 360 acres of cottonwoods would be irrigated at any one time. Once cottonwoods are established the maximum water requirement would be reduced by 260 acre-feet to 14,393 acre-feet per year.”

Comments/Questions: Is the consumptive use for cottonwoods really only 0.72 (260/360) acre-foot per acre per year? How was the consumptive use for cottonwoods calculated?

5.9

Section 4.5.6.2.2, Water Availability, p. 4-74, left column, first full paragraph on page:

“At the Uresk Drain, the Drain would be filled to raise the local groundwater table. Inflow to the Drain is supplied by groundwater. The flow rate in the Uresk Drain is estimated to be 3 to 7 cfs. Once water levels in the Uresk Drain wetlands are at operational level, the site would be operated as a flow-through system with additional water supplied by the Myton Townsite Canal.”

Comments/Questions: What is the estimated time and quantity of water required to fill the Uresk Drain? How much flow from the Myton Townsite Canal will be required to maintain the Uresk Drain wetlands once they have reached the normal operating level? Are there times when space availability in Myton Townsite Canal will not allow water to be used for the Uresk Drain

5.10

5.7 For responses to the first two questions, please refer to the responses to comments 5.1b. and 5.2b. Any additional water that may be released from Starvation Reservoir would not be a new depletion on the system as that water is, under baseline conditions, placed into storage and depleted from the natural flow of the system.

The diversion of 1861 priority reserved water rights are currently and would be from the natural flow of the Duchesne River stream system and would not have any impact on CUP storage, carryover storage or block notice requirements. It is understood that the operational program for Starvation Reservoir includes and accounts for the full diversion and depletion of the Tribe's 1861 water rights. Therefore, the actual diversion and depletion of that water should have no effect on the operational requirements for Starvation Reservoir.

For these reasons, the project partners do not believe the block notice requirements need to be reviewed for the LDWP FEIS.

5.8 The analysis used in the Duchesne River Hydrology and Water Availability Study (CH2MHill 1997) suggests that the period of record since 1989 best represents conditions under Bonneville Unit operation. In Chapter 6, "Flow Analysis of Duchesne River with Full CUP Bonneville Unit Operation," it states at page 6-1:

"Table 6-1 shows the diversions from the Bonneville Unit into Strawberry Reservoir since diversions begin in 1971. The diversions reflect only partial completion of the collection system *until 1989*, and partial reductions in storage at Upper Stillwater Reservoir due to filling criteria restrictions as mentioned above. Summary statistics for diversions are shown in the table below for pre-project completion prior to 1989, and since the project *was completed and fully operational*.

* * *

The diversions into Strawberry Reservoir for the collection system have been *essentially under full operation since 1989*, other than small diversions into Rock Creek resulting from filling restrictions on Upper Stillwater Reservoir. Diversions since 1989 have been limited only by the lack of water in the system due to drought conditions. Over the life of the project, the Bonneville Unit will, on average, deplete a total of 143,200 acre-feet from the Duchesne River system."
(Emphasis added)

The LDWP has adopted the same "essentially full [Bonneville Unit] operation" baseline period beginning in 1989.

The baseline utilized is believed to be most representative of existing and future conditions on the Duchesne River system. It would be too speculative to try and assume what will happen in the future to CUP facilities.

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Further, the FEIS for the proposed construction and operation of the Utah Lake Drainage Basin Water Delivery System (ULS) states that the ULS will have no impacts on storage in Strawberry Reservoir; therefore there is no potential impact of the ULS on the LDWP and vice versa.

5.9 Section 4.5.6.2.1 provides a figure of 0.72 acre-feet/acre for temporary irrigation of cottonwoods until they are established. This figure was based on data presented in Briggs (1996) regarding the water requirements necessary to establish cottonwood poles

5.10 The Uresk Drain would require approximately 1,400 acre-feet of water to create open water/emergent marsh complexes and other wetlands within the site, which is an amount within the water rights available for the Uresk Drain. The initial creation or “filling” of these wetlands would be conducted in a staged manner during construction as the berms are completed, so would occur over a period of several months. The exact timing of water introduction into the wetlands would be arranged to coincide with the physical construction schedule and according to the interim duty schedule or other water right agreement in place.

The Uintah Indian Irrigation Project was built to convey all water appurtenant to all of the land within the UIIP service area. The LDWP is within the UIIP service area and uses water that has previously been diverted and delivered through the canal system. There would be no increase in diversions and, therefore, no increase in the amount of water carried in the canals. The delivery of water for the LDWP would be within the capacity of the canals. The Myton Townsite Canal has the capacity to carry any water required for LDWP purposes in the Uresk Drain.

Comment Letter No. 5

wetlands?

Section 4.5.6.2.2, Water Availability, p. 4-74, left column, second full paragraph on page:

“Under the Proposed Action, the LDWP area canal diversions would be within the range of baseline conditions which vary from year to year. The water budget for the wetlands would remain similar among years. As a result, in dry years less natural flow water would be available to junior water right holders . . . than under baseline conditions. This could result in some junior water right holders calling for additional CUP project water at a higher frequency and for greater amounts. . . .”

Comments/Questions: For completeness, this reference was included. The same comments/questions apply as given under the Section S.4.5.2 heading referenced in this letter.

5.11

Section 4.5.6.2.3, Net Change in Duchesne River Streamflow, p. 4-74, right column, first full paragraph under section heading:

“Waters allocated to lands served by the Myton Townsite, Grey Mountain and Ouray School Canals are currently diverted from the Duchesne River at an average annual amount of 52,287 acre-feet. With implementation of the project, the same amount of water would continue to be diverted. Water supplied to the project wetlands would not result in a measurable change in return flows downstream of the Myton Townsite Canal. Project water applied for water quality control, representing 27-50 percent of the total water budget, would return directly to the Duchesne River as streamflow. Seepage losses from wetlands within the project area would locally recharge the alluvial aquifer of the Duchesne River. Overall, nonconsumptive use of water would average 51.7 percent of the wetland water budget.”

Comments/Questions: Was evaporation calculated into the consumptive use? Does the consumptive use of 48.3 percent, or 5,470 to 7,141 acre-feet (11,325 x 0.483 and 14,785 x 0.483, respectively), constitute a new depletion? Are the consumptive-use assumptions valid in the first place? Are there other forms of consumptive use not being considered such as other depleting geologic aquifers?

5.12

Acronyms and Abbreviations, p. A & A-1:

“CREF. Colorado River Endangered Fish (Recovery Program)”

Comments/Questions: CREF is not a common, or recognized, acronym for the Upper Colorado River Endangered Fish Recovery Program.

Summary:

As expressed in the preceding remarks, the District is primarily concerned with the potential impacts that the LDWP will have on the CUP Bonneville Unit’s project water supply, project yield, and project operations. As you prepare a response to these concerns, please feel free to contact either myself or Tom Bruton (435-738-2241) for any additional clarification of our concerns.

5.11 The statement regarding “junior water users calling for CUP water” has been deleted from the LDWP FEIS. Also, please refer to the response to comment 4a.12.

5.12 Please refer to Appendix section D.5 of the LDWP DEIS which identified that the effective evapotranspiration (evapotranspiration minus effective precipitation, as measured at the Pelican Lake weather station) was included in the water budget and that nonconsumptive uses referred only to soil seepage and water used for flow-through salinity control. These estimates have been reviewed and revised according to the weather data used by the State Engineer for the Myton area. Section D-5 of the FEIS contains the revised evapotranspiration estimates.

The consumptive use assumptions provided in the revised hydrologic analysis are the same that the State Engineer recognizes and that the CUWCD used in its analysis of the ULS. The LDWP will not be pumping from geologic aquifers.

Please also refer to the response to comment 5.3.

Comment Letter No. 5

Sincerely,

Thomas J. Bruton /for/

Gene Shawcroft, P.E.
Assistant General Manager

cc: Richard L. Tullis, P.E.
Ron Johnston

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Comment Letter No. 6

Comment Letter #6



Myton City Corporation
 160 East Main Street
 P.O. Box 185
 Myton, Utah 84052
 (435) 722-2711 Fax: (435) 722-2796

January 13, 2004

Mr. Ron Groves
 Ute Indian Tribe, Wetlands-Fish and Wildlife
 P.O. Box 190
 Fort Duchesne, UT 84026

MITIGATION COMMISSION
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 CLASSIFICATION
 PROJECT

JAN 20 2004

CC: Mark Holden, Mitigation Commission

Re: Lower Duchesne River Wetlands Mitigation Project (LDWP)

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Gentlemen:

Please accept the following comments concerning the LDWP as proposed in the Draft Environmental Impact Statement published November 2003.

SUMMARY: S.1 INTRODUCTION

The project responds to a need to fulfill mitigation commitments made to the Ute Tribe that resulted from the development of the Bonneville Unit of the Central Utah Project (CUP). The CUP is a major water development project designed to divert and transport Colorado River water from the Uinta Basin to populous areas on the Wasatch Front.

Myton City Response: The fact that CUP has come into the Uintah Basin, removed riparian habitat and wetlands in order to divert our native water to the Wasatch Front is to me indicative of the lack of concern for our area that we have come to expect from CUP in the first place and I can't see why the Ute Tribe would want to assist in any effort to destroy our economy and endanger our citizenry. I am still unclear where the Ute Tribe stands on this proposal.

No CUP project to date has even considered new growth water for the Duchesne County area in their plans. Their goal remains and has always been to divert water to the Wasatch Front. With this in mind it seems only fitting that the CUP should consider completing this portion of their agreement with the Ute Tribe by mitigating areas in the Wasatch Front. They could begin by declaring eminent domain on some chosen property on the Wasatch Front, and then eventually turning the management and ownership of those lands over to the Ute Tribe. Wasatch Front property would also have the added benefit of being worth much more to begin with. Since the mitigation that is required in the draft EIS is for the sole benefit of the Wasatch Front except for a few canals east of Duchesne City, one would think the Wasatch Front would be delighted to surrender a portion their prime real estate in return for all our water. We think a more reasonable alternative would be to move this entire project into some area where NO HUMAN BEINGS OR THEIR ECONOMY would be endangered as a result of it.

6.1

After researching this draft we can see no benefits for the Ute Tribe or any other affected entity in our region to any of the action alternatives. The only agency that would benefit from any action alternative would be the Central Utah Project, in that their promise to the Ute Tribe would be satisfied.

S.3.2 MOSQUITO CONTROL

S.3.2.1 Issues and Concerns

One of the most controversial aspects of the LDWP is that the project will increase wetland and marshy habitat that are known breeding sites for mosquitoes. There are two important questions related to this issue: 1) will there be a significant increase in nuisance mosquitoes from wetlands and marshes within two miles of the town of Myton, and 2) will there be a significant increase in disease-bearing mosquitoes in the Uinta Basin that cannot be reasonably controlled?

Responses to Comment Letter No. 6

6.1 Regarding the first comment, the Tribe has endorsed the Proposed Action in resolution #00-296 of support by the Business Committee of the Tribe dated November 28, 2000. The Tribe has participated as the lead planning agency for the project and a cooperating agency in the development of the EIS. Tribal Business Committee Chair Ms. Maxine Natchees provided an oral statement of support for the project on behalf of the Tribe at the public meeting on December 17, 2003. Since that time, the Business Committee of the Tribe passed another resolution, #05-058 on January 24, 2005, in support of the LDWP.

It is true that SACS delivers water to Strawberry Reservoir for subsequent delivery to the Wasatch Front. However, SACS is only one of many components of the Bonneville Unit, which in turn is only one unit of the CUP. Many CUP features develop and deliver water supplies within the Uinta Basin. The Jensen Unit of CUP and the Vernal Unit of CUP both develop and supply water wholly within the Uinta Basin. The Jensen Unit, with Red Fleet Reservoir and Tyzack Aqueduct as two of its major features, supplies 4,600 acre-feet annually for irrigation and 18,000 acre-feet for municipal and industrial uses. Red Fleet Reservoir also has 8,500 acre-feet reserved for flood control storage, and it also provides a popular boating and fishing recreation area. The Vernal Unit, including Steinaker Reservoir, similarly provides a supplemental irrigation water supply to about 14,781 acres and 1,600 acre-feet annually for municipal uses. Steinaker Reservoir also provides a popular fishing and boating recreation resource to the Uinta Basin. Two systems of the Bonneville Unit provide water to the Uinta Basin. In addition to storing and later delivering water to the Duchesne River needed to exchange for CUP diversions out of the Duchesne River and its tributaries to the Bonneville Basin (about 30,000 acre-feet annually), the Starvation Collection System with Starvation Reservoir also provides about 15,000 to 30,000 acre-feet annually (varies by water year) for supplemental irrigation in communities along the lower Duchesne River; 434 acre-feet are provided for municipal use annually. Starvation Reservoir also provides flood control, recreation and fish and wildlife benefits. The Uinta Basin Replacement Project authorized by CUPCA (Section 203) as a Bonneville Unit project, also provides water for Uinta Basin residents. When completed in about 2007, the project will annually provide 2,500 acre-feet of irrigation water and 3,000 acre-feet of municipal water delivered to Roosevelt for local uses. It will also transfer 6,500 acre-feet of storage from the High Uintas to the enlarged Big Sand Wash Reservoir. The project partners believe the CUP has provided many benefits to the Uinta Basin communities and economies through those projects mentioned. Please also refer to the response to comment 3b.3 for further discussion of the LDWP mitigation location.

The project partners acknowledge your concerns regarding the effects of the LDWP on the local economy. In response to these concerns, the project partners have reviewed and updated the local economic analysis. Measures undertaken to reduce these impacts are more fully described in the response to comment 10.2.

Comment Letter No. 6

S.3.2.2 Response

The Proposed Action and alternatives will increase mosquito habitat in the project area, much of it within two miles of Myton residential areas.

Myton City Response: Dr Steven V. Romney, Director of the Uintah Mosquito Abatement District, carrying a PHD in Entomology (the study of insects) states that with the impending explosion of West Nile Virus in the State of Utah, now is definitely not the time to create other major wetlands with serious additional acreages of mosquito habitat. He further states that the *Culex tarsalis* vector has a flight range of up to ten miles. The species is the confirmed extremely competent vector of West Nile Virus in the Western United States.

6.2

Myton City believes that this above all other reasons is enough to stop this proposal dead in its tracks. It is unthinkable that the Mitigation Commission or CUP would entertain the idea of endangering the people and animals of the City of Myton, the citizens and livestock of the Ute Tribe and the citizens and animals of the State of Utah with this mitigation project as proposed.

The City would like to know when the designers of this proposal determined that Myton City and its 586 inhabitants were expendable. The sad fact is that we were never invited to the table and our very existence might depend on whether this project moves forward or not

I have spoken to members of my community and they remember the time when the mosquitoes were so thick you couldn't talk without getting mosquitoes in your mouth. No one wants to return to that time. Duchesne and Uintah County have spent millions of dollars in mosquito abatement and its efforts are commendable.

Imagine if you will, trying to entice anyone to live in Myton with a mosquito breeding marsh just down the street. Already, with just the hint of this project moving forward people are thinking about moving out. They are thinking of going to the Wasatch Front -- where, by the way, the water is, as well.

The project outlines two different strategies to reduce the number of mosquitoes generated by the project and to reduce the risk of disease when disease vectors are present.

I will comment on allowing with permit the Mosquito Abatement Districts in both Duchesne and Uintah Counties to be allowed to provide mosquito control. The fact that the Mosquito Abatement Districts would have to purchase permits to enter such property and then get permission from the Ute Tribe to use whatever chemicals necessary to abate the mosquitoes is unacceptable to us.

6.3

Duchesne County doesn't have the resources now to fully handle our present mosquito population; neither does Uintah County. And the fact that at some point Special Permits "may" (or may not) be purchased from the managers of these vast wetlands to manage the mosquito population being bred seems unrealistic. Why should we the innocent victims of this proposal have to pay for this mosquito abatement at all? If this project goes through it is only fitting that CUP makes arrangements to pay for the mosquito abatement necessary as a result of this proposal in perpetuity.

6.4

S.3.3 CHANGES TO COUNTY TAX REVENUES

S.3.3.1 Issues and Concerns

...the projected tax loss is \$699 for Duchesne County and \$909 for Uintah County.

I don't know where you arrived at these figures because the basis for fact wasn't included in the proposal but I do know that the Duchesne County figure is vastly understated according to the Duchesne County Commissioner's I've spoken to. These figures should be substantiated using present and future economic indicators that include the distress to our local economy that would be inflicted as a result of any of the action proposals. The proposal doesn't seem to take into account anything except the actual taking of the land from its owner. It fails to mention that the absence of the farmers and ranchers and their contribution

6.5

6.2 Please refer to the responses to comments 1.6, 2.2 and 2.3.

6.3 Please refer to the responses to comments 1.3 and 2.3.

6.4 Please refer to the response to comment 1.5.

6.5 The tax impact analysis has been revised and expanded in sections 4.9.6.2.4 and 4.9.6.3.4 of the FEIS and includes additional tax information provided by Uintah and Duchesne counties, which are serving as cooperating agencies on the FEIS. Beyond that, there is tax impact analysis included in the socioeconomic impact analysis as generated by the IMPLAN model.

Please also refer to the response to comment 4a.

Comment Letter No. 6

to our economy would be far reaching to our community and immediate. I believe this section of the draft is seriously flawed for these reasons.

S.4.8 SOCIOECONOMICS

S.4.8.2 Impact Analysis

Your draft clearly states that the project would not create enough jobs to have significant impact on the local economy – with the caveat that due to the exceptionally high rate of unemployment within the Tribe, this employment would be significant for the Tribe itself.

6.6

The negative socioeconomic impacts of the action proposals weren't mentioned.

When the farmers and ranchers have gone, they will no longer purchase products from Uintah Basin businesses and they in turn are affected with less profit. This socioeconomic impact cannot be ignored.

When these marshes are created, water from them will sub into the neighboring farms making that land useless as well, forcing them to sell their properties and move elsewhere. Our local farmers and ranchers have spent untold time and money to drain their fields to make them into producing viable resources for our area. It is unthinkable that we now seize their properties or create swampland next to them in an effort to create two or three jobs.

6.7

Myton City believes that property values will go down as a result of this proposal. Real estate prices will plummet in an already depressed market and Myton as well as the rest of our County will experience huge detrimental effects from it.

MISCELLANEOUS

Another issue to consider here is the reintroduction of salt into the river and ultimately down stream into the Colorado River. This project offers no salt reduction. The Federal Government is spending billions of dollars annually to reduce salt. The United States has a signed treaty with Mexico that states we will reduce the amount of salt to the Colorado River. This proposal is in direct contradiction to that policy. I am interested in finding out whether Mexico has been informed of your intention to dump salt back into the rivers they've been told were being cleaned up.

6.8

CONCLUSIONS:

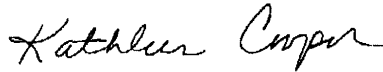
Myton City has reviewed this proposal and can find no positive influences for our City or its inhabitants and neighbors. We would like to stand with Duchesne County and their response to this proposal. We are deeply concerned that this project would have far reaching effects on our residents and the community at large. We would like to mention to the Bureau of Reclamation and the Mitigation Commission that Myton City is alive and well and opposed to this proposal in every aspect you have outlined. Your decisions will only have negative consequences on our whole region.

6.9

We respectfully request that all concerned parties be called to the table to have an active part in any future planning that will affect the City.

Myton City may present other comment and evidence supporting its position in this matter.

Sincerely,



Kathleen Cooper
Mayor, Myton City Corporation

6.6 The effect that this comment refers to is calculated by the multipliers that are part of the IMPLAN input-output analysis. Please refer to the response to comment 4a.9 and Appendix D.9 for additional discussion of economic multipliers.

6.7 A groundwater analysis has been added to section 4.8.6 of the LDWP FEIS to address the potential impacts of wetland creation on adjacent cropland. Please also note that the purpose of the LDWP is to create wetland-wildlife habitat for the Tribe and not to create jobs. Please refer to the response to comment 4a.3 for further discussion of the LDWP project purpose and need.

6.8 Please refer to the response to comment 3a.5.

6.9 Thank you for your comment.

DRY GULCH IRRIGATION COMPANY

Irrigating more than fifty-three thousand acres in the heart of the Uintah Basin

263 East Lagoon, P.O. Box 265, Roosevelt, Utah 84066

1-435-722-2204

1-435-722-2241 (Fax)

Board Chairman

Dale Nelson

Secretary

Carolyn Winterton

Board Members

Lloyd Walker
Don Winterton

Kelly D Bird
Kim Bastian

Keith Mortensen
Kim Anderton



Mr. Ron Groves
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026

January 13, 2004

CC: Mark Holden

Dear Mr. Groves;

Dry Gulch Irrigation Company Board of Trustees have reviewed the Lower Duchesne River Wetlands Mitigation Project (LDWP) and would like to submit the following comments.

The board is concerned about the maps. They feel property ownership and boundaries need to be more clearly identified. It would be helpful if clarification of water rights and the location of diversion structures were included.

7.1

The county has a land use policy that no net loss from private to public ownership should take place. We agree with this policy and feel it should be followed. We strongly oppose any proposal to impose eminent domain.

7.2

7.3

We also feel there will be many adverse economic impacts besides the loss of tax base if private ground is used in the project. The farms and ranches located on the private ground have a far reaching economic effect on the communities within our counties.

7.4

As members of this community we are also concerned about the increased mosquito habitat that this project will generate. This is a grave health risk. Increasing insect control measures would be very costly to both the counties and the tribe.

7.5

Our irrigation company has been installing several pressurized pipelines so our stockholders can use sprinklers instead of flood irrigating for salinity control. We feel our efforts will be countered by this project since it will have standing water which will

7.6

Responses to Comment Letter No. 7

7.1 Please refer to the responses to comments 4a.18 and 8a.5. Figure 4-1 of the LDWP DEIS depicted the location of diversions. There would be no change in diversion points under the LDWP.

7.2 Please refer to the response to comment 3a.2.

7.3 Please refer to the response to comment 3a.3.

7.4 The Proposed Action in the FEIS has been revised to reduce the amount of private land acquisition and to avoid acquisition of established farms and residences where possible. The economic analysis provided in section 4.9.6.2. of the LDWP FEIS utilizes multipliers that account for direct, indirect, and induced impacts. Please also refer to the response to comment 4a.9.

7.5 Please refer to the responses to comments 1.3, 1.5 and 1.6.

7.6 Please refer to the response to comment 3a.5.

Comment Letter No. 7

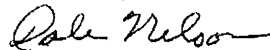
push the salt into the subsoil to be transported underground to the river.

There are several noxious weeds prevalent in Duchesne County. It seems to us that this project would provide an area for the propagation of these weeds with limited access for use of equipment to control them.

7.7

We feel the above comments state some pertinent concerns about the Lower Duchesne River Wetlands Mitigation Project. We ask that these concerns be addressed.

Sincerely,



Dale Nelson,
President

7.7 Please refer to the response to comment 3a.7.



Duchesne County Water Conservancy District

855 East 200 North (112-10)
Roosevelt, Utah 84066
General Manager: Randy Crozier
Assistant Manager: Don W. Winterton
Admin. Assistant: Adrienne S. Marett
Board Members:
Art Taylor, Chairman
Keith Mortensen, Vice-Chairman
Ed Bench, Member
Lynn Burton, Member

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D. Brad Hancock, Member
Craig Thomas, Member
Max Warren, Member

Upper Chain Lake

January 12, 2004

Mr. Ron Groves
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026

Dear Mr. Groves:

The Duchesne County Water Conservancy District (DCWCD) would like to submit the following comments in regard to the Lower Duchesne River Wetlands Mitigation Project (LDWP).

Mapping is very inadequate on all maps. There are discrepancies in land ownership, scale, and some missing land parcel information. The document also needs to identify the water rights associated with each 40-acre parcel on the map (for example, Class I, Class II, and Class III per 40-acre tract within project arca). 8a.1
8a.2

Par. 2.1.1.2 "Oxbow Restoration", pg. 2-14, states there are no existing water delivery points to Ted's Flat and a new headgate is to be installed in the Myton Townsite Canal. Does the Myton Townsite Canal have capacity for carriage of additional water? 8a.3

Par. 2.1.1.3 "Large Marsh Complexes", pg. 2-15, states that berms would be placed west of Mallard Springs but nothing is shown on your maps. There is a water delivery system that delivers Uintah & Ouray Indian Irrigation Project water to the west side of Mallard Springs that must not be removed or interfered with in order to assure delivery of water to Mallard Springs. 8a.4

According to Par. 2.1.1.7 "Management Changes", pg. 2-18, existing rotation cropland would continue to be maintained as cropland. When the present drains are removed, much of the adjacent cropland will become saturated and will no longer be farmable. There is no reference made in the draft EIS concerning lands adjacent to, or outside of, project boundaries that could be affected by the raising of ground water tables. For your protection, as well as others, a ground water monitoring system should be part of this project so that if land owners outside of the project suffer damages, they will be compensated. 8a.5

Par. 2.1.1.8 "Water Management", pg. 2-19, states there will be no change in amount of timing of diversion of water from the Duchesne River. If this is true then will these areas be dry through the winter months? Par. 2.1.1.8 also states that there are sufficient water rights available to meet water requirements. These need to be identified on the maps and also the present point of diversion associated with those rights. Will there be point of diversion changes from historical or present, and if so, what are the changes and the amounts of those changes? In regard to Par. 2.1.1.8 "Water Management", pg. 2-19, there must be water measurement at any additional point of diversion. 8a.6

Responses to Comment Letter No. 8a

8a.1 Please refer to the response to comment 4a.18.

8a.2 If the Class I, II and III designations reference Bureau of Reclamation land designations, they are inapplicable to lands with an appurtenant Tribal reserved water right, which have not been classified by BOR. If the designations are in reference to the Bureau of Indian Affairs assessment classifications, those are an internal BIA assessment classification and do not determine or designate which lands have an appurtenant 1861 priority reserved water right. Table 4-30 of the FEIS shows the water rights for each site within the LDWP project area under each action alternative. A detailed map of the water rights for the LDWP is beyond the scope of the LDWP DEIS, as it is not necessary for evaluating impacts of the alternatives. A listing of the 1861 reserved water rights appurtenant to each 40-acre tract within the UIIP is available on the Utah Division of Water Rights database. Additionally, maps depicting the 40-acre tracts are on file and available for review at the BIA office in Fort Duchesne.

8a.3 The Uintah Indian Irrigation Project was built to convey all water appurtenant to all of the land within the UIIP service area. The LDWP is within the UIIP service area and uses water that has previously been diverted and delivered through the canal system. There would be no increase in the range of diversions and, therefore, no increase in the amount of water carried in the canals above the amounts that have previously been carried. The delivery of water for the LDWP would be within the capacity of the canals. The Myton Townsite Canal has the capacity to carry any water required for LDWP purposes in Ted's Flat.

There is an existing water delivery point from the Myton Townsite Canal to the Ted's Flat site that is in need of maintenance. Maintenance of the canal system is the responsibility of the UIIP and will be conducted independently of the LDWP. The text in section 2.1.1.2 has been revised to reflect this information.

8a.4 Map 3 has been revised to depict the berm locations west of Mallard Springs. The Mallard Springs water rights are currently being delivered by the Uintah Indian Irrigation Project (UIIP) and will continue to be delivered under the LDWP.

8a.5 The only drainage ditch to be filled in is the Uresk Drain and there is no cropland adjacent to this site that would be affected by this action. For further details about potential impacts to adjacent cropland as a result of the LDWP-associated changes in groundwater levels please refer to sections 4.5.6.2 and 4.8.6 of the LDWP FEIS.

8a.6 In response to the first question, there will be no diversion of water from the Duchesne River during the winter months. Portions of the wetlands, such as wet meadow and riparian shrub edges, will be characterized by a seasonal high water table, but are expected to dry out by the end of the growing season. Other portions of the wetlands, such as the open water and deep marsh areas are expected to remain wet over the winter, as although no additional water will be applied to these areas after October, evapotranspiration losses will be reduced and water will be lost from the wetlands primarily through seepage.

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In response to the second comment, the current diversion points to be used by the LDWP and the water rights associated with each diversions were depicted on Figure 4-1 of the LDWP DEIS.

There will be no changes in water diversions for any LDWP project lands served by the UIIP. The BOR may change the point of diversion for the Riverdell Canal but this will be completed under a separate action (see discussion of interrelated projects in section 1.7 of the LDWP FEIS).

Please also refer to the response to comment 4a.14.

Comment Letter No. 8a

Par. 2.1.3.2 "Land Acquisition", pgs. 2-25 & 2-26,: Is eminent domain allowed for land acquisition according to CUPCA Legislation? Public Law 102-575, Title III, Sec. 301, 6., h.(7) (106 Stat. 4631) states "The Commission may acquire and dispose of personal and real property and water rights, and interests therein, through donation, purchase on a willing seller basis, sale, or lease, but not through direct exercise of the power of eminent domain . . ."

8a.7

Will public access be blocked by this project on non-project lands west of the town of Myton by this wetland corridor? Par. 2.1.4.2 "Public Access", pg. 2-28, states that hunting licenses would be necessary to hunt project acreage. Would a Ute Tribe access permit be required for wildlife watching?

8a.8

As far as mosquito habitat, it states these will be flow-thru complexes. How then does this flow-thru water not return additional salt load to the river system? (Refer to Par. 2.1.4.5 "Mosquito Control", pgs.2-30.)

8a.9

8a.10

At present time there is no additional CUP water available to deliver to secondary agricultural land that could be impacted by this project. (Refer to Par. 3.3.4 "Water Resources", pgs. 3-9.)

8a.11

The salt calculations appear to be very low considering that 2.58 tons of salt per acre foot of return flow water to the river in this area according to Natural Resources Conservation Service (NRCS) salt-loading data. This document claims only an increase of 1,125 tons of salt which equals only an additional 436 ac. ft. of additional return flow to the river. (Refer to Table 4-36, section 4.6.6.2.4, pgs. 4-89 and 4-90.)

8a.12

Map #1 "Proposed Construction Features on the Flume" shows a re-connection of an old oxbow system with no measurement devices or control. There must be water rights associated with this direct take from the Duchesne River in order to re-connect this complex.

8a.13

Map #3 "Proposed Construction on the Uresk Drain Site" shows a pipeline through Mallard Springs. This pipeline must not interfere with the existing mitigation area.

8a.14

Economic impacts have not been adequately addressed, not only taxes but added value to livestock production and their impacts.

8a.15

It is our understanding that the Riverdale property was purchased for the mitigation of the Duchesne River Area Canal Rehabilitation (DRACR), therefore this mitigation requirement should be completed on the lands already acquired.

8a.16

Duchesne County has in place a county land use plan and by law there must be consistency review completed for this EIS.

8a.17

Thank you for the opportunity to make comments. For any further questions, please call the Duchesne County Water Conservancy District office at (435) 722-4977.

Sincerely,


Art Taylor
Chairman

AT:asm

8a.7 The Mitigation Commission does not have authority to acquire property through eminent domain. However, the DOI, a joint lead agency, and Reclamation, a cooperating agency, both have authority to use eminent domain to fulfill the mitigation obligation represented by LDWP. The use of that authority for mitigation projects has been affirmed by the courts on several occasions.

8a.8 The Proposed Action in the LDWP FEIS does not include any land west of Myton, as the Flume site has been deleted. Additionally, all project access would be either on paved county roads or dirt roads which have an existing right-of-way. Existing rights-of-way would be maintained, as necessary, to allow landowner access to properties. Section 2.1.4.2 of the LDWP FEIS has been revised to clarify this point.

8a.9 Permission from the landowner (Tribe) would be required for nonconsumptive recreation access such as wildlife watching on Tribal land. Section 2.1.4.2 of the FEIS has been revised to clarify this point.

8a.10 The Bureau of Reclamation and the Salinity Forum recognize the interception of surface salts by surface water as a valid mechanism whereby salt enters the Colorado River system. However, they consider this pathway as contributing negligible amounts and discount it in their evaluation of salinity control projects. As a result, the LDWP DEIS analysis concentrated on changes in salts through groundwater seepage.

Section 4.6.6.2 of the LDWP FEIS has been revised to also include a mixing, or mass balance, model that includes both surface and groundwater inputs and outputs from the wetlands, including the salinity control water. The results from the mixing model supplement the more general CRSP model and provide greater detail on how the different water budget components, including the salinity control factor, interact to affect the Duchesne River TDS concentrations.

8a.11 Please refer to the response to comment 5.1.

8a.12 The commenter is correct that there would be only minor changes in return flows associated with the Proposed Action. These return flows were described in section 4.5.6.2.3 of the LDWP DEIS. The consumptive use calculations used in the DEIS have been revised as described in the responses to comments 5.2c and 5.12. However, there would still be only negligible changes in return flows under the Proposed Action, and as a result only negligible changes in salt loads.

Please also refer to the response to comment 8a.10.

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8a.13 Reconnecting oxbows would be accomplished by removing obstacles/obstructions, which currently preclude periodic overbank (flood) flows from entering those oxbow features. Water would enter the connected oxbows only during high flows and would do so by overflow from the main river channel, which is and has been a natural floodplain process. Also, please refer to response to comments 4a.14 and 8a.6.

8a.14 Under the Proposed Action, additional water may be conveyed down the Uresk Drain than under current conditions. The Mallard Springs ponds currently divert all Uresk Drain water through the state property for a distance of approximately 200 feet. The project partners understand that the current pond diversion berm and return flow delivery structures were not engineered for water deliveries exceeding the Mallard Springs water right.

As such, any additional water deliveries or return flows through the formerly open Drain may threaten the safety and/or integrity of the existing Mallard Spring ponds. Therefore, the LDWP may use a pipeline to convey LDWP water that is greater than the Mallard Springs water rights, and which was formerly conveyed through the Drain, around the Mallard Springs Ponds to avoid any damage to the existing ponds.

The proposed pipeline would not encroach on the mitigation ponds within Mallard Springs, nor would it affect the existing Mallard Springs water rights. Table 2-1 of the LDWP FEIS has been revised to clarify the purpose of the pipeline. Table 1-1 identifies the need to develop an agreement with DWR regarding delivery of Tribal water rights east of Mallard Springs.

8a.15 The IMPLAN input-output model used to evaluate socioeconomic impacts in the FEIS is a widely used analytical approach that takes into consideration direct, indirect, and induced impacts of changes in the local economy. Please refer to the response to comment 4a.9 for additional discussion of multipliers and other aspects of this model.

8a.16 We agree with the comment. DRACR mitigation is no longer a component of any alternative of the LDWP. Mitigation for DRACR will proceed under a separate plan and NEPA document to be developed later by the Mitigation Commission and DOI. The LDWP FEIS has been revised at sections 1.3.2, 1.4.2 and 1.5.4 to reflect this change.

8a.17 A consistency review for both Uintah and Duchesne County land use plans was completed and can be found in section 4.8.6.2.2 of the LDWP DEIS. Please refer to the response to comment 3a.2.

Comment Letter No. 8b

Comment Letter #8b



Duchesne County Water Conservancy District

855 East 200 North (112-10)
Roosevelt, Utah 84068

Office: (435) 722-4977
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Assistant Manager: Don W. Winterton
Admin. Assistant: Adrienne S. Maret

Board Members:

Art Taylor, Chairman
Keith Mortensen, Vice-Chairman
Ed Bench, Member
Lynn Burton, Member

D. Brad Hancock, Member
Craig Thomas, Member
Max Warren, Member

Upper Chain Lake

February 17, 2004

Mr. Ron Groves
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026

Dear Mr. Groves:

The Duchesne County Water Conservancy District (DCWCD) would like to submit further comments in regard to the Lower Duchesne River Wetlands Mitigation Project (LDWP).

It is our understanding that the LDWP will have an adverse affect on the water yield of the Central Utah Project, Bonneville Unit for which this mitigation is being proposed.

8b.1

Duchesne County Water Conservancy District is supportive of the suggested alternative submitted by the Duchesne County Commission, dated February 9, 2004. DCWCD does have water rights in the Green River and we would be willing to discuss this option, along with the water rights, with all interested parties.

8b.2

If this project were developed and constructed on the Green River, there would be opportunities to assist the recovery of the endangered fish in the Green River.

Thank you for the opportunity to make comments. For any further questions, please call the Duchesne County Water Conservancy District office at (435) 722-4977.

Sincerely,

Randy Crozier
Randy Crozier,
General Manager
by Don W. Winterton

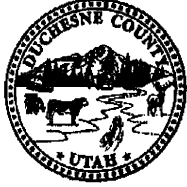
RC:asm

Enc.

Responses to Comment Letter No. 8b

8b.1 Please refer to the responses to comments 5.2 and 5.8.

8b.2 Thank you for your comment. Please refer to the response to comment 3a.3.



**DUCHEсне COUNTY
WEED DEPARTMENT**

Ron Johnson, Supervisor
P.O. Box 910
Duchesne, Utah 84021
Phone (435) 738-2745
Fax (435) 738-5522

January 29, 2004

Mr. Ron Groves, Director
PO Box 190
Ft. Duchesne, UT 84026

RE: Lower Duchesne River Wetlands Mitigation Project (LDWP)

In the Uintah Basin there is a noxious and invading weed problem in aquatic and wetlands areas. The following are examples:

1. There exists a serious problem with the waterfowl water moving planting seeds from Perennial Pepper weed (*Lepidium Latifolium*).
2. Movement of Russian Olive (*Elaeagus Angustifolia*), which is listed on the Noxious Weed List for Duchesne and Uintah Counties in the State of Utah. It flourishes in wetland areas.
3. There are various others that pose a threat:
 - a) Russian Knapweed (*Centaurea Repews*)
 - b) Leafy Spurge (*Euphorbia Esula*)
 - c) Purple Loosetrife (*Lythrum Salicaria*)
 - d) Invading Plants (Water Hemlock and Poison Hemlock)

All of these species of weed are in the Uintah Basin and have the capability to grow out of control in wetlands of the proposed Myton area. We have these plants and the Duchesne County Weed Department spends countless monies and hours attempting to keep these plants under control. Wetlands pose a large problem due to Environmental Protection Agency Rules and Regulations limiting useable weed control products in these areas. The chemicals allowed within these regulations do a poor job of controlling noxious weeds, and requires spraying several times more a scason causing greater expenditures.

The Uintah Basin has some of the Federal and State's rare and endangered species. Some are located in the proposed wetland area (Duchesne Rock Cress, Duchesne River

9.1
cont

1
LDWP Comments from Weed Dept.

Responses to Comment Letter No. 9

9.1 The commenter's assertion that waterfowl spread pepperweed seed is not documented and no references could be located to support this assertion. Between 1997-2006, pepperweed expanded dramatically in the LDWP project area along irrigation ditches. Its expansion occurred in the absence of the LDWP and appeared to be independent of waterfowl movement. As noted on the Duchesne County Weed Control web page (<http://www.duchesnegov.net/publicworks/weeds.html>) noxious weeds "are spread by wind, water, animals, and humans. Noxious weeds are spread in contaminated hay, straw, seed, grains, equipment, top soil, manure, tire treads, and on our clothes." Thus, there is no one single mechanism for noxious seed dispersal. Additionally, although giant pepperweed produces abundant seed, it rarely reproduces by seed. Reproduction is primarily clonal or spread by root fragments (Young et al. 1996, Miller et al 1985).

The suggestion that operation rules and water quality regulations would eliminate control over noxious weeds in wetland and riparian areas is incorrect. Please refer to the response to comment 3a.7 for discussion of effective herbicides.

Within the LDWP project area, Russian olive has mostly established along wetland and irrigated pasture edges in which either the water table is highest in the spring or in which the water table is high during irrigation but drops rapidly in the fall. Russian olive is most effectively treated during fall translocation (the time of year when plants transfer sugars from leaves to roots for overwinter storage). Water tables are typically low during this season, thus, there would likely be no restrictions on herbicide choice.

Tamarisk has mostly established in the riparian zone above the active floodplain and in areas not considered wetland. There are exceptions and the project partners agree that controlling tamarisk in areas with a high water table will be more difficult than tamarisk control in drier sites. However as noted above, there are aquatic formulations of herbicides effective in tamarisk control that can be used in wetland areas.

Regarding adverse impacts to the Duchesne rock cress and Duchesne River hawthorne, the US Fish and Wildlife Service has identified that there are no threatened, endangered or sensitive plant species in the LDWP project area that would be affected adversely by the LDWP (see Appendix E).

Please refer to the response to comment 3a.7 for additional discussion of weed control.

Comment Letter No. 9

Hawthorn). The plants Leafy Spurge and Perennial Pepper weed are two species that should not be uncontrolled in or near any wetland areas. Leafy Spurge, Russian Knapweed, Poison Hemlock and Water Hemlock are extremely toxic to animals and humans. These are already in the proposed wetland area that will be open for public use causing a serious problem.

Also, Salt Cedar (Tamarix Ramosissima Ledeb) is in the proposed area and is a Uintah County noxious weed. It also adds serious problems to environment as well as adding a great deal of salinity to water drainage to the Green River. Again, the chemicals to control this are not allowed in wetland areas.

Sincerely,



Ron Johnson,
Duchesne County Weed Supervisor

Lee Nelson,
Chairman, Duchesne County Weed Board



RJ/aa

↑
9.1
cont

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Duchesne and Strawberry Rivers Association
P.O. Box 123
Duchesne, UT 84021
Phone: (435) 738-5640

February 11, 2004

Mr. Michael Weyland
Utah Reclamation Mitigation and Conservation Commission
102 West 500 South, Suite 315
Salt Lake City, UT 84101

Dear Mr. Weyland:

After reviewing comments and letters of concern, and in some cases outright protests, to the proposed project (including objections from Tribal members), we believe some additional alternative needs to be studied and earnestly considered, especially for mitigation for the Strawberry Aqueduct and Collection System (SACS) portion.

It was understood when the Riverdell property was purchased from Mr. R.W. Young in the late 1980's it was to satisfy two objectives: (1) it was less costly to purchase the land than reconstruct the diversion and canal system of the said property, (2) the location could then be set aside as mitigation for the Duchesne River Area Canal Rehabilitation Project (DRACR). This agreement was already in place before the Lower Duchesne River Wetlands Project (LDWP) was in the initial planning stages. It then was included in the proposed action alternative of the LDWP. This portion of mitigation could be constructed independently without the taking of private property, the expense of purchasing property, or non-compliance with the Duchesne County Land Use Plan. This property does have the necessary water rights to fulfill the requirements of this project. This area could then function similarly to the nearby State property (i.e., Mallard Springs).

10.1

For mitigation of the SACS requirement, the recent Duchesne County Commission's proposal is very worthy of consideration and should receive high priority. By moving to the Bureau of Land Management (BLM) area on the Green River as the Commissioners propose, the following problems would be eliminated:

- (1) private property, including private Indian allotments, would not be taken,
- (2) adjacent private property would not be damaged,
- (3) public opposition due to the location of the project near populated areas would be alleviated,
- (4) there would be no "net loss" of private property in keeping with Duchesne and Uintah Counties' land use plans,
- (5) the economic loss to the counties would no longer be detrimental, and
- (6) potential health problems associated with increased mosquito infestations would be greatly diminished.

10.2

Responses to Comment Letter No. 10

10.1 Please refer to the response to comment 4b.3.

10.2 Although the Green River Alternative you suggested is not feasible (please refer to the responses to comments 3a.3 and 3c.2), the project partners have incorporated new measures in the Proposed Action that help lessen the impacts that you specifically identify in your comment.

Regarding mitigation actions incorporated to minimize the acquisition of private property, please refer to the response to comment 3a.2.

- Although you are not specific about the damages incurred to adjacent private property, we assume the comment refers to groundwater damage. Regarding the damage of adjacent private property, the Proposed Action has been modified to delete the Flume site. The northern boundary of the Uresk Drain site has been modified to exclude portions of the site nearest the Myton cemetery from the LDWP. A groundwater monitoring program is included in the project to evaluate potential impacts of the project on Myton. The results of the groundwater monitoring in the Myton area are discussed in responses to comments 6.7, 8.5, 22.4, 39.3 and 39.19.
- The nature of the comment regarding “the location of the project near populated areas” is unclear and can not be addressed with the information provided. However, to the extent that this comment reflects mosquito concerns, please see the discussion in the last point of this response.
- All acquired private land would remain in fee status, so there would be no net loss of private land.
- There would be no loss of the county tax base under the revised Proposed Action.
- The LDWP FEIS has been amended to further clarify the differences among mosquitoes in terms of disease transmission ability, potential habitat creation, to address health problems associated with any potential increase in mosquitoes and provide details of the project mosquito control plan. Please refer to the responses to commenters 1 and 2 for additional details regarding mosquito mitigation measures.

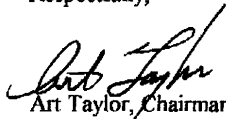
Comment Letter No. 10

Local government and community representatives have a valid concern in that they have not been consulted in the initial planning of this project. Duchesne-Strawberry River Water Users and other entities would like to be actively involved throughout this project. By accepting the Duchesne County Commission's proposal and also inviting all entities to the table, this issue would be resolved.

10.3

Thank you for the opportunity to comment and be assured that the Duchesne-Strawberry River Water Users would welcome working with you in the formulation of a viable alternative.

Respectfully,



Art Taylor, Chairman
Duchesne-Strawberry River Water Users Association

cc: Mr. Ron Groves, Ute Tribe

10.3 Local government and community representatives, including water user groups, were invited to public scoping meetings for the LDWP held in Ft. Duchesne, Roosevelt and Salt Lake City, Utah, in May 2001 as described in section 5.3 of the DEIS. Oral and written comments were received and incorporated into project planning. The DEIS devoted special attention to areas of concern expressed at scoping such as land acquisition, vector control and water rights to ensure that environmental impacts in these areas were fully covered and accurately expressed.

All affected local governments, community groups, organizations and many individuals were provided copies of the DEIS for review and comment during a public review period which extended for more than two months. During this time, the public was invited to three open public meetings where oral and written comments were received. Numerous local governments and public and private organizations provided written and oral comments that we believe provide a full exposition of their respective views on the project plan. The project partners have made every effort to fairly evaluate and incorporate all written and oral comments received during the public review period during preparation of the FEIS.

The public involvement process mandated by NEPA for federal actions significantly affecting the quality of the human environment has been followed during the planning for this project and is deemed adequate by the project partners. Specifically in response to requests from Duchesne and Uintah counties, both governments have been invited to participate as cooperating agencies in this NEPA process. Section 5.4 of the FEIS has been revised to include this information.

MOON LAKE WATER USERS ASSOCIATION

Roosevelt, Utah

P. O. Box 235 - 263 East Logoon Street - Office Phone 435-722 2002 - FAX 435-722-2241 - Cell phone 435-823-4174 - E mail drymum@qubtanet.com

January 6, 2004

Mr. Ron Groves, Ute Indian Tribe,
Wetlands-Fish & Wildlife
P. O. Box 190
Ft. Duchesne, Utah 84026

Dear Mr. Groves;

The Moon Lake Water Users Association would like to make the following comments regarding the Draft Environmental Impact Statement concerning the Lower Duchesne River Wetlands Mitigation Project.

As we examine the written material and maps, we find it very difficult to understand where the boundaries are and actual current property ownership. Water rights are not identified or sources of flow through waters. We think that it would help clarify these matters if you showed more detail such as Township, Range, Section Numbers, to show the line boundaries, land ownership. We would like to see the location of diversion structures, estimated diversion from and return flows to the river.

11.1

Even though the Statement does not feel that reducing the private lands in Duchesne County will have much effect, we feel that the Federal Government could make Bureau of Land Management (BLM), Forest Service or other Federal lands available in exchange so that there is no net loss of private lands. This could help to keep the crop and livestock production closer to current levels.

11.2

We would request that the plan be flexible and landowners be allowed to decide if they want to sell rather than have it taken by condemnation proceedings or obtained for public use under the right of eminent domain. Our understanding of the rules to acquire land is:

11.3

The Commission may acquire and dispose of personal and real property and water rights, and interests therein, through donation, purchase on a willing seller basis, sale, or lease, but not through direct exercise of the power of eminent domain...

The Project boundaries, as we understand them, shows at least two and possibly three separate areas and thus each could be increased or decreased without much problem.

We cannot find a justification or reasoning for the size of the Project area. How was it

11.4
cont

The Moon Lake Water Users Association is an Association of eight (8) Irrigation Companies serving 72,000 acres in Utah's "GREAT" Uintah Basin

Responses to Comment Letter No. 11

11.1 Please refer to the responses to comments 4a.18, 7.1 and 8a.5.

11.2 The Mitigation Commission and the DOI CUP Completion Act Office have no authority over Bureau of Land Management (BLM), Forest Service or other federal lands. These lands are managed under other authorities and for different public purposes. These lands could not be exchanged for private lands as you have suggested as part of the LDWP. Please also refer to the response to comment 3a.2.

11.3 Please refer to the responses to comments 3a.3 and 8a.7.

Comment Letter No. 11

determined that 7,790 acres were needed? We would appreciate seeing the formulas or regulations that determined that acreage. ↑ 11.4
cont

We are concerned that the wet lands near the river will be very supportive of noxious weeds that the County has been trying to eliminate for many years. How will these weeds be controlled in the wet lands? | 11.5

Thank you for allowing us to comment. Please feel free to call if you have questions concerning our comments.

Sincerely,



Keith Mortensen, President

The Moon Lake Water Users Association is an Association of eight (8) Irrigation Companies serving 72,000 acres in Utah's "GREAT" Uintah Basin.

11.4 The size of the LDWP Project described in the DEIS evolved from planning that began in 1965 as described in section 1.2.1 of the DEIS. The original 1965 plan was for development of six waterfowl management units, which totaled 6,640 acres and included 3,000 acres of wetlands. The project partners believe that an equitable mitigation project plan must be consistent with the original acreage commitments, but that a strict or artificial adherence to a goal of 6,640 acres is not necessary as long as the wetland and riparian habitats impacted by SACS are replaced in a manner that maximizes wetland and wildlife habitat connectivity, restores intact oxbow systems and restores riparian habitat in large contiguous blocks. Section 1.2 has been revised to emphasize the importance of riparian habitat connectivity over total acre size, as long as the scope of the LDWP remains consistent with the original acreage obligation.


The Proposed Action presented in the DEIS also incorporated the mitigation commitment from a second Uinta Basin project (DRACR) and was, therefore, larger than 6,640 acres. The combination of two different mitigation obligations into a single project has been eliminated and none of the action alternatives presented in the LDWP FEIS incorporate DRACR mitigation.

11.5 Please refer to the responses to comments 3a.7 and 9.1 and the Weed Control Plan presented in Appendix B.

Comment Letter No. 12

United States Department of Agriculture

Comment Letter #12


Natural Resources Conservation Service
240 W. Hwy 40 (333-4)
Roosevelt, UT 84066
(435) 722-4621
FAX (435) 722-9065



January 8, 2004

Ron Groves
Ute Indian Tribe
P.O. Box 190
Ft. Duchesne, UT 84026

Dear Mr. Groves,

I am writing to comment on the Draft Environmental Impact Statement (DEIS) for the Lower Duchesne River Wetlands Mitigation Project (LDWP). Our comments are;

4.6.6.2.4 Salinity Loading

The salt loading of the Duchesne River is directly impacted by the efficiency of the water application to the land in the LDWP. The assumption that the change is insignificant may not be accurate. Using our estimation procedures, we would predict a greater increase in salt loading of the Duchesne River than is reflected in the LDWP. 12.1

4.5.6.2.2 Water Availability

The assumption that the change in the use of the water from inefficient pasture irrigation to wetland development will not affect the stream flows in the Duchesne River is questionable. If the expected recharge from wetland seepage does not occur, the TDS in the Duchesne River may be altered greatly. 12.2

There may also be USDA program implications on the private land involved in the project. We have not been involved in the process of developing this DEIS. However, we would be happy to discuss our salt loading procedures or any other issues with you. 12.3
12.4

We also recommend that you have some dialog with the Colorado River Salinity Control Forum on this proposal to avoid potential conflicts.

Brett Prevedel
District Conservationist

Cc: Harry Slawter, Acting State Conservationist, NRCS
Karl Kler, Asst. State Conservationist, NRCS
David Webster, Area Conservationist, NRCS

Responses to Comment Letter No. 12

12.1 Salinity impacts from the Proposed Action and alternatives, including No Action, were analyzed in section 4.6.6 of the LDWP DEIS and in the Salinity Technical Report, which was available to the public with the DEIS. The DEIS concluded that the additional salinity loading resulting from the Proposed Action (and the action alternatives) was not significant, based on the criterion adopted by the Federal government and the Salinity Forum that measures changes in the salinity of Colorado River water at Imperial Dam. Applying the analysis procedures employed by the Bureau of Reclamation, there would be no measurable change in salinity of Colorado River water, measured at Imperial Dam, from the Proposed Action or alternatives. Thus, the project partners are confident the calculated salinity impacts of the LDWP would, nevertheless, would be negligible with respect to the Colorado River system. Please also refer to the response to comment 8a.10.

12.2 Sections 4.5 and 4.6 of the LDWP FEIS have been revised to include additional information on how the LDWP return flows were calculated and the relationship between return flows and TDS concentrations.

12.3 The comment pertains to penalties USDA program beneficiaries may incur if they fail to complete certain commitments made in exchange for USDA financial support, usually for soil and water conservation, or other agricultural improvements or practices. Acquisition of existing agricultural lands currently benefitting from these assistance programs, and conversion to wetlands under the Proposed Action, could trigger these penalty clauses and result in financial hardships on sellers of such property. The joint lead agencies recognize that all land acquisitions are subject to the resolution of existing encumbrances, regardless of origin. These encumbrances are identified by the appraisal process, and acquisition costs would reflect any financial impact of USDA program penalties. Section 2.1.3.2 of the LDWP FEIS has been revised to include additional material on this matter. Please also refer to the response to comment 4a.7.

12.4 The DOI has reviewed the NRCS salt loading procedures with the State Office and concluded that the NRCS procedures are more suitable to assessing salinity impacts of changes in irrigation methods than salinity impacts of restoring wetlands. As a result, the BOR salt load assessment methods described in the LDWP DEIS were also used to calculate salt loads for the FEIS.

Comment Letter No. 13

Comment Letter #13

23

Subj: Fw: Lower Duchesne River Wetlands Mitigation Project DEIS Comment
Date: 1/20/2004 11:43:20 AM Pacific Standard Time
From: wetlands@ubtanet.com (Wetlands)
Reply-to: wetlands@ubtanet.com (Wetlands)
To: Lesliegecy@aol.com

<BLOCKQUOTE dir=ltr style="PADDING-RIGHT: 0px; PADDING-LEFT: 5px; MARGIN-LEFT: 5px; BORDER-LEFT: #000000 2px solid; MARGIN-RIGHT: 0px"><DIV style="FONT: 10pt arial">----- Mensagem Original -----
From: "Carl Adams" <carladams@utah.gov>
To: "wetlands@ubtanet.com" <wetlands@ubtanet.com>
Subject: Lower Duchesne River Wetlands Mitigation Project DEIS Comment
Date: 13/01/04 21:34

<META content="MSHTML 6.00.2800.1170" name=GENERATOR><DIV>Thank you for the opportunity to comment on the LDWP DEIS. As the Watershed/TMDL Coordinator for the Uinta Basin in the Division of Water Quality I was surprised to find no mention of the fact that the lower Duchesne River is listed on the State of Utah's 303d list of impaired waters for Total Dissolved Solids (TDS). I am particularly interested in the effects of the LDWP on TDS concentrations in the lower Duchesne River but after reviewing both the DEIS and the supplemental Salinity Impact Analysis all I could find was the statement "By increasing discharge through wetlands in the project area, the project would reduce the concentrations of boron and TDS entering the Duchesne River." There is abundant information within the DEIS on the anticipated increase in salt loading, but lakes and streams are assessed according to pollutant concentrations, not loads. To be able to fully understand the impact of the LDWP on the water quality of the lower Duchesne River additional information and rationale is needed to support the statement that TDS concentrations will be reduced. </DIV><DIV> </DIV><DIV>Sincerely, </DIV><DIV> </DIV><DIV> </DIV><DIV>Carl Adams
Watershed Basin Coordinator
Utah Division of Water Quality
P.O. Box 144870
Salt Lake City, Utah 84114-4870
(801) 538-9215 (phone)
(801) 538-6016 (fax)
carladams@utah.gov
</DIV></DIV></BLOCKQUOTE>

Message sent using UBTAnet Webmail powered by UebiMiau 2.7

----- Headers ----- Return-Path: <wetlands@ubtanet.com> Received: from rly-xn03.mx.aol.com (rly-xn03.mail.aol.com [172.20.83.136]) by air-xn02.mail.aol.com (v97.18) with ESMTP id MAILINXN23-63a400d84be3c0; Tue, 20 Jan 2004 14:43:20 -0500 Received: from aspen.ubtanet.com (aspen.ubtanet.com [65.174.123.162]) by rly-xn03.mx.aol.com (v97.10) with ESMTP id MAILRELAYINXN34-63a400d84be3c0; Tue, 20 Jan 2004 14:42:54 -0500 Received: from UebiMiau (aspen.ubtanet.com [65.174.123.162]) by aspen.ubtanet.com (Postfix) with SMTP id D02A5A4034 for <Lesliegecy@aol.com>; Tue, 20 Jan 2004 12:26:11 -0700 (MST) Received: from client 208.5.86.6 for UebiMiau2.7 (webmail client); Tue, 20 Jan 2004 12:26:11 -0700 Date: Tue, 20 Jan 2004 12:26:11 -0700 From: "Wetlands" <wetlands@ubtanet.com> To: Lesliegecy@aol.com Reply-To: "Wetlands" <wetlands@ubtanet.com> Subject: Fw: Lower Duchesne River Wetlands Mitigation Project DEIS Comment X-Priority: 3X-Mailer: UebiMiau 2.7X-Original-IP: 208.5.86.6X-MSMail-Priority: Medium Importance: Medium Content-Type: text/html; charset="iso-8859-1"; MIME-Version: 1.0 Message-Id: <20040120192612.D02A5A4034@aspen.ubtanet.com> Content-Transfer-Encoding: quoted-printable X-AOL-IP: 65.174.123.162 X-AOL-SCOLL-Score: 0:XXX:XXX-AOL-SCOLL-URL_COUNT: 0

Responses to Comment Letter No. 13

13.1 Discussion of the lower Duchesne River 303d status and the impacts of the LDWP on this status has been added to section 4.6 of the LDWP FEIS.

Comment Letter No. 14a



State of Utah

MICHAEL O. LEAVITT
Governor

OLENE S. WALKER
Lieutenant Governor

Governor's Office of Planning and Budget

WES CURTIS
State Planning Coordinator

Resource Development Coordinating Committee

JOHN A. HARJA
Executive Director

GLADE SOWARDS
Committee Chairman

Comment Letter #14a

January 8, 2004

Mr. Ron Groves, Director
Wissiuks Wetlands Project
Ute Indian Tribe
P.O. Box 190
Ft. Duchesne, Utah 84026

SUBJECT: Lower Duchesne River Wetlands Mitigation Project Draft Environmental Impact Statement
Project No. 03-3508

Dear Mr. Groves:

The Resource Development Coordinating Committee (RDCC), representing the State of Utah, has reviewed this proposal. The Division of Wildlife Resources comments:

All alternatives include the development of wetlands on either side of the Division's 270-acre Mallard Springs Wildlife Management Area (WMA). Although the DEIS states that the WMA is not included in the formal project area, certain project features are nonetheless proposed for installation both within and immediately adjacent to the WMA which could potentially compromise the ability of the Division to manage its Mallard Springs holdings. The Division recognizes that the DEIS is more conceptual plan than a final design document. Nonetheless, we believe that a NEPA document warrants at least some recognition and discussion of the potential impacts of the proposed project on WMA operation, resources, or existing infrastructure.

Specific Comments

The Division owns water shares that are routinely applied to the WMA. This irrigation water is supplied via two delivery points located on the west side of the Mallard Springs WMA and associated internal ditches. The DEIS does not discuss these water rights or the conveyance system nor does it describe how the Division's ability to deliver its existing water rights to the WMA will be affected by the various alternatives. The DEIS should further describe measures designed to minimize or mitigate for any project actions that would compromise the ability of the Division to deliver irrigation water or otherwise

14a.1
cont

1594 West North Temple, Suite 3710, P. O. Box 145610, Salt Lake City, Utah 84114-5610
telephone (801) 538-5535 • facsimile (801) 538-5544 • <http://governor.utah.gov/planning/rdcc.htm>



Responses to Comment Letter No. 14a

14a.1 The commenter incorrectly suggests that the pipeline is intended to function as a “collection system on the WMA.” The pipeline is intended to ensure that delivery of the LDWP water is made in the proper amounts and timing to the proposed wetlands east of the Mallards Springs ponds without damaging the ponds. Table 2-1 of the LDWP FEIS has been revised to clarify this misunderstanding.

The commenter also states that “The Division currently operates the salinity mitigation ponds as a flow-through system, and flows entering the WMA exits (sic) the property essentially undiminished”. The LDWP wetlands would also be operated as a flow-through system, but approximately 48 percent of the water delivered to the eastern portion of the Uresk Drain would be lost to evapotranspiration. Similar depletions are likely for the Mallard Springs ponds. As a result, the DWR may need to address any potential conveyance losses of Tribal water rights through the Mallard Springs ponds as operating agreements and final designs are developed. Table 1-1 has been revised to include the need to develop an agreement with DWR regarding delivery of Tribal water rights east of Mallard Springs.

Please also refer to the response to comment 8a.14.

adequately manage its property.

In addition, the Division and the Duchesne Water Conservancy District have recently completed a mitigation project on the Mallard Springs WMA consisting of a series of four small impoundments. This project was designed and funded through the Bureau of Reclamation's Colorado River Salinity Control Program as mitigation for wetland losses. The Division is concerned that the proposed installation of a pipeline, modifications of the existing water conveyance system, or other potential impediments to water delivery to the WMA will adversely affect the success of the mitigation work already completed.

↑
14a.1
cont

Table 2-1, Uresk Drain Site, Physical (page 2-4) states that the Uresk Site will be operated as a flow-through system and that a pipeline will be installed across Mallard Springs "to ensure complete water delivery". The Division currently operates the salinity mitigation ponds as a flow-through system, and flows entering the WMA exits the property essentially undiminished. It is unclear to us what function the pipeline is supposed to satisfy. Is there a legitimate water deficiency that requires installation of what appears to be a collection system on the WMA to ensure "complete" delivery downstream? If problems exist, the Division would be willing to consider other remedies, such as manipulation of our existing water shares, which may address the issue.

14a.2

Applicants who wish to install rights-of-way, power lines, pipelines, etc. on Division lands are required to submit proposals for review and approval as described under Administrative Rule R657-28, Use of Division Lands. Accordingly, we would ask that the Division be included among those agencies listed in Table 1-1.

14a.3

General Comments

A previously mentioned, a major feature of the proposed project, the Uresk Drain Site, includes substantial development of wetlands on lands conspicuously located either side of the Mallard Springs WMA along the Uresk Drain. The resource values that would be realized by operating the entire Uresk Drain complex as a whole system, with due regard to respective jurisdictions, would be greater than the sum of its individual components. The Division believes that the proposed project would logically offer significant opportunities for collaborative wetland management for the Division and the Ute Tribe. In addition, this approach would support the Utah Reclamation Mitigation and Conservation Commission's programmatic direction to implement an ecosystem approach and foster partnerships in project development wherever possible. The Division would welcome the opportunity to discuss this concept with the Ute Tribe, Mitigation Commission, and other appropriate entities at some future time.

14a.4

The Division commends the Ute Tribe and the lead agencies for incorporating Duchesne Area Canal Rehabilitation Program (DRACR) mitigation into the proposed project with accommodation for public access and the continued use of State hunting and fishing

14a.5

14a.2 Please refer to the response to comment 14a.1.

14a.3 Table 1-1 has been revised in the LDWP FEIS according to the information you provided in your comment.

14a.4 The LDWP was developed to be consistent with Mallard Springs operations as the joint lead agencies recognized the value of the entire Uresk Drain wetland system. We will further consider Mallard Springs operations in the development of pertinent LDWP Operating Plans and Agreements.

14a.5 DRACR mitigation has been eliminated from the Proposed Action.

Page 3

licenses. This seems like a reasonable way to account for outstanding DRACR obligations and enhance the resource benefits of the proposed project. This approach may present some inherent administrative difficulties, however, we believe any problems are readily surmountable. The Division would like to meet with the Tribe and other interested parties at an appropriate time to discuss how this approach might be implemented to minimize administrative problems and confusion on the part of the public.

If you have questions or require further coordination, please feel to contact Eric (Rick) Larson, CUP Coordinator, at 801-538-4822 at your convenience.

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Resource Development Coordinating Committee at the above address or call Carolyn Wright at (801) 538-5535 or myself at (801) 538-5559.

Sincerely,



John Harja
Executive Director
Resource Development Coordinating Committee

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Comment Letter No. 14b



State of Utah

OLENE S. WALKER
Governor

GAYLE McKEACIINIE
Lieutenant Governor

Governor's Office of Planning and Budget

WES CURTIS
State Planning Coordinator

Resource Development Coordinating Committee

GLADE SOWARDS
Committee Chairman

JOHN A. HAJIA
Executive Director

Comment Letter #14b

January 8, 2004

Mr. Ron Groves, Director
Wissiuys Wetlands Project
Ute Indian Tribe
P.O. Box 190
Ft. Duchesne, Utah 84026

SUBJECT: Lower Duchesne River Wetlands Mitigation Project Draft Environmental Impact Statement
Project No. 03-3508

Dear Mr. Groves:

The Resource Development Coordinating Committee (RDCC), representing the State of Utah, has reviewed this proposal. Additional comments were received from the Division of Water Resources after our initial letter was sent dated January 8, 2004. The Division of Water Resources comments:

The Division of Water Resources understands that canals in the area of the project are already running at full capacity. Will providing the water for the project exceed the capacity of those canals? 14b.1

The document notes that 40 to 70 percent of the water supplied to the project comes from presently occurring canal seepage and irrigation return flows. Will this preclude future projects to improve irrigation efficiency or canal transportation efficiency? 14b.2

We noted that the project area includes 3,885 acres of dry pasture and 1,087 acres of idle federal lands. Will water be applied to the total acreage? Will the water rights identified as available for the project be sufficient for the project area? Will change applications be required for such use of the water rights? 14b.3

Will downstream flows required for endangered species be affected as a result of the project? What is the estimated impact on junior water right holders upstream and downstream from the project? If shortages occur, how great would be the shortages and how frequently would they occur? 14b.4
14b.5

If further information from the Division of Water Resources is required, please contact Jim Stephens, area planning specialist for the Uintah Basin, at (801)538-7275.

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Resource Development Coordinating Committee at the above address or call Carolyn Wright at (801) 538-5535 or myself at (801) 538-5559.

Sincerely,

John Harja
Executive Director
Resource Development Coordinating Committee

Responses to Comment Letter No. 14b

14b.1 Please refer to the response to comment 8a.3.

14b.2 Section 4.5.6.2.1, page 4-71 of the LDWP DEIS describes the water requirements for the Proposed Action. This section states that “The proposed water budget includes support for created and restored wetlands, support for existing irrigation-induced wetlands and irrigation water to maintain grasslands.” The LDWP water budget specifically included water for support of irrigation-induced wetlands to prevent loss of existing wetlands from changes in irrigation or canal reconstruction outside of the project area. The amount of this support is quantified in Table 4-31 of the LDWP DEIS under the category “wetland support-enhancement.” As a result the LDWP will not preclude future irrigation improvement projects outside of the LDWP.

14b.3 The Riverdell North property is not included in the revised Proposed Action and table 4-44 of the LDWP FEIS has been edited to reflect the new Proposed Action area. Please note, however, that “other land” does not necessarily refer to dry grassland. “Other land” is a land use term used by the BIA that lumps a variety of non-cropland habitats. The “other land” category includes irrigation-induced wetlands, natural wetlands, riparian areas, and unimproved pasture whether irrigated or not; the category also includes dry grassland.

The LDWP will only apply water to those lands which have a water right, most of which are currently being irrigated. Under the revised Proposed Action, 2,865 acres of land will be irrigated with 830 acres remaining as desert shrub habitat. Portions of 1,110 acres of riparian habitat will undergo temporary irrigation to establish new trees and shrubs.

For response to the second question in this comment, please see Table 4-31 in the LDWP FEIS which shows that there is more water available for LDWP lands than is needed by the LDWP.

With respect to the third question in this comment, a change application is not necessary. There is no change in the point of diversion, place or type of use. The water would still be used to irrigate the land for the growth of crops, forage and habitat for wetland, wildlife and habitat purposes.

14b.4 Please refer to the response to comment 4b.11.

14b.5 Please refer to the response to comment 4a.12.

Comment Letter No. 14c



State of Utah

OLENE S. WALKER
Governor

GAYLE McKEACHNIE
Lieutenant Governor

Governor's Office of Planning and Budget

WES CURTIS
State Planning Coordinator

Resource Development Coordinating Committee

GLADE SOWARDS
Committee Chairman

JOHN A. HARJA
Executive Director

Comment Letter #14c

February 10, 2004

Ron Groves
Wissiuks Wetlands Project
Ute Indian Tribe
P.O. Box 190
Ft. Duchesne, Utah 84026

SUBJECT: Lower Duchesne River Wetlands Mitigation Project
Project No. 03-3641

Dear Mr. Groves:

The Resource Development Coordinating Committee (RDCC), representing the State of Utah, has reviewed this proposal. Additional comments were received from the Division of Water Rights after our initial letter was sent dated January 8, 2004. The Division of Water Rights comments:

The primary concern of the Division is that the project not enlarge the water rights involved and thereby impair existing water rights on the Duchesne River. The water rights which will be used have a specific number of acres of irrigation associated with each water right. The combined depletion associated with the project wetlands and ponds and the depletion associated with continued irrigation must not exceed the depletion allowed under the existing water rights. An evaluation of the water rights and the proposed uses must be conducted before determining the future uses to ensure that existing water rights are not impaired. It is recommended that the project file change application(s) so the water rights can be addressed.

14c.1

Permits are required for any construction that changes the beds or banks of streams in Utah. These permits may be obtained from the Utah Division of Water Rights or the US Army Corps of Engineers.

14c.2

The Committee appreciates the opportunity to review this proposal. Please direct any other written questions regarding this correspondence to the Resource Development Coordinating Committee at the above address or call Carolyn Wright at (801) 538-5535 or myself at (801) 538-5559.

Sincerely,

John Harja
Executive Director
Resource Development Coordinating Committee

Responses to Comment Letter No. 14c

14c.1 The LDWP would not enlarge the amount of water diverted, 4.00 acre-feet per acre with an appurtenant 1861 priority water right, nor would the combined depletion exceed 2.00 acre-feet per acre recognized in the 1990 version of the Ute Indian Compact ratified by Congress in section 503 of the Central Utah Project Completion Act. Also, please refer to responses to comments 5.2 and 5.3. While different types of crops, forage and habitat would be grown and developed on LDWP lands, water would continue to be applied to lands in same manner as under baseline conditions. Change applications are not needed for the LDWP lands served by the UIIP because no changes in point of diversion or place or type of use would occur.

14c.2 Please refer to Table 1-1, page 1-20 of the LDWP DEIS which listed the “possible authorizing actions, permits and or licenses for [LDWP] construction.” Both the Clean Water Act 404 permit issued by the Army Corps of Engineers and the Streambank Alteration Permit issued by the Utah Division of Water Rights were listed in this table. The project partners acknowledge that both permits may be necessary for construction of the project and would submit appropriate permit applications prior to construction.

Comment Letter No. 15

Comment Letter #15

Stonefly Society Chapter
Trout Unlimited and
Federation of Fly Fishers
482 12th Avenue
Salt Lake City, Utah 84103
February 16, 2004

Maxine Natchees, Business Committee Chairperson
T. Smiley Arrowchis, Business Committee Vice-Chairperson
C/O Ron Groves
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026

Dear Ms. Natchees and Mr. Arrowchis;

I am writing in behalf of the Stonefly Society Chapter of Trout Unlimited and the Federation of Fly Fishers to comment on the Lower Duchesne River Wetlands Mitigation Project. This project will partially address the impacts that have been produced on the lands of the Ute Indian Tribe by operations of the Central Utah Water Project and other Bureau of Reclamation activities.

Our organization has a long history of involvement with the Central Utah Water Project. At times, this has been a highly combative relationship, but recently has been very positive. We were the leading conservation organization in the state of Utah advocating that increased flows should be provided for streams in the Uintah Basin particularly Rock Creek and the Duchesne River. We continue to have concerns regarding the streams, wetlands, and riparian corridors in the Uintah Basin. We believe that elements of Lower Duchesne River Wetlands Mitigation Project could play a highly significant role in the protection of these resources.

The Lower Duchesne River Wetlands Mitigation Project is an extremely innovative approach to wetland mitigation planning. We are particularly pleased that the "Large Ponds Alternative" was rejected by the Tribe, the Commission, and the project consultants. The DEIS has very skillfully

15.1

Duchesne Wetlands DEIS, Stonefly Society Comments, page 1 of 10, 2/19/04

Response to Comment Letter No. 15

15.1 Thank you for your comment.

Comment Letter No. 15

integrated existing landscape features into a plan that works to enhance a variety of wetland/riparian resources. We are especially impressed with efforts to restore the riparian corridor of the Duchesne River. This is strikingly different from every other wetland mitigation project we have reviewed to date.

However, there are issues in the DEIS which still raise questions. In part, this is due to the unusual nature of the plan that has tried to combine the wishes of the Tribe with a more sound ecological approach. Also, it appears that the plan was limited by choices that are not adequately explained in the DEIS.

1) Number of Acres to be restored

The DEIS states that 6,640 acres would be enhanced as compensation for SACS (Section 1.4.2). This figure comes from the CUP Bonneville Unit Definite Plan Report released by the Bureau of Reclamation in 1964. We have never seen any data that supports this figure. No additional documentation has been produced to assure the Ute Indian Tribe that this number accurately reflects the impacts to the Duchesne River corridor and/or tribal lands. We believe that this figure could be checked in a relatively cost effective manner.

15.2

Does the tribe desire that this figure be checked to insure that it represents a reasonable estimate of Tribal lands that have been impacted?

2) Funds Available for Project 1-6

The discussion of rejected alternatives in section 1.5 is shaped by a proposed cost ceiling on this project. On page 1-6, it is stated that the project has a cost ceiling of 7.9 million dollars. At no point in the document is there a discussion why this ceiling was implemented. There have been at least two critical points in the history of the CUP in which the Ute Tribe has given approval to the CUP based on very specific benefits and mitigation efforts that would be provided in exchange for their support. Opposition by the tribe would have placed the CUP in jeopardy and possibly led to its cancellation. The tribe was promised 6,640 acres of mitigation wildlife lands in 1965. This number was reaffirmed by administrative

15.3
cont

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15.2 Please refer to the responses to comments 11.4 and 6.1.

15.3 The funding authorization of 7.9 million dollars was determined by indexing the costs calculated in 1988 for constructing the six waterfowl management areas (then commonly referred to as the “Wissiuks Project”) as described in the 1965 FWCA Report and in the 1988 DPR. The unexpended balance of that authorization has been indexed each year since 1991. The project partners, including the Tribe, have agreed to plan the LDWP Project within the available authorization.

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actions in 1988 and by congress in 1992. At no point did the tribe agree that this commitment should be qualified by a cost ceiling.

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15.3
cont

3) Rejection of Riparian Flow Alternative (Section 1.5.2)

In our past comments on this project we strongly urged that the project at least in part be based on restoring and protecting a more natural hydrograph on the Duchesne River. In this section the DEIS rejects this alternative both totally and partially as a component of the proposed alternative for a number of reasons that seem open to question.

On page 1-16, it is stated that the Riparian Flow Alternative "included acquisition of all land within the 10- to 25-year floodplain between Duchesne and Ouray." Later, in the section this cost estimated to be 8.3 million dollars. It is not clear why land acquisition on this scale should be a project requirement. Why couldn't a combination of tribal action, easements, donations, setback dikes, and limited purchases be constructed to allow periodic flooding along the Duchesne and its tributaries?

15.4

On page 1-17, it is stated that this alternative would require 45,000 acre-foot/year of water and that would exceeded the amount of would have become "available with land purchase". This statement requires clarification. How much water would exactly have become available with land purchase? How much more is needed?

Are there alternative sources of funding such as the Colorado Salinity Control Program that would reduce project cost?

15.5

It is stated that the water from the Instream Flow Agreement would not be available below the confluence of the Duchesne and Strawberry River. This is open to question. We would argue that this water should be reserved for instream flow purposes all the way from the Strawberry Collection System to the Green River. This would allow water to be used for over bank flooding and later summer base flow.

15.6a
cont
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On page 1-17, it is noted that the pattern of release of flows under the Instream Flow Agreement is relatively uniform and would not fit the needs of

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15.4 In response to the first comment regarding statements made on page 1-16 of the LDWP DEIS, lands would need to be acquired in fee title in order to allow the Duchesne River to flood without causing significant private property damage. The geomorphology of the Duchesne River is such that set-back dikes would not create much, if any, floodplain benefit without substantial floodplain regrading. Although there are both natural and man-made levees along the Duchesne River, most of the isolation of the river from its floodplain has been through channel downcutting and loss of flows. For the Riparian Flow Alternative to succeed, flows high enough to substantially move sediment and cut into high banks would be necessary. Inundation and reestablishment of the floodplain would not be conducive to existing grazing or cropping practices, necessitating fee title acquisition. Acquisition of the floodplain would foreseeably leave landowners with uneconomical remainders and the purchase of entire farms would be more practical. In addition, flows high enough to reestablish the floodplain would potentially damage existing residences, which have been built in the historic floodplain. As a result, all lands and residences within the historic floodplain would require purchase so that the Duchesne River could flood naturally.

The estimated amount of water associated with land acquired or leased in the riparian corridor under the Riparian Flow Alternative would be approximately 22,000 acre-feet. Therefore, another 23,000 acre-feet of water would still be needed to make the Riparian Flow Alternative hydrologically feasible. Current market value for water rights exceeds \$1,500 per acre-foot, resulting in a cost of at least 34.5 million dollars, above and beyond the land acquisition and other project costs. In addition, acquisition of only a portion of a larger fee land parcel would create the undesirable impact of farm splitting, which the LDWP has strived to avoid.

15.5 The project partners will consider other potential sources of funding, including exploring opportunities for cost sharing in salinity control measures with Reclamation, when implementing a selected action following the LDWP FEIS and ROD.

15.6a The project partners disagree that the Agreement dated February 27, 1980 among the United States, State of Utah, and Central Utah Water Conservancy District (commonly referred to as Stream Flow Agreement of 1980, as amended in 1990) is open to question with respect to the status of the instream flow water downstream of the Duchesne and Strawberry Rivers confluence. Article 2 states in part "... Below the confluence of the Duchesne and Strawberry rivers, it is agreed that water released for augmenting stream flows may be rediverted by the District and used for such uses as are consistent with the water rights comprising the same ...". Additionally, Article 11 states in part "... It is contemplated that uses for such released water will develop below the points of confluence of the Duchesne and Strawberry Rivers, and that at least part of the water released to meet the fishery obligations will occur at times when the water can be rediverted and reused under the water rights for other district and project uses ...". However, it should be noted that even if the Stream Flow Agreement water were to be made available, the magnitude and timing of the releases would be far short of those needed to achieve the Riparian Flow Alternative. The Stream Flow Agreement water is delivered at a uniform, steady rate throughout two periods of the water year (essentially irrigation season and non-irrigation season). Although detailed analysis of the Stream Flow Agreement of 1980, as amended in 1990, is beyond the scope of the LDWP FEIS, it is clear that the water used to

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meet the Stream Flow Agreement is not freely available. The Riparian Flow Alternative is not achievable and is not reasonably viable.

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a "Riparian Flow Alternative". This has been the pattern since its implementation, but although it is not part of the DEIS, the Stonefly Society has become increasingly concerned about whether this pattern should be reexamined. Such an assessment, we strongly believe would lead to conclusion that a different, more natural flow pattern would be important for coldwater fisheries. Such a revised stream flow pattern could then complement a "Riparian Flow Alternative".

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15.6a
cont

On page 1-17, it is stated that the instream flow agreement did not provide for storage of instream flow water and implies that no storage space would be available. This implication is open to question. There would be a need to store the instream flow water in the late summer, winter, and early spring. On most years, there would be space available in Starvation at these times to do this. The water would then be available to amplify the spring runoff and early summer flows. The space might not be available every year. Would the space be available and if not, how many years would it not be available?

15.6b

We project that the only years on which the space would not be available would be high water in which only a limited amount of added flow would be needed to produce overbank flooding.

In addition, to the Instream Flow Water, the water from Daniels Creek has now become available. While the use of this water has not been determined, it is highly probable that its best use will be to provide high spring flows periodically on an alternating basis on each of the major streams intercepted by the collection system. Such a plan would make this water available for a "Riparian Flow Alternative."

15.7

The Strawberry Collection System enables some very interesting water trades. In fact, water trades in which water is exchanged back into the Uintah Basin would have spectacular environmental benefits. Under the CUP's water conservation program, the Interior Department is starting to acquire water rights in Utah Lake that could then be traded back into Strawberry Reservoir. Donations and water purchases in the Bonneville Basin could also be traded back to the Uintah Basin. Again, such a plan would make this

15.8

15.6b Regarding the comment on the text located on page 1-17 of the LDWP DEIS, it must be reiterated that the Stream Flow Agreement of 1980, as amended in 1990, is to provide minimum flows needed to retain 50 percent of the historic adult trout habitat in the four streams covered under the Stream Flow Agreement (Strawberry River, Currant Creek, West Fork Duchesne/Duchesne rivers and Rock Creek). This requires 54,900 acre-feet annually, of which 44,400 acre-feet is supplied from CUP (absent any shared shortages that may be imposed). Although the comment does not specifically identify concerns with the pattern of those releases or bypasses, it should be noted that attempts to provide “... a more natural flow pattern ...” would need to be made with supplies over and above the 44,400 acre-feet dedicated annually to maintain the minimum levels. Such an additional supply does not presently exist on a permanent basis, nor is such a supply reasonably foreseeable. Provisions under the 1990 Amendment to the 1980 Stream Flow Agreement that allow for temporary storage of a portion of the annual allocation of 44,400 acre-feet, if not needed to maintain the necessary minimum flow amounts in a given year, will not yield sufficient quantities to meet the needs of the Riparian Flow Alternative on a predictable or frequent basis, even if it were somehow determined that those waters so stored could be used for LDWP purposes.

15.7 The commenter’s reference to the “... water from Daniel’s Creek ...” refers to 2,900 acre-feet of water made available to the Mitigation Commission under the Wasatch County Water Efficiency Project with Daniels Replacement Pipeline Project. Under CUPCA, the water will be available for stream flow purposes within the Strawberry River and/or the streams affected by SACS. Final disposition of the 2,900 acre-feet will be the subject of a subsequent NEPA action, which will consider alternative uses of the 2,900 acre-feet. However, the 2,900 acre-feet, even if committed to uses compatible with the Riparian Flow Alternative, would not be sufficient to make this alternative reasonable or viable.

15.8 The project partners disagree that water conserved under the CUP water conservation program or acquired in Utah Lake or elsewhere in the Bonneville Basin, could feasibly be “traded back” into Strawberry Reservoir to facilitate the Riparian Flow Alternative. Water conserved in the Utah Lake drainage area under Section 207 of CUPCA has been committed to June sucker recovery (FEIS for the Utah Lake Drainage Basin Water Delivery System, September 2004). Water conserved in the future would be committed further to June sucker recovery by providing supplemental instream flows in Hobble Creek and the lower Provo River. The relatively minor amount of water conveyed to the Secretary of the Interior under Section 207 of CUPCA within the Uinta Basin (currently 375 acre-feet) is temporary, and the amount is insufficient to achieve the Riparian Flow Alternative. Also, for any water rights acquired within the Bonneville Basin to even conceptually be transferred to the Uinta Basin, the Utah State Engineer would have to prevent impacts on downstream water right holders in the basin of origin of the water right who depend on the return flows of the acquired water to fulfill their legal water rights. At best, the Utah State Engineer could approve, for exchange only, the amount of water represented by the consumptive use of the acquired right. This would likely be about half of the amount acquired, thereby making this strategy highly inefficient and expensive even if it were feasible. Given this, it is unreasonable that the LDWP project could acquire sufficient water, even in conjunction with other sources as described in the LDWP DEIS at section 1.5.2, to make a “trade back” option hydrologically feasible.

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water available for a "Riparian Flow Alternative". In fact, such transfers would produce the enormous environmental benefits.

Finally, should channel work on the Duchesne be explored to alter the relationship between the river and its floodplain?

15.9

6) Interactions with the Upper Basin Recovery Implementation Program (RIP)

It is curious that this document does not reflect greater communication between the Ute Tribe, their consultants, environmental groups, the Mitigation Commission, and the Upper Basin Recovery Program. Neither the Ute Tribe nor any Utah environmental or recreational groups have been involved in the RIP program. The Duchesne River Wetland mitigation project and cooperation on the Duchesne could be extremely important to the health of the Colorado River System.

The Recovery Program should have logically helped participate in this DEIS. On page 1-24, it is stated that the recovery program recommended flows for the Duchesne in 1990. There have been recent alterations to these recommendations that should have been reviewed as part of this document, but obviously have not been. Such recommendations could have altered the proposed alternative and/or the makeup of the proposed alternative in this DEIS.

15.10

7) Operation of the river-connected oxbows

We view the river connected oxbow systems as perhaps the strongest part of the Proposed Action. There appear to be five oxbow systems that will be altered. Two will be connected to the Duchesne (Flume & Riverdell North); two will not (Ted's South & Riverdell South); and one might be (Ted's North).

It is stated that on the 2 connected systems flow will occur during high water periods and then stop each summer. Have you addressed how the flow will drop? This will determine whether fish will become stranded in the oxbows. It is stated on page 4-57 that there is a possibility that pike minnow could enter several of the oxbow systems. Consequently, there will be a need to control the drop in flows slowly enough for fish to exit the oxbow systems.

15.11

15.9 In response to both intra and inter-basin diversions and other anthropogenic modifications, the geomorphology and flow regime of the lower Duchesne River have changed so that the historic flood plain is located from 12 to 26 feet above the river channel throughout much of its length. Exceptions are near the Flume secondary channel, the Riverdell North oxbow and the Ted's Flat oxbow, where banks are within 4 to 6 feet of the river channel, and the river still periodically tops its banks. Removal of flooding obstructions is proposed in these areas to allow more frequent connection of the river and its flood plain at select locations.

Reconstruction of the Duchesne River to connect it with its historic flood plain throughout its length would require either raising the channel bed or lowering the flood plain between the outlet of Starvation Reservoir and the Green River. Either approach would require handling of more than 42 million cubic yards of soil. The costs of soil handling alone would exceed 100 million dollars without land acquisition, design, or planting. Reconstruction of the Duchesne River channel would also require changes in flows or other work on the Green River, as the Duchesne River bed elevation is affected by the Green River bed elevation, so that changes in one river channel morphology would affect channel morphology on the other.

Although the project partners recognize the value of a reconstructed flood plain, in this case the costs of the reconstruction combined with uncertainty of whether or not a reconstructed channel would function over the long-term without addressing control points on the Green River makes this alternative infeasible.

Instead, the project partners have focused on reconnecting the river and its flood plain in selected locations where the frequency of overbank flooding can be increased by removal of flooding obstructions without extensive channel reconstruction.

15.10 The LDWP planning team is well acquainted with the "Upper Basin Recovery Program" aka Colorado River Endangered Fish Recovery Program. The Recovery Program goals (to advance the recovery and delisting of several endangered fish species) are different from the goals of the LDWP, which are to create and enhance wetlands and wetland-wildlife habitats along the Duchesne River.

During the early planning of the LDWP (1997), members of the LDWP Planning Team met with the FWS and Reclamation to discuss program overlap. There was, and continues to be, overlap among two program goals. Updates of the LDWP progress were provided to members of the recovery team at key milestones (e.g., initial planning in 1997, scoping in 2000, release of the DEIS in 2003) and the LDWP team reviewed key recovery program documents (e.g., 1995 and 2005 flow recommendations, geomorphic analyses of the Duchesne River, historical data and photographs collected by Utah State University for the Recovery program).

The commenter is correct that the FWS, on behalf of the Recovery Program, did recommend preliminary flow recommendations for the Duchesne River to benefit listed Colorado River fish. These preliminary recommendations were first issued in 1995 and revised in 2005. The preliminary flow recommendations (1995) were considered by the LDWP planning team as part

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of the Riparian Flow Alternative during preparation of the DEIS. It was widely concluded by the team, as well as by local water agencies and administrators, that the preliminary flow recommendations were infeasible due to lack of available water. Please refer to the responses to comments 15.6 through 15.8.

The 2005 FWS flow recommendations establish peak flow management recommendations, base flow targets and channel maintenance flows, on a yearly basis, for the lower Duchesne River. (Details regarding these flows are too extensive to include here, but are available in the May 2005 update of the Biological Opinion for the Duchesne River basin, available upon request from the project partners.) These revised flow recommendations have also been reviewed by the LDWP planning team. Essentially, these new recommended flow targets are considerably lower than originally recommended in 1995 and are not sufficient to contribute materially to any LDWP alternative. These flows specifically do not provide a sufficient base flow for riparian vegetation to establish and persist.

It is important to note that the LDWP planning team has identified other water sources that are sufficient to implement the Proposed Action and alternatives. It is not anticipated that either additional water sources or altered river management will be needed to achieve the goals of the project.

15.11 Only the Ted's Flat oxbow would be connected (pending funding) to the Duchesne River under the revised Proposed Action. Natural river flow would be allowed to enter the oxbow during high spring flows with supplemental water provided to the oxbow from the Ouray School Canal. Water for flow-through salinity control would be maintained during the entire irrigation season so that fish entering the oxbow would be able to exit at the lower end. Additionally, telemetry studies by the recovery program have shown that native fish species, including the Colorado Pikeminnow, will use flooded areas but leave when the water starts to recede (Modde 2004). As a result, it is unlikely that stranding of fish would occur.

Water from the Ouray School Canal (Ted's Flat North oxbows) or the Myton Townsite Canal (Riverdell South, Ted's Flat South oxbows) would be supplied to the oxbows according to the duty schedule, or other water rights agreement in place. Water operations would be manipulated, if necessary, within these constraints to maintain a mix of habitats. The specific water management details on a fine-scale basis would be identified during the final design for each site.

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8) Connection of the Other Oxbows

With modification of flows on the Duchesne River with a Riparian Flow Alternative, can the other oxbows be connected allowing Duchesne River water to flow out of the river through the oxbows and back into the Duchesne River? 15.12

9) Operation of the Oxbow System

It appears that the operation of oxbow system will function with relatively fixed water levels. Historically, the natural functioning of these systems was very different. There was year-to-year variability in the amount of the system that was flooded each year. Next, these oxbows flooded and then the water level gradually dropped each summer. By late summer, fall, and winter, much of the system no longer had standing water. Should the system be operated in this manner? 15.13

This hydrologic pattern appeared to favor native vegetation. Would the proposed alternative system favor wildlife and/or native vegetation?

10) Operation of the wetlands for fishery benefits

There is very little attention to the use of these areas for fishery purposes. Can the wetlands and oxbow systems be designed make them serve a fishery purpose? For instance, can they be modified to allow seasonal use of the system by sport fish, pike minnow, or razorback suckers? Can they be operated in a manner that would favor these fish over carp?

On page 2-19, it is noted that all areas would be operated as flow through systems. Can this flow through operation allow fish entrance and exit? 15.14

Would this pattern help suppress mosquito production?

Is this also true of the connected oxbow systems after spring runoff?

If so, are there design modifications that would improve their value as fisheries?

Is this a value that would be important to the tribe?

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15.12 Please refer to the responses to comments 15.5 through 15.10 which emphasize the infeasibility of the Riparian Flow Alternative. Although the project partners recognize the value of reconnecting oxbows, the ability to acquire sufficient water rights to achieve the required flows to move sediment and provide overbank flooding under the recommended flows is not certain. It is too speculative for the LDWP to investigate all potential oxbow connections for flows that are not feasibly achievable.

15.13 The commenter is correct that the oxbows may function with less variability than historically. However, the historical records indicate that the oxbows were very marshy and not seasonally dry. As noted in the response to comment 8a.6, the wetlands will be designed to maintain a variety of wetland types, distributed along a topo-edaphic gradient. For example, a portion of the wetlands will be designed for wet meadows, characterized by a seasonal high water table, but expected to dry out by the end of the growing season.

The hydrologic pattern that resulted in a Duchesne River floodplain containing cottonwoods of varying age classes cannot be restored under the LDWP.

15.14 The oxbows would be operated to replace pre-CUP natural functions as much as possible, which includes measures to restore the entire aquatic ecosystem. Maintenance of a healthy ecosystem that contains aquatic predators is one component of the Proposed LDWP IPM approach to mosquito control (see Appendix G). As noted in Appendix G, the flow-through system was established to maintain wetland water quality, but has the additional benefit of assisting in the physical aspect of mosquito control. The maintenance of ongoing flow would also allow fish passage through the oxbows connected to the river.

Because of the prevalence of carp in the Duchesne River, it is likely that carp would establish in oxbows connected to the river regardless of the wetland operation. As a result, all wetlands will be monitored for the presence of carp and control measures implemented as necessary. Water level manipulation will generally not be used for this purpose due to the relatively flat gradients of some wetlands which would prohibit emptying and the potential for drawdowns to promote noxious weed establishment. Mechanical removal would be the most likely method of control.

The LDWP conceptual designs have included a number of measures that would improve the fishery value of the wetlands (e.g., water quality improvement, increase in dissolved oxygen, encouragement of submerged aquatic vegetation). Specific design criteria for these and other project features would be developed during the final design for each of the sites.

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11) Status of Cottonwood Regeneration

On page 1-8, it is stated that most of the Cottonwood trees along the broader Duchesne corridor are 100 to 150 years old and that recent re-establishment in the corridor has been limited. Conversely, tamarisk and Russian olive have invaded the corridor. On page 4-7, it is suggested that Cottonwood recruitment has been lower since 1930 and occurred only on 4 out of 33 years since 1965. It is then stated "few native riparian species have established along the Duchesne River since the CUP became operational." This last connection is open to question. CUP seemed to magnify the problem, but the age of this cottonwood forest shows the problem antedated the CUP.

There needs to be more explanation. Along the reaches above Starvation, there has been more recent recruitment although this might be changing due to operations of the Collection System. It would appear that handling of the spring floods by local irrigation canals combined with operations of the Strawberry Project, and the Deer Creek Project might be more responsible for 15.15 elimination of cottonwoods and willows.

Can these impacts on the riparian forest be separated?

Consequently, it seems important to examine the operation of these three reservoir systems plus local irrigation diversions in addressing the needs of the Duchesne's riparian corridor.

Are operational changes in each of these projects needed to support this mitigation project?

What would the differences be in operational and maintenance costs between the proposed project and a project with Duchesne River flows managed for riparian restoration?

10) Re-planting of Former Duchesne River Floodplains (noted in section S.2.3, page 5-3)

It is stated in this section that a major project component would be an attempt to destroy established groves of Russian olive and tamarisk and

15.16
cont

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15.15 This comment is correct in that the cumulative impacts of both inter- and intra-basin diversions have combined to deplete the Duchesne River flow. The diversion amounts and timing are identified in section 1.3.3 of the LDWP DEIS and their effects on river flow and cottonwood regeneration further described in WWS (1998 and 2000). It is also correct that this problem began prior to the Bonneville Unit of the CUP becoming operational. The exception is below Randlett where cottonwoods established after the floods of 1983/84 and 1999.

WWS (1998) estimated that flood peaks of at least 4,000 cfs at Myton and 6,500 cfs at Randlett would be necessary to allow cottonwood establishment. These peak flows occurred in 1999, but flows of 4,000 cfs lasted less than a few hours at Myton. Flows peaked at 6,500 cfs at Randlett, dropping to 1,000 cfs in nine days. The short duration of the flood peak and the sharp decline in flows reflected both the local practice of using irrigation canals to divert flood flows in the Myton area and the operation of Starvation Reservoir. Cottonwood plots sampled in the summer of 1999 after the flood event showed no successful cottonwood establishment in the Flume (above the Myton Townsite Canal) but an average of 59 cottonwoods per square foot in the upper Wissiups, which is located below the free flowing Uinta River.

Due to the successive changes in flows over time, it is difficult to completely separate the effects of local from trans-basin diversions on cottonwood regeneration within the scope of the LDWP. Most of the Duchesne River diversions prior to 1930 were through the local canal system, although the Strawberry Valley Project diverted some water to the Wasatch front beginning in 1915. Transbasin diversions increased substantially in 1953 with the Provo River Project (PRP) and with the CUP beginning in 1967. Local canals account for an average diversion amount of 137,145 acre-feet of Duchesne River water. Together, the PRP, CUP and SVP divert an average annual amount of 180,200 acre-feet. The largest and most recent diversions occurred as a result of the CUP. For example, from 1973 to 1990, total depletions averaged 51 percent of total runoff. After the closure of Stillwater Reservoir, flow depletions have averaged 79 percent of total runoff with a high of 85 percent in 1990.

Although SACS is not the only project affecting Duchesne River flows, the Mitigation Commission has the responsibility to mitigate for the effects of SACS operation on the Duchesne River, and not for the impacts of other water projects, particularly those that predate the CUP. No operational changes of Starvation Reservoir, or any other reservoir, are needed to implement the Proposed Action or its alternatives.

The Riparian Flow Alternative is deemed infeasible, therefore we have not calculated any of its operational costs.

15.16 The commenter is correct that weed control would be both a large component of the proposed LDWP construction and a necessary on-going cost during the subsequent O&M period. The joint lead agencies agree that allowing for natural riparian establishment and maintaining a much higher summer baseflow would reduce the long-term costs of weed control. However, as noted in the response to comment 15.10, the water necessary to implement the Riparian Flow Alternative is currently unavailable. It would be unsatisfactory to allow mitigation for the loss of

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Tribal resources to be suspended indefinitely, after an existing 40-year delay, until water rights could be purchased sufficient for the Riparian Flow Alternative.

It is important to note that under any alternative, even the Riparian Flow Alternative, that tamarisk and Russian olive control would be an on-going concern. Both species have become well established within most of the Colorado River system. They are prevalent along the Duchesne River, the Green River and even the free-flowing Yampa River. Given the strong regional presence of tamarisk and Russian olive, altered river geomorphology and altered adjacent land use, these species would still require control under a Riparian Flow Alternative, albeit at a lesser intensity than the Proposed Action.

There are a number of other Colorado River Storage mitigation projects funded under CUPCA in which removal of non-native species, with or without supplemental planting of native species, has been successful. These include work in the San Miguel Watershed (Southwestern Colorado; DOI Mitigation Project 03-FCCU-PR010), Echo Park (Dinosaur National Monument, Colorado; DOI Mitigation Project 01-AACU-NP020), Colorado River (Parker, Arizona; DOI Mitigation Project 7-FCCU-CT110) and Lees Ferry Riparian Restoration (Arizona; DOI Mitigation Project 01-AACU-NP010). Details of these projects are on file and available from the Department of Interior CUPCA office in Provo, Utah.

The LDWP O&M budget includes \$10,000/year for on-going weed control.

Regarding planting of woody species in the Uresk Drain site, the Uresk Drain is part of the Duchesne River pre-historic floodplain (WWS 1998). The northeast corner of the Uresk Drain borders the current Duchesne River channel. Historical photographs show the main portion of the Uresk Drain as a marshy area, with approximately one-third of the area dominated by willows. The LDWP proposes to plant cottonwoods only within the current Duchesne River corridor where they are appropriate, and plant native shrub species more adapted to marsh edges within the wetter portions of the site.

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replant with cottonwoods and willows (Flume section - 197 acres, Uresk Drain - 248 acres, Rivendell - eradication on 223 acres, re-plant 593 acres, and Ted's Flat - eradication on 105 acres, re-plant 854 acres). The entire project except this component appears to be feasible.

Approximately 1900 acres would be re-planted with the hope that cottonwood and willow will prevent re-invasion by non-native plants. Without supportive manipulation of Duchesne River flows, we feel that this project should be regarded as experimental. We are not aware of such a program being successful in any other locations. Do such locations exist?

15.16
cont

Even if initially successful without hydrologic support, there will a need for perpetual program to support native plants and suppress exotics, literally a botanical Vietnam. What would be the estimated cost of such a program? Reasonably, this should be a cost that is the responsibility of water user groups, not the Ute Tribe. Who will provide funds to support a vegetation management program forever?

Finally, while the Flume, Rivendell, and Ted's Flat sections are part of the Duchesne's historic flood plain, this does not appear to be the case for the Uresk Drain section. Are cottonwoods appropriate in this section?

11) Need for Operating and Management Agreement and Adequate On-going Financial Support for the Tribe (noted in section 2.1.4.3, page 2-28)

This section lists a variety of ongoing activities that will be needed to support this mitigation plan.

What will this cost?

As noted in section #10, where this money come form?

15.17

If provided with financial support, is the Ute Tribe willing to sign a contract to provide such services?

We would prefer a plan that could produce a system that would function naturally and require a lower Operating and Management Budget. Is it

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15.17 Funding for long-term O&M of the LDWP could come from a variety of sources, including CUPCA Titles IV and V, revenue sources available to the Tribe, and others. Under the revised Proposed Action, the Tribe would be the LDWP landowner (except in some limited situations) and land manager and therefore it would not be necessary for them to sign a contract to provide services to the federal government. Section 2.1.3.2 of the LDWP FEIS has been revised to include this information. Please also refer to the response to 27.2.

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possible that an alternative system with at least partial hydrologic manipulation of the Duchesne River would reduce ongoing expenses? If so, by what percent?

12) Salinity Changes (noted in section 3.3.5, page 3-10)

This section discusses the downstream salinity changes produced by the project and notes that there will be an increase in 1,125 tons in salt loading in the Duchesne River. This project has four main subunits. The salt loading similar is significantly different on each of these units (page 4-87). For instance operations on the Uresk Drain and Flume contribute more salt loading. Are there alterations in these areas that could reduce salt loading? 15.18

In addition, will continued irrigation on project lands increase salt loading?

In either case, with projects alterations would the project qualify for aid from the Bureau of Reclamation's Salinity Control Project?

13) Continued Irrigation for Wildlife on 1,362 Acres (noted pages 2-3 to 6)

It is planned that irrigation will continue on 1,362 acres, but the crops will be left on the field for wildlife.

What will be the cost of this operation on a yearly basis?

Will the water requirement drop? 15.19

Would use by wildlife require a second irrigation cycle?

Could the land be retired and have this activity supported by the salinity control program?

14) Description of the Duchesne River (Section 1.3.3 page 1-7)

The Duchesne River is described as "highly turbid". This description is appropriate for some sections, but not for others. Some of the turbidity is

15.18 Several changes have been made to the Proposed Action for the FEIS. These include elimination of the Flume site, and reduction of the Uresk Drain size, with wetland expansion in the Uresk Drain only occurring on low permeability clay soils. These two changes have substantially reduced the potential contribution of salts by the Proposed Action to the Duchesne River.

Continuing the existing irrigation of agricultural lands within the project, as proposed under the LDWP, would not be expected to increase salt loading above existing baseline conditions. Alterations of irrigation practices that could otherwise change salinity loading, such as removal of irrigation (land fallow) or conversion to sprinkler methods, are not proposed as part of this project.

Mitigation measures that promise to reduce salinity contributions from project lands may qualify for federal financial support under the Bureau of Reclamation Salinity Control Program. Although the LDWP will be operated to minimize salt inputs to the Duchesne River, it is generally not a salt reduction project.

15.19 The Proposed Action has been revised to eliminate most cropland. There are only 58 acres of cropland under the revised Proposed Action, all of which would be managed for wildlife purposes. This would include leaving some or all of the crop for wildlife use. If the land is partially cropped than the crop sale would be used to offset the operating costs. The cropland would continue to be irrigated at the same level that it is currently so that there would be no change in water requirements or timing of water application. Cropland retirement is not a component of the LDWP.

Comment Letter No. 15

caused by irrigation return flows. The character of the river changes between the town of Duchesne and Myton.

There are sources of turbid water flowing into the river between these towns. Also, the flow is greatly reduced by irrigation diversions.

It is possible to direct the turbid water inflows through the wetlands being developed to improve Duchesne River water quality or would this be destructive to the longterm functioning of the drain or oxbow systems? 15.20

Would the Tribe regard this as a desirable benefit of this project?

15) Land Ownership (page 2-26)

The land ownership on the reservation seems impossible for an outsider to understand. As an editorial note, it seems odd that tribal members would sell easements to their land to support mitigation on their land for the Central Utah Water Project that mainly benefits white communities along the Wasatch Front. Are tribal interests being adequately protected or should more of the land acquisition occur off tribal lands? 15.21

16) Prohibition on Bicycle Use (page 2-27)

Is there a reason to prohibit bicycle access along entryways used by pedestrian or maintenance uses? 15.22

Sincerely,

Fred W. Reimherr

David Serdar, President
Stonefly Society

15.20 The water used to operate the wetlands under the Proposed Action will be derived from the existing canal system according to existing diversion amounts and at existing diversion points. Although the idea of using wetlands to reduce Duchesne River TDS is intriguing, it would not be feasible as (1) maintenance of wetland water quality will require water inflow with low TDS concentrations for the wetlands to function properly and (2) the LDWP will need to function according to the existing water rights as described in the response to comment 5.3.

15.21 The joint lead agencies agree that Tribal benefits from the LDWP were not well explained in the DEIS. Sections 1.2 and 1.3 of the LDWP FEIS have been revised to clarify this issue. The Proposed Action has been modified to address public concerns regarding land acquisition and ownership. As a result, the project size (and associated private land acquisition) have been reduced, but all acquired land will be generally placed in Tribal (fee) status which does protect Tribal interests.

15.22 The intent of the description on page 2-27 of the LDWP DEIS was to identify some general activities that may or may not be consistent with a wildlife management area. The adjacent page identifies that some activities may be compatible most of the time with the wildlife goal, but that either seasonal restrictions on access during sensitive wildlife periods or restrictions on some activities in portions of the sites may be necessary. Section 2.1.4 of the LDWP FEIS has been revised to indicate that many non-motorized wildlife-related activities (such as watching wildlife on a bicycle) would be considered in the more detailed Management Plan, but that both seasonal (i.e., avoidance of sensitive wildlife periods) and locational restrictions on access types could be possible.

Comment Letter No. 16



Comment Letter #16

Utah Field Office
559 East South Temple
Salt Lake City, Utah
84102

TEL 801 531-0999
FAX 801 531-1003

Moab Project Office
P. O. Box 1329
Moab, Utah
84532

TEL 435 259-4629
FAX 435 259-2677

International Headquarters
Arlington, Virginia

January 8, 2004

Mr. Ron Groves
Ute Indian Tribe
P.O.Box 190
Fort Duchesne, Utah 84026

Dear Mr. Groves,

Thank you for the opportunity to comment on the Lower Duchesne River Wetlands Mitigation Project Draft Environmental Impact Statement (DEIS). We appreciate all the hard, sustained work by the Ute Tribe, Mitigation Commission, Central Utah Project Completion Act Office and consultants that was required to develop the DEIS. We are impressed with the outcome: a multi-species restoration vision for critical riparian and wetland systems of the lower Duchesne River. We are especially pleased that the project complements our ecoregional planning efforts.

In 2001, the Nature Conservancy produced their Wyoming Basins Ecoregional Plan that assessed a 33 million acre area to identify conservation priorities. Forty-seven "Portfolio Sites" were identified, one of which was the Uinta Benches - a 161,909 acre site important for its rare plants with the Duchesne River running through its core. Implementation of the Proposed Action or either alternative would be a major contribution towards achieving our conservation goals for the area.

16.1

While all alternatives are a vast improvement over current conditions, the Proposed Action would result in the greatest benefit to riparian and wetland systems and the wildlife that depend on them. For that reason we support the Proposed Action over the other alternatives. We are also supportive of your efforts to improve conditions under the Proposed Action for the Uinta Basin Hookless Cactus, a target species for the Uinta Benches Portfolio Site.

We are excited about this project, believe it will serve as an excellent example for future restoration projects, and offer our full support for its implementation.

Sincerely,

A handwritten signature in cursive script that reads "Joan Degiorgio".

Joan Degiorgio

Northern Mountains Regional Director

Responses to Comment Letter No. 16

16.1 Thank you for your comment.

Comment Letter No. 17

TriCounty Health Department
www.tricountyhealth.com

Joseph B. Shaffer, M. A., M.B.A., E.H.S.
Director/Health Officer

Comment Letter #17

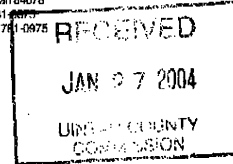
Uintah County Office
147 East Main
Vernal, Utah 84078
(435) 781-5476
Fax: (435) 781-5372
WIC (435) 781-5480

Duchesne County Office
50 East 100 South
P.O. Box 210
Duchesne, Utah 84021
(435) 738-2202

Daggett County Office
Flaming Gorge Community
Health Center
P.O. Box 156
Manna, Utah 84046
(435) 794-3494

Rowley Office
281 First 200 North
Roosevelt, Utah 84068
(435) 722-5085
WIC (435) 722-3987

TriCounty
Dental Clinic
198 West 200 North
Vernal, Utah 84078
(435) 781-0975
Fax: (435) 781-0975



January 25, 2004

To: Utah Reclamation Mitigation and Conservation Commission

From: Joseph B. Shaffer, M.A., M.B.A., E.H.S., Director / Health Officer
TriCounty Health Department

Subject: Lower Duchesne River Wetlands Mitigation Project

Since its formation in 1978, TriCounty Health Department has been dedicated to furthering the health and well being of Uintah Basin citizens. TriCounty Health Department is committed to provide resources, education, and skills to improve the quality of life in the Uintah Basin by utilizing population based public health techniques.

It is the position of TriCounty Health Department that the Lower Duchesne River Wetlands Mitigation Project will have a considerable negative public health impact on the communities in and around the Myton area and along the surrounding area of the project.

Our concern centers around the increase in Mosquito habitat, the potential for increase in the mosquito population, and the subsequent risk of increased public exposure to West Nile Virus (WNV).

The WNV has emerged as a bigger problem than first anticipated and poses a great health threat. West Nile is transmitted to both humans and horses by mosquitoes. Migratory birds are considered to be the carriers of the WNV, carrying the virus coast-to-coast. The proposed wetlands will create additional habitats for migratory birds and increases the risk of the virus moving at a faster rate. The wetlands also will provide additional habitat for the Mosquito to breed and hatch.

In 2003, West Nile virus was detected in eight Utah counties including Carbon, Duchesne, Emery, Grand, Sanpete, Uintah, Utah, and Wayne.

17.1

MITIGATION COMMISSION
OFFICIAL FILE COPY
CLASSIFICATION
PROJECT

JAN 29 2004

| CODE | INITIALS |
|------|----------|
| MCO5 | |
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| | |

BOARD OF HEALTH MEMBERS

Cloyd Harrison • Larry Ross • Sharon Walters • John Hullinger • Richard Jolley, D.D.S. • Lynn Morrill, D.O. • Wendy Mattis • Ellen Hawings

Responses to Comment Letter No. 17

17.1 Please refer to the responses to comments 1.1, 1.2 and 1.6.

Comment Letter No. 17

West Nile Virus is here. Not only is it in Utah, but according to information released by the Centers for Disease Control (CDC) is it also active in neighboring states; in Colorado there were 2,477 human WNV cases with 45 deaths. New Mexico had 202 cases of human WNV and 4 deaths, and in Wyoming there were 368 human cases and 9 deaths. During the past year, 2003, there were a total of 8,734 cases of Human West Nile Virus, and a death count of 208 with almost one quarter of all deaths coming from neighboring states, Colorado being the hardest hit.

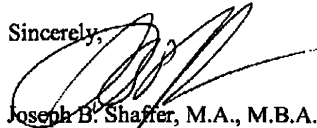
Beside the WNV in humans which can be fatal, there were 4,426 Equine cases in with 35 of these cases in Utah, most of the cases coming from the TriCounty Health District, specifically Duchesne and Uintah Counties..

The Utah Department of Health and the Department of Agriculture and Food, along with local health departments, local mosquito abatement districts, and the Division of Wildlife Resources are all collaborating in the tracking and monitoring of West Nile virus in Utah. In affected areas, local mosquito abatement district workers are increasing their efforts to reduce the number of mosquitoes that can spread the disease.

It is the position of TriCounty Health Department and the Board of Health that the Lower Duchesne River Wetlands Mitigation Project would not be feasible or appropriate for the communities we serve. We ask that you reconsider the negative public health impact and risk to the communities in and around the Myton area and along the surrounding area of the project.

17.2

Sincerely,



Joseph B. Shaffer, M.A., M.B.A., E.H.S.
Director/Health Officer
TriCounty Health Department

17.2 Thank you for your comment.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

Comment Letter #18

March 1, 2004

Regulatory Branch (200350619)

Ron Groves
Ute Indian Tribe
PO Box 190
Fort Duchesne, Utah 84026-0190

Dear Mr. Groves:

I am responding to the Draft Environmental Impact Statement for Lower Duchesne River Wetlands Mitigation, submitted to this office on November 24, 2003. The project is located in Sections 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 and 36, Township 3 South, Range 2 West and Sections 28, 29, 31, 32 and 33, Township 3 South, Range 1 West, S1.B&M, near Myton, in Duchesne and Uintah Counties, Utah.

The Corps of Engineers' jurisdiction within the study area is under the authority of Section 404 of the Clean Water Act for the discharge of dredged or fill material into wetlands or other waters of the United States (waters). Waters include, but are not limited to, rivers, perennial or intermittent streams, lakes, ponds, wetlands, vernal pools, marshes, wet meadows, and seeps. Project features that result in the discharge of dredged or fill material into waters of the United States will require Department of the Army authorization prior to starting work.

The range of alternatives considered in the EIS should include alternatives that avoid and minimize adverse impacts to waters. Such adverse impacts may include the conversion of waters to dry land or to other aquatic systems of lesser function and value. In addition, every effort should be made to avoid project features which require the discharge of dredged or fill material into waters, actively managed hydrology, and/or structural components such as berms and weirs. A restoration project that involves the least amount of post-construction human intervention, and leaves the forces of nature to manager the system would be the most preferable alternative.

18.1

The EIS analyzes the wetland and riparian habitats that occur in the project area, however, a wetland delineation has not been submitted to the Corps of Engineers for verification. A delineation verification is necessary to determine which areas meet the definition of waters, as well as to determine their jurisdictional status. We recommend that a formal wetland delineation be conducted per the 1987 Corps of Engineers Manual and submitted to this office for verification prior to the finalizing of the EIS.

18.2

Responses to Comment Letter No. 18

18.1 In response to the first comment, the alternatives have been developed based on an understanding of existing wetland conditions and the degree to which current wetland conditions have changed over time. Appendix D of the LDWP FEIS has been expanded to include more details on the current and historical wetland analysis methods. Historically, the wetlands in the Myton area were described as “marshy estuaries.” with the majority being wet enough to attract substantial waterfowl use. Currently, most of the wetlands in the LDWP area are a mix of irrigation-induced wet meadows and marsh monocultures. The LDWP proposes to provide permanent hydrologic support for the existing wetlands and increase their extent. Additionally, Appendix C of the LDWP DEIS provides the results of an analysis of the wetland and riparian functions currently being performed compared to the anticipated post-project level of functional performance. Under all LDWP action alternatives, there would be a general increase in wetland functional performance and no loss of current wetland functions.

In response to the second comment, the LDWP considered a range of non-structural alternatives to restore wetlands during the planning process. Complete use of non-structural methods in oxbow restoration was found to be infeasible within the LDWP funding limitations. However, section 2.1.1.2 of the LDWP FEIS has been amended to identify that a mix of structural and nonstructural measures would be incorporated into the final design as topography and soils allow. As a result, physical oxbow restoration in the Riverdell South and Ted’s Flat sites would occur through a mix of levee removal, excavation of ditched oxbow sections and construction of small berms. The specific mix of measures would be determined during final design.

18.2 Wetland and riparian habitats have been mapped and impacts analyzed for the LDWP FEIS regardless of their jurisdictional status, with the degree of irrigation induced wetlands noted for water budget purposes. In general, wetland delineations are valid for a three to five-year period. The LDWP would be constructed over an estimated seven years, following an initial land acquisition period. As a result, any jurisdictional determinations made for the FEIS would likely be void by the time construction proceeded in much of the project area. Wetland will be delineated and their jurisdictional status determined in conjunction with the Corps of Engineers following the LDWP ROD and prior to construction.

Comment Letter No. 18

2

Please refer to identification number 200350619 in correspondence concerning this project. If you have any questions, please contact Mr. Jason Gipson at the Utah Regulatory Office, 533 West 2600 South, Suite 150, Bountiful, Utah 84010-7744, e-mail jason.a.gipson@usace.army.mil, or telephone 801-295-8380, extension 22. You may also use the Regulatory Permits link on our website: www.spk.usace.army.mil.

Sincerely,



Nancy Kang
Chief, Utah Regulatory Office

Copy furnished:

Jody Williams, Utah Reclamation Mitigation and Conservation Commission, 102 West 500 South, Suite 315, Salt Lake City, Utah 84101-2328

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Comment Letter #19



IN REPLY REFER TO:

United States Department of the Interior

BUREAU OF RECLAMATION

Upper Colorado Region
Provo Area Office
302 East 1860 South
Provo, Utah 84606-7317

PRO-773
ENV-6.00

JAN 21 2004

Mr. Ron Groves
Wetlands Program Director
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, UT 84026

Subject: The Bureau of Reclamation's Review of the Draft Environmental Impact Statement (DEIS) for the Lower Duchesne River Wetlands Mitigation Project (LDWP)

Dear Mr. Groves:

This letter is written in response to your request for Reclamation's review of the subject document. The following are our comments regarding the document:

1. The document is well written and will cover NEPA requirements. Reclamation supports approval and implementation of the subject EIS through issuance of a final EIS and Record of Decision. | 19.1
2. We request that Reclamation be included in the "List of Preparers" on page "Preparers-1" due to our involvement in the Duchesne River Area Canal Rehabilitation Project (DRACR) mitigation requirements that this EIS covers. | 19.2
3. Page 1-14, column 1, paragraph 1 – The EIS should explain why 512 acres more than the planning goal will be improved. | 19.3
4. Page 1-23, column 1, paragraph 3 – The Riverdell North property water system improvements will not likely be completed in 2004. We recommend that you check with Mr. Ralph Swanson, with the Department of the Interior Central Utah Project Completion Office, for a current schedule on this project. | 19.4
5. Page 5-3, Table 5-1: Please correct "Findley" to read "Findlay." | 19.5

Responses to Comment Letter No. 19

19.1 Thank you for your comment.

19.2 Thank you for your comment. The FEIS has been revised to include this information.

19.3 Please refer to the response to comment 11. 4.

19.4 The comment is correct. Appropriate revisions have been made in section 1.7.4 in the LDWP FEIS.

19.5 Thank you for your comment. The FEIS has been revised to correct this spelling.

Comment Letter No. 19

2

Thank you for the opportunity to be involved in this EIS process. If you have any questions or concerns, please contact W. Russ Findlay at 801-379-1084.

Sincerely,

A handwritten signature in cursive script that reads "Beverley C. Heffernan".

Beverley C. Heffernan
Chief, Environmental Group

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466
Phone 800-227-8917
<http://www.epa.gov/region08>

JAN 12 2004

Ref: 8EPR -N

Ron Groves
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026

Re: Lower Duchesne River Wetland
Mitigation Project, Draft
Environmental Impact Statement,
CEQ# 030532

Dear Mr. Groves:

The U.S. Environmental Protection Agency Region VIII (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the Lower Duchesne River Wetland Mitigation Project. Our review of this project was conducted in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act. We have enclosed detailed comments addressing specific areas where we believe the EIS could be improved.

The proposed action of the Lower Duchesne River Wetland Mitigation Project is rated EC-1 (environmental concerns, "1" adequate information). Our review found the proposed project will not replace the aquatic habitats (and their functions) lost as a result of previous actions within the Central Utah Project. "EC" indicates that the EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures will likely require changes to the preferred alternative to assure lost resources are replaced in-kind. The "1" indicates that EPA believes the DEIS adequately sets forth the environmental impact(s) of the preferred alternative. A full description of EPA's rating system is enclosed.



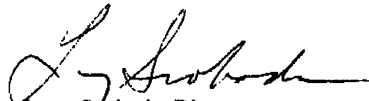
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Comment Letter No. 20

EPA appreciates the opportunity to provide these comments and suggestions at this time. Dave Ruitter, of this office, is available for coordination as this project continues and can be contacted at 303-798-9452 if you have questions, or would like to discuss these comments.

Sincerely,



Larry Syoboda, Director
NEPA Program
Ecosystems Protection and Remediation

enclosures

cc: Elaine Willie - Ute Indian Tribe
Mark Holden - URMCC
Ralph Swanson - BOR, Provo
Lynn Hansen - BIA
Nancy Kang - COE, Bountiful
Lucy Jordan - FWS, West Valley City
Barbara Conklin - EPA

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Comment Letter No. 20

Environmental Protection Agency Region 8
Detailed Comments on the Lower Duchesne River Wetland Mitigation Project,
Draft Environmental Impact Statement
December 31, 2003

The document would benefit from additional rationale to support the proposed creation of open water areas within the proposed project. The project purpose is to replace the habitat lost as a result of previous Central Utah Project actions. Every effort should be made to replace the lost habitat types in-kind. In general, open water areas such as those created by dykes and berms in marsh habitats are not natural landscape features in the arid west. The amount and type of open water marsh habitat which occurred in the project area prior to Central Utah Project should be evaluated, as well as the amount and type of open water marsh habitat that occurs in the current, pre-project condition. This will allow the reader to understand how much of the project area has been converted to open water marsh habitats currently and whether the large berms proposed in areas such as the Uresk Drain site will offset previous habitat losses in-kind. Cost savings from elimination of the large berms should also be evaluated to determine whether such savings could be used to reconnect natural open water oxbows systems such as the Tcd's Flat North system which the DEIS indicates is currently under funded.

20.1

20.2

20.3

One area which should be clarified is the cumulative impact assessment discussion of water quality. One paragraph indicates the proposed project would result in an increase in total dissolved solids (TDS) while the next paragraph indicates the proposed project would result in a decrease in TDS.

20.4

Responses to Comment Letter No. 20

20.1 An historical analysis of wetland conditions along the Duchesne River was completed in 1998 as part of the LDWP feasibility analysis (WWS 1998). Sources used included anecdotal accounts from Tribal residents living in the area prior to 1964, accounts of the 1776 Dominguez and Escalante expedition which traveled along the Duchesne River from the confluence with the Uinta River to the present day town of Duchesne (Warner 1995), 1936 and 1955 aerial photographs, 1939 soil survey data, and results of an historical geomorphic study conducted by Utah State University (Brink and Schmidt 1996). Details of this analysis are on file with the Tribe in Fort Duchesne. Appendix D of the LDWP FEIS has been revised to include additional details of the historical analysis methods. The historical analysis showed that:

- The 1936-1939 Duchesne River corridor between Myton and Ouray contained a mixture of cottonwood stands of varying densities, with the highest density forest just below Randlett; active secondary channels and annually flooded oxbows deep enough to provide habitat for dabbling ducks were common.
- The riparian corridor near Myton differed from the riparian corridor between Randlett and Ouray in that the area around Myton was dominated by marshy estuaries, willow thickets, and a general high groundwater table, with more open grasslands than woody vegetation.
- In the Myton area, marsh-type wetlands historically dominated the river corridor. Downstream of Myton, particularly near the junction of the Duchesne and Uinta rivers, cottonwood forests dominated the river corridor.
- In 1936, the overall extent of emergent marsh in the Uresk Drain was similar to the current combined extent of wet meadow and emergent marsh. The condition in this site prior to Drain excavation was one of a very wet marsh. The main vegetation changes in the Uresk Drain between 1936 and 1997 are conversion of deep emergent marsh to predominantly wet meadow communities indicating a trend towards drier wetland types.

The project partners agree that the dikes and berms are not natural features and have amended the LDWP FEIS to incorporate nonstructural measures to the extent feasible. Please refer to the response to comment 18.1 in which this is discussed in more detail.

Also, please note that the historical condition of the project area was considered in developing the Proposed Action. There are three types of wetland/riparian habitats proposed: large marshy area, restored oxbows and riparian forest. Each of these habitats are proposed for the area in which they historically occurred. A large contiguous marsh complex is proposed for the Uresk Drain (532 acres of contiguous marsh) where it historically occurred. A mix of shallow emergent marsh, deep emergent marsh and wet meadow bordered by grassland, mesic shrub or woody riparian vegetation is proposed along the oxbows (662 acres of herbaceous wetland) according to where oxbows historically occurred, and 854 acres of large blocks of woody riparian vegetation are proposed for the corridor downstream of Myton where the cottonwood forests historically occurred. As such, the

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Proposed Action is providing for the in-kind restoration of habitats in the geographical areas and within the landscape features that historically contained wetlands.

20.2 Please refer to the response to comment 20.1 for a description of historical wetland conditions. Open water in the LDWP project area is currently limited to the following areas:

- Uresk Drain “Drain” and Goose Ponds: 9 acres
- Ted’s Flat “Swamp”: 30 acres.

Thirty-nine acres, or less than one percent, of the LDWP project area contains open water under baseline conditions. Although the Ted’s Flat Swamp is a constructed wetland that was not visible in the 1936 aerial photographs, a mix of open water and marsh was visible in all of the Uresk Drain and more than 50 percent of the oxbows. The LDWP proposes to convert the areas containing water in either 1936 or 1964 that are now dry, back into the marshy estuaries that were previously noted. As such, there would not be out-of-kind replacement.

20.3 Please refer to the responses to comments 18.1 and 20.1. The LDWP FEIS has been revised to include a mix of structural and nonstructural measures. Cost savings realized through a smaller project area would be used to incorporate additional excavation in lieu of berms to create wetlands.

20.4 Section 4.21.1.3 of the LDWP FEIS has been revised to clarify the cumulative impacts associated with water quality.

**Environmental Protection Agency Rating System for Draft Environmental Impact Statements
Definitions and Follow-Up Action***

Environmental Impact of the Action

LO -- Lack of Objections

The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC -- Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO -- Environmental Objections

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU -- Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 -- Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 -- Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 -- Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

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Comment Letter #21



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Mountain-Prairie Region



IN REPLY REFER TO:

MAILING ADDRESS:
Post Office Box 25486
Denver Federal Center
Denver, Colorado 80225-0486

STREET LOCATION:
134 Union Blvd.
Lakewood, Colorado 80228-1807

FWS/R6
ES

JAN 15 2004

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Mr. Ron Groves
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026

Dear Mr. Groves:

The Fish and Wildlife Service has reviewed the Draft Environmental Impact Statement (DEIS) for the Lower Duchesne River Wetlands Mitigation Project (LDWP). As you are aware, we have worked closely with you and the joint lead agencies during project planning and in assessing benefits and impacts to fish and wildlife resources. We are preparing a Fish and Wildlife Coordination Act Report as per our responsibilities under the Fish and Wildlife Coordination Act. We are providing the following comments for your consideration.

We commend the Ute Tribe and the joint lead agencies for developing three action alternatives all of which emphasize restoring Duchesne River floodplain habitats to the extent possible given current hydrology opportunities and constraints. The ecosystem approach used to develop alternatives maximizes potential benefits to wildlife while minimizing construction, operation, and maintenance costs. This is the way we believe all restoration projects should be approached.

21.1

This project will provide highly valued fish and wildlife resources to the Ute Tribe, training and employment opportunities for Tribal members in ecosystem restoration and management, and long-term protection of tribal natural resource assets of high cultural importance. With these benefits in mind, we endorse the proposed action as the best for fish and wildlife resource conservation.

Responses to Comment Letter No. 21

21.1 Thank you for your comment.

Comment Letter No. 21

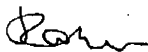
Mr. Ron Groves

2

If we can be of further assistance, please contact Dr. Lucy Jordan, U.S. Fish and Wildlife Service, Ecological Services, 2369 West Orton Circle, West Valley City, Utah, 84119 at (801) 975-3330, extension 143 or by email at lucy_jordan@fws.gov.

We appreciate the opportunity to review these documents.

Sincerely,


JILL PARKER
Assistant Regional Director,
Ecological Services

cc: Central Utah Project Completion
Act Office
(Attn: Ralph Swanson)
Utah Reclamation Mitigation and
Conservation Commission
(Attn: Mark Holden)
Fish and Wildlife Management
Assistance Office, Vernal, Utah
(Attn: Dave Irving)

Maxine Natchees, Chair
Ute Tribe Business Committee
P.O. Box 190
Ft. Duchesne, Utah 84026

O. Roland McCook
Ute Tribe Business Committee
P.O. Box 190
Ft. Duchesne, Utah 84026

Richard Jenks
Ute Tribe Business Committee
P.O. Box 190
Ft. Duchesne, Utah 84026

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Comment Letter No. 21

Mr. Ron Groves

3

Elliot Ridley
Ute Tribe Business Committee
P.O. Box 190
Ft. Duchesne, Utah 84026

Fabian Jenks
Ute Tribe Business Committee
P.O. Box 190
Ft. Duchesne, Utah 84026

Smiley T. Arrowchis
Ute Tribe Business Committee
P.O. Box 190
Ft. Duchesne, Utah 84026

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Comment Letter No. 22

Comment Letter #22

WAYNE HENDERSON

Rt. 3 Box 3671
Myton, UT 84502
646-3397

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|---|--|
| MITIGATION COMMISSION OFFICIAL FILE COPY | |
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| PROJECT | |

FEB 18 2004

February 13, 2004

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Dear Sir:

As President of Uintah Basin Irrigation Company, I am very upset with the idea of a Wet lands on the lower Duchesne River.

Our canal has a large water right in the Duchesne River that is delivered down the Grey Mountain to our heading. I am considered about how this will impact our canal system, and the water rights. | 22.1

A Wet Land on the Duchesne River will defeat all the work that the Farmers, NRCS, and Bureau of Reclamation have done over the years, to decrease the salt load in the River. | 22.2

The Uintah Basin is a sparsely populated area of Utah. But we do have an economy that will be damaged by this Wet Land. There isn't anyway that the few jobs the Wet Lands will make can offset the current economy. | 22.3

Property values will drop. Who will want to live and work with Mosquitoes? Myton City is all ready seeing this. | 22.4

Roads are going to be damaged by the underground and changes in surface waters. | 22.4

We now have West Nile and Equine infectious anemia in the Uintah Basin. With new breeding grounds for insects we will soon have more diseases. | 22.5

With a decreased tax base where will the Counties come up with the money to support a larger Mosquito Abatement Program? | 22.5

There are families that have been on the Duchesne River for two and three generations and more the heritage of these people should have the same value as the Indian heritage

And lastly it is just plain wrong to take private land for this. | 22.6

I understand that Duchesne County has a plan that would move this to down on to the Green River. I support the plan. | 22.7

Sincerely,

Responses to Comment Letter No. 22

22.1 Please refer to responses to comments 8a.3 and 14c.1.

22.2 The project partners disagree that the LDWP would reverse or defeat all the work completed to date to reduce salinity in the Duchesne River. The LDWP DEIS acknowledged that an additional 1,125 tons per year of salt will be added to the Duchesne River by the Proposed Action and the action alternatives. Changes to the LDWP have resulted in a reduction of salt inputs (115 to 829 tons of salt per year) for the revised Proposed Action. However, other federal and non-federal agricultural projects being planned in the basin will also contribute salinity to the river system. The purpose of the federal Salinity Control Program, operated by the Bureau of Reclamation, is to offset the salinity impacts of individual projects such that these projects may proceed.

22.3 Please refer to the responses to comments 4a.9 and 31.2 regarding potential economic impacts.

It is too speculative to address changes in property values, as they are affected by many factors, such as local population and job growth, that are beyond the control of the LDWP. Mosquito control measures will be implemented on all project lands and therefore we do not anticipate any changes in property values as a result of West Nile Virus risks. Please also refer to the responses to comments 1.1 through 1.5 regarding mosquito issues.

22.4 The project partners agree that the maps depicting the proposed features may have inadvertently been confusing so that it appeared that River Road would either be removed or used as a wetland berm. The intent was to show that existing dirt roads no longer needed for access might be removed. This has been corrected in the maps prepared for the FEIS. A new section has been added to the LDWP FEIS to address potential impacts to existing county roads. Please refer to section 4.11 for discussion of this issue.

22.5 Please refer to the responses to comments 1.5 and 1.6.

22.6 Thank you for your comment.

22.7 Please refer to the response to comment 3c.2.

Uintah County Farm Bureau

P.O. Box 146
Jensen, Utah 84035

January 9, 2004

Ron Groves
Ute Indian Tribe
PO Box 190
Fort Duchesne, Utah 84026

RE: Lower Duchesne River Wetlands Mitigation Project
Draft EIS

Dear Mr. Groves:

As a farm organization that represents the majority of farmers and ranchers in Uintah County, we do not feel that adequate consideration was given to the contributions that agricultural producers make to the economy and general benefit of Uintah County. The income received by these producers is circulated many times through the local communities to the benefit of all who live here.

23.1

A breakdown of affected producers was not included in this DEIS, but by the taking of over 2000 acres out of private ownership, many people will be impacted. Some of these producers will lose just a portion of their property, which will impact their economic viability, due to the same fixed cost having to be paid by reduced acres. This reduced efficiency will result in much higher total loss to the county economy than claimed in this DEIS.

Although the economic loss at the state and county level may be small, some of the individual producers will be severely impacted and possibly forced out of business. Agriculture has been and continues to be of major importance to Uintah County. This project, as presented, would cause hardship to individual producers and the agricultural economy of Uintah County.

23.2

Sincerely



Gawain Snow
Vice President
Uintah County Farm Bureau

Responses to Comment Letter No. 23

23.1 The socioeconomic analysis in the DEIS employed an input-output model provided by the Governor's Office of Planning and Budget (GOPB). This analytical tool did incorporate multipliers in estimating economic impacts, although this was not discussed in detail. For a number of reasons, the FEIS abandoned the GOPB model and adopted the more widely recognized IMPLAN input-output model for evaluating economic impacts. This model is capable of generating a variety of economic multipliers for output, income, and employment. In evaluating the effects of the Proposed Action, multipliers which incorporate the broadest range possible of indirect and induced economic effects were used. Please refer to comment 4a.9 for further discussion of this model and the use of multipliers in the analysis, and to comment 4a.8 regarding impacts to private individuals.

23.2 The socioeconomic impact analysis was based on data collected at the county level. Data and economic models were not available at more discrete levels such as municipalities within the counties. We recognize that the impacts and benefits of the project may not be distributed uniformly across the counties. However, it was not possible in this analysis to quantify the impacts at more local levels or to specific individuals.



Comment Letter #24

January 14, 2004
Utah County Soil Conservation District
80 North 500 West, Suite #3 - Vernal, UT 84078

MITIGATION COMMISSION
OFFICIAL FILE COPY
CLASSIFICATION
PROJECT

Mitigation Commission
Attn: Mark Holden
102 West 500 South #315
Salt Lake City, UT 84101-2328

JAN 20 2004

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Re: Lower Duchesne River Wetlands Mitigation Project

Dear Mr. Holden:

The Utah County Soil Conservation District would like to go on record as being opposed to the mitigation project.

We feel this Lower Duchesne River Wetlands Mitigation Project is not in the best interest of the community and state. The definition of mitigation is to "moderate or to become less severe" not to make an area more severe from the original project. This proposed project has far too many negatives and very few benefits to be in the best interest of anyone.

24.1

We fail to see or understand the benefits to any landowner including the tribe. This project retires up to 7000 acres of tribal, private and federal lands for purposes without value either to the owner or the economy. The only benefit derived from this project is to meet the definition for mitigation of the CUP.

The BOR and the Mitigation Commission have previously purchased conservation easements in perpetuity, have made outright purchases and have exercised its eminent domain authority on the river systems of the Duchesne, Rock Creek and Strawberry Rivers. The trans-basin diversion has harmed tribal lands as well as private landowners. It is felt this draft plan is inappropriate because the owners of 2154 acres of private land were not contacted nor were they noticed as individuals that this plan would seriously affect their lives and their well-being.

24.2

The proposal to build burns, dams and retaining ponds is widely opposed because of increased mosquito habitat. The very problem of transmitting infectious diseases by mosquitoes should be adequate to stop the project. Both counties and the tribe spend all the money they can on insect control especially with the threat of the "West Nile Virus".

24.3

Another issue with this project is salinity control. The BOR, irrigation companies, other federal and state agencies have been working closely with land owners in the two counties to control and hold salt in the soil and subsoil rather than sending the salt downstream in the Colorado River. This mitigation project is not a salt retaining project.

24.4

CONSERVATION - DEVELOPMENT - SELF-GOVERNMENT

Responses to Comment Letter No. 24

24.1 The primary objective of the LDWP is to fulfill the obligations of the federal government to the Tribe and mitigate impacts to riparian/wetland resources resulting from construction and operation of the SACS portion of the Central Utah Project. The CUP was developed to provide substantial economic benefits to the agricultural community, municipalities, and private landowners in the Uinta Basin and along the Wasatch Front. Mitigation for CUP impacts and fulfilling other obligations under the 1965 Definite Plan Report Addendum are required components of the CUP, and must be completed.

The CUP develops and delivers substantial water within the Uinta Basin as more fully described in the comment response to 6.1.

Part of the cost of the CUP has been borne by the Tribe in the form of deferring development of a portion of its water rights so that the trans-basin diversion to the Bonneville Basin could occur and through losses to their fish and wildlife resource base, particularly along the Duchesne River. Diversion of water into SACS for the economic benefit of agriculture, and municipal and industrial uses has deprived riparian wetlands of water, reduced aquatic habitats in the river, harmed water quality, and reduced migratory bird, aquatic and riparian wildlife populations, much to the detriment of the Tribe. Mitigation, as addressed by the purposes and needs of the LDWP, intends to minimize, and make less severe, those environmental impacts and costs of the CUP by replacing those resources and to provide additional wetland habitat resources for the benefit of the Tribe.

In 1992 the State of Utah and its elected officials in Congress supported the passage of the Central Utah Project Completion Act which established the terms and conditions for completion of the CUP, including a reaffirmation of the mitigation requirements. A major impetus for CUPCA was the recognition by Congress that prior mitigation efforts had lagged behind other elements of the project. It was the intent of Congress to balance the mitigation debt within Utah and provide to mitigation an equal footing with the construction elements of the project. Mitigation for CUP impacts and fulfilling other obligations under the 1965 Definite Plan Report Addendum are required components of the CUP and must be completed in order for the Bonneville Unit to continue operating.

24.2 Please refer to the response to comment 3a.1.

24.3 Please refer to the response to comment 1.6.

24.4 Please refer to the responses to comments 3a.5 and 22.2.

Standing water will push the salt into porous subsoil and then be transported underground to the river.

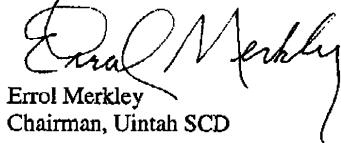
Prior to settlement of the basin, the river itself was the wetlands, oxbows and shorelines were flooded during spring runoff. The adjoining lands were dry. Farming and ranching have created wetlands away from the riverbank. It is quite ironic that the landowner that created the wetlands and pasture areas will be penalized for their good works if this plan is implemented as drafted. The loss of grazing areas, combined with the far reaching effects upon business and the economy will total far beyond the statements of effect in the draft plan. After all economic effects are identified this becomes a very expensive project for the Uintah Basin.

24.5

One of the responsibilities of the locally elected Soil Conservation District Board is to provide leadership related to the stewardship and protection of natural resources. Projects that we support are those that protect and preserve natural resources, and are a benefit to the area and community. This proposed project is not in the best interest of this community and will cause many health, economic and natural resources concerns. Therefore, as stated, we wish to go on record as being opposed to the proposed Lower Duchesne River Wetlands Mitigation Project.

24.6

Sincerely,


Errol Merkley
Chairman, Uintah SCD

Cc: Ron Groves, Ute Indian Tribe

24.5 Please refer to the response to comment 4a.9.

24.6 Thank you for your comment.

Comment Letter No. 25

Comment Letter #25

From: "UIT Wetlands Dept." <wetlands@ubtanet.com>
To: "Richard Mingo" <RMINGO@uc.usbr.gov>
Date: 1/28/2004 11:16:09 AM
Subject: FW: LDWP Draft EIS

-----Original Message-----

From: Bill Johnson [mailto:bjohnson@co.untah.ut.us]
Sent: Tuesday, January 27, 2004 3:55 PM
To: wetlands@ubtanet.com
Subject: LDWP Draft EIS

Dear Mr. Groves,

I appreciate the opportunity to comment on the Lower Duchesne River Wetlands Mitigation Project Draft Environmental Impact Study. I believe at this point the "no action" alternative should be chosen. The other alternatives would violate Uintah County's General Plan of "no net loss of private land" as well as creating many other obstacles of economic concern that I list below.

25.1

1.) Many of the lands to be acquired would surround a home site, creating an island and possible access problems to it's owners. This would also reduce the valuation of that home to the point it may not even be salable.

25.2

2.) Agricultural income would be reduced as much of the ground is presently used for growing crops or grazing and similar land of like nature would be impossible to find in replacement.

25.3

3.) All of the work and money that has been spent to alleviate the selenium problems will have been wasted.

25.4

4.) Potential health hazards would include increased noxious weeds and breeding of mosquitoes that could carry the West Nile Virus and other infectious diseases.

25.5

On behalf of the economy of Uintah County, I again urge that no action be the alternative chosen. Thank you for consideration of my comments.

Bill Johnson, Executive Director
Uintah County-Vernal City Economic Development
Uintah County Courthouse, 147 East Main Street, Vernal, UT 84078
Phone: 435-781-6731 Fax: 435-781-6732 Cell: 435-828-5687

Responses to Comment Letter No. 25

25.1 Please refer to the responses to comments 3a.2 and 3a.3.

25.2 Existing right of ways would be maintained under the LDWP and no homes within the project boundaries would be “landlocked” by the project.

25.3 Potential economic impacts from the project have been reduced in the revised Proposed Action by avoiding farms and residences where possible. Notwithstanding this fact, the analysis in the LDWP DEIS, as well as that in the FEIS, was based on the assumption that farming operations displaced by the Proposed Action would not find replacement ground elsewhere in the basin. Realistically, however, it is likely that displaced grazing operations can find alternative grazing lands in these counties where livestock grazing is the main use of existing agricultural lands. If alternative grazing lands are found, then the negative economic effects would be less than those identified in the analysis found in section 4.8.6.2 of the LDWP FEIS.

25.4 The project partners disagree that the Lower Duchesne River Wetlands Project will affect other basin efforts to address selenium (heavy metal) contamination in the soil and water. Water quality sampling during the feasibility planning stages for the project identified the main water quality parameters of concern in the project area as total dissolved solids (salinity) and boron. Selenium is not anticipated to be an issue in the LDWP operation.

25.5 The project partners recognized in the LDWP DEIS that both mosquito control and weed control would be important components of the project. The project partners agree that additional details on both plans are warranted. The weed control plan in Appendix D has been expanded for the FEIS and a mosquito control plan added to Appendix G.



Comment Letter #26

Utah Farm Bureau Federation

9865 South State, Sandy, Utah 84070-3205 • Fax: (801) 233-3030

Executive (801) 233-3000
Accounting (801) 233-3008

Public Policy (801) 233-3004
Farm Safety (801) 233-3006
Water Quality (801) 233-3014

Communications (801) 233-3005
Member Relations (801) 233-3010

Ute Indian Tribe/US Fish & Wildlife Service
C/O Ron Groves
P. O. Box 190
Fort Duchesne, Utah 84026

Dear Ute Tribe/U. S. Fish & Wildlife Service,

The Utah Farm Bureau Federation represents the majority of farmers and ranchers in the state of Utah, and also in Duchesne & Uintah Counties. We are the voice of Agriculture at all levels.

We are responding to the Lower Duchesne River Wetlands Mitigation Project; Draft Environmental Impact Statement (DEIS). As a general statement on this DEIS, it seems that the private landowners were left out of the process.

26.1

All three of the alternatives in the DEIS involve purchasing approximately 2000 acres of private property and combining them with federal and Ute tribal lands to develop a wetlands project. The main differences in each of the alternatives are simply boundary changes.

We oppose the DEIS because we support no net loss of privately owned land in the State of Utah. When private land is purchased by public entities, it is taken off of the county tax roles, and local governments' funding is decreased.

26.2

We at the Farm Bureau are champions of private property rights. Our Constitution protects private property rights. We have specific policy that supports the protection of private property owners' rights to manage their private property without government interference. The process to formulate this DEIS on the Lower Duchesne river has not been inclusive of one of the most important concerns---private property owners rights!

26.3

We have had Farm Bureau members who own property in the area call our office with concerns about their property that is included in the alternatives of the DEIS. The DEIS does not adequately address the concerns of the private landowners. Proposals to limit croplands within the mitigation project boundaries to an 80% harvest (leaving 20% for wildlife), do not compensate those farmers for the income lost due to the cost of land preparation, fertilization, seed, planting, and irrigation of the crop---when they will only be paid for 80%.

26.4

Responses to Comment Letter No. 26

26.1 Please refer to the response to comment 3a.1.

26.2 Thank you for your comment.

26.3 Section 4.8 of the LDWP DEIS considered impacts to private property owners. These impacts have been reduced in the revised Proposed Action. Please refer to the response to comments 3a.3 and 4a.7.

26.4 Any encumbrances to a property resulting from the acquisition of a conservation easement requiring a percentage of the crop to be retained for wildlife, or that restricts the timing of cropping to be more compatible with wildlife, will be financially compensated through the acquisition of this property right. In other words, farmers will be paid for 100 percent of their crops. They will only harvest 80 percent, but will be compensated for the 20 percent left for wildlife. This arrangement would be similar in concept to the current purchase of crops by the Tribe. The compensation arrangement would also be similar in concept to cooperative farming agreements with the Ouray National Wildlife Refuge in which farmers agree to farm certain tracts of Refuge land (using the government's land and water) and harvest a certain percentage of crop (70 percent) in exchange for leaving a crop for wildlife (30 percent).

An independent appraisal will be made of the value of the easement and any resulting financial impact associated with the easement. The appraisal will then be used as a basis for negotiations with the landowner regarding compensation.

Comment Letter No. 26

We also recommend that you involve the State of Utah's Private Property Rights Ombudsman, (Craig Call) to provide information that assists private interests, local governments and agencies in protecting private property rights.

We appreciate the opportunity to provide comments regarding the DEIS, and we strongly recommend that you implement our suggestions and work closely with the private property owners before proceeding on this Wetlands Mitigation project.

Sincerely,

A handwritten signature in cursive script that reads "Wayne Urie".

Wayne Urie
Central Region Manager,
Utah Farm Bureau Federation
9865 South State Street
Sandy, Utah 84070-3205

Ph. # (801) 360-1105

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Improving communication and expertise on water issues among Utah outdoor groups... United advocacy in reforming water law and policy for the protection of wildlife and sustainable ecosystems...

February 17, 2004

Mr. Ron Groves, Director
Wissiuaps Wetlands Project, Ute Indian Tribe
P.O. Box 190
Fort Duchesne, UT 84027

Sent via email and regular mail

Dear Mr. Groves:

Utah Waters is nonprofit conservation organization that is devoted to protecting and enhancing Utah's rivers, lakes, and wetlands. Accordingly, we are very supportive of the proposed Lower Duchesne River Wetlands Mitigation Project and are pleased to provide a few brief comments on the recent draft EIS for this project.

The EIS appears to offer a highly commendable project in the form of the Proposed Action. Frankly, we are too limited in time and resources to make a detailed review of the entire document and each alternative. As a general matter, we are concerned that these voluminous environmental documents seem to become an impediment to public involvement because so few citizens have the resources to digest this amount of information. Be that as it may, we are less concerned about the details of the various alternatives, or even the Proposed Action itself, than we are about encouraging the federal government to move forthrightly toward completing this project. This is a good project that honors a 40 year-old commitment to native Americans and restores a highly degraded riparian area. Do not let it become another addition to our nation's long list of failed promises to indigenous peoples and to the environment.

27.1

We are aware that many residents in the area of the project are highly antagonist to having it built. Some of their objections appear to reflect legitimate concerns, such as mosquito abatement, although others border on subtle forms of racism. Of course the racism must be rejected, but we encourage you to go to extra lengths to research and clarify issues of concern within the nearby community. Having done that, we think that no apology should be necessary in moving the project forward. It seems to us beyond dispute that the two counties involved in this project have both benefitted from federal expenditures on the Central Utah Project and that local antipathy should not be allowed to derail equally important commitments to other citizens and the environment.

One item of specific concern is funding. We note that one of the project

27.2 cont

Responses to Comment Letter No. 27

27.1 Thank you for your comment.

27.2 The Mitigation Commission intends to fulfill the mitigation responsibilities identified in our five-year Mitigation and Conservation Plan. On an annual basis, the Mitigation Commission submits a request for funding based on amounts previously authorized by Congress identified for specific mitigation programs. The Mitigation Commission's request for funding is considered along with all other federal agencies and federal programs, and the President submits his budget to Congress. The Congress of the United States then provides the Mitigation Commission a fixed annual appropriation to expend funds on the mitigation program. The Mitigation Commission can only expend funds in the amounts appropriated and for the purposes authorized by Congress.

Through this planning process, we will be better able to identify a realistic budget for the Lower Duchesne Wetlands mitigation commitment. All the project partners are committed to planning the LDWP within the authorized amount approved by Congress.

Comment Letter No. 27

purposes (Sec. 1.2.2) is to stay within the funding authorization from the URMCC's Mitigation and Conservation Plan of 2002. It is our opinion that the mitigation obligations of the project should take precedence over any preordained funding constraints, and such priorities should be identified in the document. In the interest of fairness and efficiency, we think it is essential to find the funds necessary to fulfill the entire mitigation obligation through the current proposal.

↑
27.2
cont

Again, we congratulate you on presenting a worthwhile alternative and look forward to seeing the wonderful enhancements it should bring to the Duchesne River corridor.

Sincerely,



James A. Wechsler
Assistant Coordinator

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Gary Hadden
P.O. Box 203
Myton, Utah 84052
435-646-3049

Comment Letter #28

January 26, 2004

Ron Groves, Director
Wissiuaps Wetlands Project,
Ute Indian Tribe
PO Box 190
Ft. Duchesne, Utah 84026

Dear Mr. Groves;

I would like to comment on the Lower Duchesne River Wetlands Mitigation Project. I feel that this project would be a big disadvantage to the residents of Duchesne and Uintah Counties, especially to the people in the Myton Area who live along the Duchesne River.

I have lived East of Myton along the Duchesne River all my life and have run cattle there for years. I own property there, and also lease acreage along the river for cattle pasture. This project would definitely affect my livelihood, as it would many others that live and run livestock along this river.

28.1

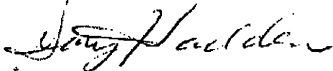
I feel that another big issue is the mosquito situation. Try as they might, the Mosquito Abatement has a struggle fighting mosquitos now. If this Wetlands Project goes into effect, the entire community will be overrun with mosquitos together with all the consequences and diseases that go along with mosquitos.

28.2

I also feel that weed control would be a bigger problem than ever, as Russian Olive trees, tall "swamp grasses" and weeds would be next too impossible to control under the proposed program.

28.3

Thank you,



Gary Hadden

Responses to Comment Letter No. 28

28.1 Thank you for your comment.

28.2 Please refer to the responses to comments 1.3, 1.5 and 1.6.

28.3 Please refer to the responses to comments 3a.7 and 9.1 and the Weed Control Plan presented in Appendix B.

Comment Letter No. 29

Comment Letter #29

STEVE HANBERG
HC 69 BOX 129
RANDLETT, UTAH 84063

Steve Hanberg
Hanberg Farms LLC
Randlett, Utah 84063
435-823-5829

December 28, 2003

Ron Groves
Ute Indian Tribe
P.O. Box 190
Fort Duchesne, Utah 84026

Dear Mr. Groves:

As a private landowner who will be affected both by taking of my property and by owning land adjacent to these proposed actions, many concerns were exposed while reading through the Lower Duchesne River Wetlands Mitigation Project Draft Environmental Impact Statement.

This DEIS does not adequately address concerns of private landowners, both within the proposed boundaries and adjacent or nearby landowners. Croplands within the boundaries are to be put under conservation easements with restrictions that 20% of crops are left unharvested, meanwhile, the expenses to produce these crops would continue at 100%. To make this economically feasible would require an annual payment to compensate landowners for on-going crop expenses.

29.1

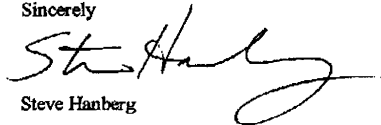
Croplands within proposed boundaries as well as adjacent and nearby landowners will see an increase in depredation to crops from increased wildlife in area. This economic burden was not addressed in DEIS and should be studied and solutions found which would avoid hardship to individual landowners.

29.2

Landowners within the proposed boundaries who wish to sell their land will be compensated at fair market value. However, those who do not wish to sell will be damaged, even at market value. Perhaps an exchange of land could be arranged between those landowners affected who cannot afford to reduce their total farmed acreage, and the Federal Government or Ute Tribe. If the Tribe wishes to consolidate its holdings to develop a wetlands project, it could exchange property with lands held outside these proposed boundaries. Any forced taking of private land should be delayed until after negotiations with the Ute Tribe are completed, and if the Tribe decides this proposed action is not acceptable, private lands should remain in current ownership.

29.3

Sincerely



Steve Hanberg

Responses to Comment Letter No. 29

29.1 Please refer to the response to comment 26.4.

29.2 Wildlife depredation on lands adjacent to the project area would be treated the same as on other lands adjacent to the Uintah and Ouray Indian Reservation. Landowners would be entitled to the same compensation and assistance provided by the Utah Division of Wildlife Resources to other landowners who experience wildlife depredation on their land. Actions such as trapping and removing problem animals or holding a depredation hunt may be used.

Tribal members who experience wildlife depredation on their lands would be entitled to the same compensation and actions provided by the Tribe to all Tribal members who experience wildlife depredation. Actions may include trapping, shooting, or a depredation hunt.

29.3 The project partners understand your concern about eminent domain and relocation. Please refer to the response to comment 3a.3. Please note that the LDWP would be a multi-year project. Figure 2-8 of the LDWP DEIS shows that land acquisition would occur over a period of years. Because eminent domain would be used only as a last resort, land acquisition would likely be on a willing seller basis during the initial years of the project time period.

Regarding damages from reduction of individual farm acreage, the Proposed Action has been revised to avoid farm splitting, to the extent practicable, so that individuals would not be left with uneconomical remainders. Where conservation easements would be used, they would be purchased and the land owner not expected to produce the same amount of income on a reduced acreage as the author suggests. Please refer to the response to comment 29.1.

The project partners do not have the authority to exchange lands but do anticipate that proceeds from land purchases will be sufficient to purchase other similar land. Relocation assistance would be provided as authorized by the Uniform Relocation Assistance and Real Property Acquisition Act of 1970.

It is unclear what negotiations the commenter refers to. The Tribe is a lead agency on the LDWP. Please refer to the response to comment 6.1.

Comment Letter No. 30

Comment Letter #30

January 11, 2004

Mitigation Commission
Attn: Mark Holden
102 West 500 South #315
Salt Lake City, UT 84101-2328

MITIGATION COMMISSION
OFFICIAL FILE COPY
CLASSIFICATION
PROJECT

JAN 13 2004

| NAME | INITIALS |
|-------|----------|
| MC02 | MS |
| 11/05 | |

CC: Ron Groves, Ute Indian Tribe

RE: Lower Duchesne River Wetlands Mitigation Project (LDWP)

Sir:

The following comments are concerns we have as they relate to the draft Environmental Impact Statement on the Lower Duchesne River.

1. When and where was notification of intent to prepare this draft published so local and impacted people would know? We were not contacted nor were we noticed as individuals that this plan would seriously affect our lives as well as our livelihood.

2. The public input phase was inadequate to receive comments. Only three locations were given for public meetings and scoping - Fort Duchesne, Roosevelt, and Salt Lake City. A meeting should have been held in Myton where this project is heavily impacted. Scoping dates should have been published in the Uintah Basin Standard but this was not accomplished. Also, letters should have been mailed directly to each individual farmer or rancher impacted by this project. More public input is needed.

30.1

3. Property owners do not want to sell or be affected by any loss of property. We as farmers and ranchers have worked long and hard to build an income operation. This would have a negative impact not only on the farmers but also on the community as a whole. The analysis should have been based on the people impacted directly within and adjacent to the project including local cities instead of on a county basis. Analysis given on a county basis is a dilution effect on the individual and cities being impacted.

30.2

4. All health issues were not adequately addressed. The proposal to build dams, burms, and retaining pools would only bring about an increased mosquito habitat. Human and animal exposure to West Nile Virus will increase dramatically if the project is implemented. Other human and animal diseases will likely show up due to the increased wet environment.

30.3

Responses to Comment Letter No. 30

30.1 The project partners disagree that the public input for the project was inadequate to either solicit or receive public comments. Notice of intent to prepare a DEIS was announced in the Federal Register on April 25, 2001. Notice of availability of the DEIS and the schedule for public meetings were announced in the Federal Register on November 17, 2006, and published in newspapers of general circulation in the project area.

The project partners believe that the two public meetings convened in the immediate project area (Fort Duchesne and Roosevelt, Utah) were adequate. A third public meeting was located in Salt Lake City, Utah to encourage participation by state government agencies and private environmental/outdoor interest groups. The decision not to schedule a public meeting in Myton, Utah does not render the public review process deficient.

The public scoping process conducted in the project area in 2001 was noticed as described in response to comment 3a.1. Dates for the public meetings on the DEIS were published in the Provo Daily Herald, Uintah Basin Standard, Vernal Express, and Salt Lake Tribune. In addition, the Uintah Basin Standard published a feature article on the project that included the dates and locations of all public meetings.

The mailing list for the DEIS contained many, although not all, private landowners affected by the project, each of whom received a copy of the DEIS for review and comment. While letters were not mailed directly to each individual impacted by the project, the project partners do not believe that such action is necessary to achieve adequate public notice or to secure adequate public review of this project.

Please also refer to the response to comment 3a.1.

30.2 Input/output models, like IMPLAN, are based on interrelationship between business sectors. For the model to work, there needs to be enough businesses within the study area to model these relationships. The Myton economy is not large enough to map these interrelationship and there is no data available that could be used to model the Myton economy. The county level is the the “lowest” level at which inter-industry data is available and which economic modeling is possible. We recognize the impacts will occur more intensely within the project than throughout the county. We agree that impacts to some individual farmers might be significant if farming operations are altered or private residences acquired.

30.3 Please refer to the responses to comments 1.1, 1.3 and 1.6.

Comment Letter No. 30

5. Ground water impacts for all adjacent landowners or within the project have not been adequately addressed for:

30.4

- (a) Increased water table levels for the city of Myton, Myton Cemetery, and all adjacent landowners within the project.
- (b) The salt content in the groundwater has not been adequately addressed. There will be an increased load of salts. The Bureau of Reclamation, irrigation companies, other state and federal agencies have been working closely with the landowners to control and hold salt in the soil rather than sending it down stream into the Colorado River. Productivity of our land will decrease because of the higher water table that increases salt.

30.5

6. Noxious Weeds are a major problem in this area. Without the proper application of weed control we will see an increase in the spread of these weeds.

30.6

We cannot identify any positive influences with this project. The negative impacts will have far reaching effects upon our lifestyle and well being.

Mail comments to:
Gloria Jones
P.O. Box 72
Myton, Utah 84052

Sincerely,

The Daniel Uresk + Josephine Uresk Family Trust
The Daniel Uresk and Josephine Uresk Family Trust

Gloria Jones
Gloria Jones

Carolyn Harvey
Carolyn Harvey

30.4 Sections 4.5.6.2 and 4.8.6 of the LDWP FEIS have been revised to address the potential impacts of wetland creation on adjacent cropland. Please also refer to the response to comment 39.3 for additional discussion of specific issues associated with the Myton cemetery.

30.5 Please refer to the responses to comments 3a.5 and 22.2 for questions regarding salinity impacts and comment 30.4 for questions regarding groundwater impacts.

30.6 Please refer to the responses to comments 3a.7 and 9.1 and the Weed Control Plan presented in Appendix B. Weed control is a large component of this project.

SIGNATURES OF OTHER CONCERNED CITIZENS OPPOSING THE
LOWER DUCHESNE WETLANDS MITIGATION PROJECT.

Leonard Wilson
Katie Wilson
Paul Bronck
Jay O'Neil
Scott Henry
Russ Kitch
Linda Nelson
Luth Nelson
Sandra Beck
Mary Perkins

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Comment Letter No 31

Jan 8, 2004

Comment Letter #31

Ron Groves
P.O. Box 190
Fort Duchesene, Utah 84026

Dear Sir

My grandparents homesteaded this property on Teds Flat. It has been in the family ever since. As a child I helped on the farm. During the Korean War I joined the army. When my time in the army was over I came home to the farm. I married and started my family of five children. We took over the small dairy that my parents had , that has been our only source of income.

I am 70 years old, and do not know any other way to make a living. It is a struggle to farm today. A farmer doesn't make very much money, but it is a living.

My daughter has moved back to the farm and got her self a small herd of milk cows. That is how she is supporting her family of 9 children.

Are you going to replace 2 homes, a milk barn, pay for milk tanks and milking equipment. The pipe that was put in the fields to reduce river salinity. I have oil rights and mineral rights . Are they going to pay for those to.

31.1

I am a Veteran and I thought I had a right to own homes and land in the United States, but I guess I don't.

I hear you saying that this will create jobs for a few Indians, I don't think they will want to do that kind of work. They haven't stayed with any of the projects that have been created for them. In order for you to do all that your wanting to do, I will lose a lifetime of work and dreams.

31.2

Since the Mitigation Project is mandated by the Central Utah Project Completion Act. It is the law. When you acquire property you should acquire all the private land that will be involved in the project for there will not be water for the farmer to water any crops. I don't think that any farmer can leave twenty percent of any of the farm crops for wildlife, when he needs the crops for there lively hood. JUST DON'T TAKE 10 OR 20 YEARS to do what ever your going to do. GET IT DONE.

31.3

Lawrence JUSTICE
Rt 3 Box 3270
Myton, Utah 84052

Responses to Comment Letter No. 31

31.1 Please refer to the responses to comments 3a.3 and 4a.17. Offers to purchase property will be based on an independent appraisal of the value of the property, including the value of homes, barns, etc. Removable personal property, such as tanks and milking equipment will not likely be acquired as part of the purchase. Relocation assistance would be provided as per the Uniform Relocation Assistance and Real Property Acquisition Act of 1970.

31.2 Please refer to section 1.2 of the LDWP FEIS. The purpose and need for the project is to fulfill CUP mitigation obligations to the Tribe and not specifically to create jobs. Any employment opportunities for the Tribe, or otherwise, are ancillary to the project.

31.3 Please refer to the response to comment 26.4.

LOWER DUCHESNE RIVER WETLANDS MITIGATION PROJECT
DEIS Public Meetings

-Comment Form-

Comments on the Project: (Attach additional pages as necessary.)

After talking to the Reps. here tonight
all I can see is the C.U.W.P. is finding
another way to steal the water of the
Vivian Basin.
I understand from them that the state
considers the residents here are disposable
as long as the Wasatch front gets to water
there towns ~~are~~ then who cares about
how we feel or how we do financially.
I personally have no property that will
be seized. But I live in the area
that will be affected both financially and
and a possible health hazard for my
family.

If the C.U.W.P. wants to fill their
obligations to the tribe then they
should pay them the money they promised
and build the reservoirs that they expected.

32.1

In a Nut shell this all comes down
to the C.U.W.P. doesn't want to build what
they promised because the residents of the
Basin doesn't have the votes to change
anything. You're telling us that we are
lower than Saddam Hussein citizens.
Pay the tribe their money

32.2

Name: JAMES Kettle

Address: Po Box 352 Myton UT 84052

Please fold in thirds, tape, apply correct postage, and return to the address listed on the back.
Comments can also be e-mailed to wetlands@ubtanet.com. Comments must be received by
January 16, 2004.

Responses to Comment Letter No. 32

32.1 This project is needed to satisfy promises made to the Tribe beginning in 1964 to mitigate for adverse impacts of the CUP on riparian and wetland habitats. There was never any intent or promise by the United States to provide a payment to the Tribe in lieu of constructing this mitigation project. Payment of money in lieu of these resource replacements is not authorized or provided for in the existing commitments of the federal government to the Tribe. The comment apparently confuses the LDWP resource mitigation commitments with certain commitments for funds and water resources development facilities made to the Tribe under other agreements and provisions of law, namely Title V of PL 102-575 (CUPCA). Nor is the LDWP intended to compensate the Tribe in lieu of constructing reservoirs, as suggested by the comment. Bottle Hollow Reservoir was constructed as a mitigation measure to benefit the Tribe in 1970. The Lower Stillwater Dam project was superceded by Congress under Title V, Section 505(d) of CUPCA, which provides funding for the Tribe in lieu of constructing Lower Stillwater Dam. Such commitments are separate from, and not pertinent to, the wetland mitigation commitments of the LDWP.

32.2 Thank you for your comment.

LOWER DUCHESNE RIVER WETLANDS MITIGATION PROJECT
DEIS Public Meetings

-Comment Form-

Comments on the Project: (Attach additional pages as necessary.)

~~Some of the comments vector here 7-26-82 - all over Colorado~~
~~sheep deaths - 16 horses - wetlands produce mosquitos.~~
~~that are responsible for the death loss in animals.~~
~~Your representative to the cross roads Roosevelt~~
~~meeting was very professional and polite. Also~~
~~provide table about the long term effects. Please~~
~~consider the following.~~

- 1 ~~complete disregard for the new river road~~ 33.1
~~paved this last year by our tax money.~~
- 2 ~~The health of the whole area is being ignored~~
~~by the C.W.P.P - west Nile virus will increase greatly~~ 33.2
~~if this wetlands is created by Beaura personal~~
~~who do not live in this area themselves.~~
- 3 ~~Ronald Stoves represented the tribal members~~
~~well. Pay them the money owe them.~~ 33.3
~~They deserve it and the average person will~~
~~all be paid fairly by the tribe.~~
- 4 ~~This increases the economic money flow in the basin~~
~~It has a domino affect on the local economy.~~
- 5 ~~The cost of amphibious craft and planes to control~~ 33.4
~~the mosquitos would total more than the tribal~~
~~money owed them. Continuing into years~~
~~of extra expense and health problems for~~
~~all basin residents. Pay the money and~~
~~Thank you for your time and effort on behalf~~
~~of all Basin residents. Together we can overcome~~
~~this trouble we do not need as residents of the area~~

Name: Dick Kettle

Address: Rt 3 Box 3310 Myton Ut. 84052
ph 435-5452411

Please fold in thirds, tape, apply correct postage, and return to the address listed on the back.
Comments can also be e-mailed to wetlands@ubianet.com. Comments must be received by
January 16, 2004.

Don't make this wetlands. 33.5

Responses to Comment Letter No. 33

33.1 Please refer to sections 4.5.6.2 and 4.11 of the LDWP FEIS which have been revised to address potential impacts of the project on paved county roads.

33.2 Please refer to the response to comment 1.6.

33.3 Please refer to the response to comment 32.1.

33.4 Please refer to the response to comment 2.2.

33.5 Thank you for your comment.

-640131

Comment Letter #34a

LOWER DUCHESNE RIVER WETLANDS MITIGATION PROJECT
DEIS Public Meetings

-Comment Form-

Comments on the Project: (Attach additional pages as necessary.)

Water belongs to the land it starts on.
 The land belongs to people who own it and
 use it to make a living there. Tribal
 leases are sure money into future income.
 White landowners need all the water they
 can to make a living from their land.
 A few people who get paid by the government
 want our water to go to the Salt Lake area.
 Our income will be gone - theirs is still secure
 CUWP do not live in this area. We do - swamp
 increases mosquitos by thousands. West Nile illness
 comes from mosquitos, why put the citizens here
 in danger and take the income out of the
 area. 90 per cent of the people are against
 this swamp. Why give SLC our water we need.

Name: Jean Kettle Ben Kettle Dick Kettle

Address: Rt 3 Box 3310 Myton Ut 84052
Rt 3 Box 3315 Myton Ut 84052

Please fold in thirds, tape, apply correct postage, and return to the address listed on the back.
Comments can also be e-mailed to wetlands@ubtinet.com. Comments must be received by
January 16, 2004.

The CUWP are too cheap to make lakes & reservoirs
They should pay the tribe the money owed

34a.1
34a.2
34a.3

Responses to Comment Letter No. 34a

34a.1 Please refer to the response to comment 1.6.

34a.2 The economic impacts of the project have been reduced by reducing the size of the project and the amount of cropland that would be acquired. In addition, the boundaries of the project have been modified to minimize the number of farming operations that would be impacted by the project (see section 4.9.6.2 of the LDWP FEIS). Under the LDWP, individual landowners would be compensated for the fair market value of the highest and best use of their property, including any impacts on their remainder properties or ranching operations resulting from the acquisition.

34a.3 As stated in the response to comment 32.1, there is no provision in law or authority in existing agreements between the United States and the Tribe for a payment of funds as a substitute for completion of the wetlands development and mitigation commitment to be fulfilled by the LDWP substantively in accordance with the plans agreed to in 1965. These commitments call for construction of wetland and wildlife related habitats and facilities to replace similar resources lost as a result of construction and operation of SACS of CUP and to provide additional wetlands-related benefits and opportunities for the Tribe.

LOWER DUCHESNE RIVER WETLANDS MITIGATION PROJECT
DEIS Public Meetings

-Comment Form-

Comments on the Project: (Attach additional pages as necessary.)

Do Not let this swamp be made. It is a way to steal our water. It will not be Indian owned - But federally controlled. Income to the tribe by leases, and money spent by farmers in the area will be wiped out. We are all in danger of the increase of misquitos carrying the West Nile virus. Who can pay for the control in years to come. It is only sensible to Pay The Money Owed to the Tribe and let the non Indians use their land as they wish too. We have a right to make a living too. And not be cheated out of our livelihood by water thieves from the Westach front.

34b.1

34b.2

34b.3

Name: Jean Kettle

Address: RT 3 Box 3310 Myton Ut 84052
Ph 435-5452411

Please fold in thirds, tape, apply correct postage, and return to the address listed on the back. Comments can also be e-mailed to wetlands@ubtanet.com. Comments must be received by January 16, 2004.

Responses to Comment Letter No. 34b

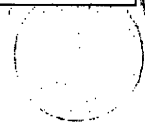
34b.1 Please refer to the responses to comments 4a.6 and 4a.9.

34b.2 Please refer to the responses to comments 1.5 and 1.6.

34b.3 Please refer to the response to comment 32.1.



W. L. Mathisen
R.R. 3 Box 3251
Myton, UT 84052-9602



Ute Indian Tribe
Fon Doves
Dear Sir

35.1

In regards to the L.P.W.P. I think that it is a mistake to go with this project. I believe that it will be a big mosquito infested swampy area. There will ~~not~~ be no way people to live along the water way. West Nile virus will be prevalent where deer stock will be at high risk.

35.2

35.3

If they could relocate us with the same amount of land + water rights as we have here, or they could buy us out for a good price we would go for that but it is not fair for you to come in and take it for pennys on the dollar for land that we have been working all of our lives. By the time everyone is bought out it will cost more than it is worth which in my eyes it isn't worth much.

Responses to Comment Letter No. 35

35.1 Thank you for your comment.

35.2 Please refer to the response to comment 1.6.

35.3 Offers to purchase property would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 and would be based on a professional real estate appraisal of the fair market value of the highest and best use of the parcel as described in section 2.3.1.2 of the LDWP FEIS. Relocation assistance would be provided as authorized by the Uniform Relocation Assistance and Real Property Acquisition Act of 1970.

Under the Proposed Action, all reasonable attempts would be made to acquire property on a willing seller basis. The joint lead agencies do not have the authority to exchange lands. Please refer to section 2.1.3.2 of the LDWP FEIS which describes the land acquisition process. Please also refer to the responses to comments 3a.3 and 26.3.

If you want the land then
you should pay a good price
per acre.

thank you
Wendell L. Mathisen



W. L. Mathisen
R.R. 3 Box 3251
Myton, UT 84052-9602



Ron Groves
Ute Indian Tribe
PO Box 190
Fort Duchesne Utah 84026

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UTAH INDIAN TRIBE
TRIBAL BUSINESS COMMITTEE
RECEIVED

JAN 15 2004

Jan, 2004

Comment Letter #36

To: Ronald A. Groves ^X
L.O.W.M.P manager Director

fr: Stewart Pike
Box 344 nylon ut, 84052

Sub: Impact Statement of Nov. 2003

Overall Concerns

The Draft Environmental Impact Statement of Nov. 2003 seems to give the Utah Reclamation Mitigation and Conservation Commission the overall authority and ownership of the entire project included are (lands, Fee, tribal, allotted, Fed, etc.) water, wildlife, hunting & fishing, access, etc. This is unacceptable. 36.1

Other Concerns:

1. Any allotted lands must be compensated including mineral rights at 200%. 36.2
2. Public Access: most project access are through tribal and allotted lands. The words Paved County Roads in DEIS is incorrect and unacceptable. 36.3
3. Uintah and Quay Irrigation system: lacks capacity and water to fulfill its original obligation to the existing users. 36.4

Responses to Comment Letter No. 36

36.1 Under the LDWP, the Mitigation Commission would not own all project lands, including Tribal lands and allotted lands, and would not assume all management authority over such lands. Fee lands to be acquired for the LDWP Project would become Tribal fee lands. Tribal Trust and allotted lands would remain in ownership by the United States for the Tribe, and those lands would become part of the LDWP only through easements granted by the Tribe. The Tribe would have management authority over all project lands. Revisions have been made in section 2.1.3.2 of the FEIS to clarify this matter.

36.2 Please refer to the responses to comments 4a.6 and 4a.17.

36.3 Please refer to the response to comment 8a.8. Section 2.1.4.2 of the LDWP FEIS has been corrected to indicate that access to the LDWP will occur on existing rights-of-way, which include both dirt roads and county paved roads. No paving of roads would occur as a result of the LDWP.

36.4 The 1861 priority water rights utilized by the LDWP are appurtenant to the lands located within the LDWP and have historically been delivered to those lands. The obligation of the Uintah Indian Irrigation Project is to divert, at a rate of 4.00 acre-feet per acre, and deliver the water rights utilized by the LDWP to the LDWP lands. The capacity of all Uintah Indian Irrigation Project canals utilized by the LDWP is sufficient to carry the water utilized by the LDWP as well as the water utilized by other lands under each canal.

UFE INDIAN TRIBE
TRIBAL BUSINESS COMMITTEE
RECEIVED

JAN 15 2004

4. Work, workers, goods & services
This includes materials. Must
Comply with Tribal Preference (Resolutions,
Ordinances) 36.5
5. There are other areas of concerns
water, hunting and fishing, water and Oroya
Irrigation system, public access, Pouching,
state of Utah Reclamation Mitigation and
Conservation Commission, etc.
6. the Impact statement, states in part,
in order for the C.U.P to be completed
the mitigation must be done.
the tribe does not recognize the overall
C.U.P project.

For over 25 years I have farmed, ranched
and lived in the Riverdell north area
I have seen trespassing, destruction
of personal property, wildlife by
mostly nonmembers of the tribe. The 36.6
project will allow the increase in Pouching,
the killing of Dogs and Horses, that be-
long to me, Drug Traffic, High speeds etc.
to relocate my family and farm and ranch
operation it would be between \$600,000 ^{to} \$700,000.

Stewart Pike
Box 344
Cottonwood, UT. 84052

36.5 As a Tribal project, the Tribe has managed and will continue to manage the LDWP. The Ute Tribe wetlands office is staffed by Tribal members and the construction crews are anticipated to be hired by the Tribe and include predominantly Tribal members. The economic analysis provided in section 4.9.6 of both the LDWP DEIS and FEIS reflects Tribal preference in employment. Materials would be purchased according to guidelines established by the Tribe and project partners, with materials purchased within the Uinta Basin and from Tribal companies as much as feasible.

36.6 Thank you for your comment. The Riverdell North property is no longer included in the Proposed Action

January 15, 2004

Ron Groves
Ute Indian Tribe, Wetlands-Fish and Wildlife
PO Box 190
Fort Duchesne, UT 84026

CC: Mark Holden - Mitigation Commission

RE: Lower Duchesne River Wetlands Mitigation Project (LDWP)

Gentlemen;

Your draft Environment Impact Statement is inadequate. Perhaps because it is a draft. When you put the final proposal together, here are some things you need to consider:

1. Input from public, the Ute Indian Tribe, Duchesne County, all cities, private land owners and all adjacent owners.
2. Contact all parties by registered mail.
3. Real scientific data. (not just guess work)
4. Real impacts on economy (not just guess work)
5. Clear maps with everything on them.
6. A real plan on upkeep of 7,000 acres of wet land. (This will not be easy.) This nice serene wet land is going to turn into a mosquito and noxious weed infested swamp. Seven thousand acres of nice dry farm ground is hard enough to take care of, let alone 7,000 acres of wet ground. It would take 10 times the work and money for upkeep. You really haven't researched the upkeep of this project. You will need lots more employees than three and lots of specialized equipment, not to mention the money it will take.
7. A better plan for taking care of the mosquitoes. The impact statement was lacking. This is of real concern to me and my family. Please relocate this project to an isolated area where human life will not be threatened. Honestly, I am worried! I saw more dead birds last year than I've ever seen, indicating the presence of West Nile Virus. This one thing should be considered above all else.

37.1

37.2

37.3

If you put this mitigation wetland in place, you'll be telling us you don't give a darn about our community. The impact is far reaching and

37.4
cont
↓

Responses to Comment Letter No. 37

37.1 Please refer to the responses to comments 3a.1, 4a.16, 3a.6, 4a.9 and 39.5.

A number of revisions to the LDWP FEIS have been made in response to this comment. Please refer to the response to comments 3a.1 and 4a.1 for a discussion of the public review process.

The project partners decline the suggestions to contact all parties by registered mail. The project partners do not believe such a measure is necessary to conduct an adequate and thorough public review of the environmental impact statement. Please also refer to the response to comment 30.1.

Relevant scientific data has been included throughout the FEIS pertaining to the extent and types of wetlands, potential to aggravate pest problems in the Uinta Basin and measures to deal with such problems, water supplies and water rights and other matters. Please also refer to the response to comment 39.5.

The economic impacts of the project have been updated and revised in the FEIS. Please refer to the response to comment 4a.9 for further information on the economic analysis.

Project maps have been revised to increase clarity and convey a better understanding of project features and locations. Please also refer to the response to comment 4a.16.

Appendix B of the LDWP FEIS has been revised to provide additional details about the project weed control plan.

37.2 The project partners agree that maintenance of the wetland area will be crucial to maintain the desired wetland benefits. Section 2.1.4 of the LDWP DEIS identified that a more detailed Management Plan, and specific Operating Agreements to implement the Management Plan, would be developed after completion of the NEPA process, but before construction commences. These plans and agreements will build on the management framework described in the LDWP DEIS. We appreciate your specific concern regarding weed control and have revised the LDWP Weed Control Plan (Appendix B) to provide additional details on the proposed weed management strategies.

Section 4.9.6.2.2 of the LDWP DEIS states that the project would fund two to three full-time employees. Although the LDWP would permanently employ a small management team, additional workers would be hired as necessary during the growing season to assist with fence maintenance, weed control, monitoring and other tasks that are most intensive during the summer months. This management scenario is similar to that of the larger Ouray National Wildlife Refuge (management staff of three with supplemental help or contract work during key seasonal periods). Additionally, cooperating agencies such as FWS and BIA, would likely provide in-kind technical services to supplement the Tribal staff under existing agreements. Section 2.1.5.2 of the LDWP FEIS has been revised to clarify this issue.

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37.3 Please refer to the responses to comments 1.1 and 1.6.

37.4 Thank you for your comment.

devastating. Please reconsider this disaster!

↑ 37.4
cont

We are one of the private land holders you want to take ground from. It will hurt us financially. But if we thought it would benefit our neighbors and community we would give up the land. But this has no benefit! We go on record as saying, "We reject such a reckless plan!"

Please, let us meet together and figure out a workable plan. None of this behind the back stuff! There are alternatives.

We do have one thing in common, wildlife. We have tried to lure wild life to our farm and have been very successful. But it has been a lot of work. We know how you can do it with very little impact on the community. Would you please sit down at the table with us and listen. If we are going to spend money, lets build something great, something we can look at and admire and take care of. Not a swamp out of control!

37.5

Sincerely,
Ken Richens family
Rt 3 box 3613
Myton, Ut 84052

37.5 Please refer to the response to comment 3a.1.

Comment Letter No. 38

Comment Letter #38

From: Richard Mingo
To: Wetlands
Subject: Re: Fw: Comments

>>> "Wetlands" <wetlands@ubtanet.com> 1/26/2004 3:45:03 PM >>>

----- Mensagem Original -----
From: "Guy & Joyce Thayne" <gthayne@ubtanet.com>
To: "wetlands@ubtanet.com" <wetlands@ubtanet.com>
Subject: Comments
Date: 26/01/04 18:30

Dear Mr. Groves,

I am sending you the comments that I have in hopes that you will consider and enter them in the comment section.

First I have a really big concern that you or no one else ever contacted myself about this project, there for I am very concerned that you are doing under the table to land owner what ever you will. In my opinion that is a very poor way to keep good relations that are workable for both sides. 38.1

I am not opposed to you having your wet lands, but I am not in favor of letting that happen at my expense as a land owner. The area that is proposed that will be taken, of my land is the very backbone of my ranching operation, and could destroy my ability to pay off the property that I have a objection to pay for and some of that is on a (30) thirty year contract. I am very concerned that no one has even approached me on the subject of obtaining my land or giving me any idea what they expect to pay for that land. 38.2

I am concerned that in a county that there is only 17% of the ls land owned privately that more go to government ownership. that increases the burden on those that own land in this county (Duchesne). 38.3

The use of "eminent domain" in this case is in no way legit.... This will be given to the Ute Tribe and that does not constitute "eminent domain". The public as a whole will not benefit from this project. 38.4

Thanks for taking my comments.

Sincerely

Guy R. Thayne

Responses to Comment Letter No. 38

38.1 The project partners disagree that there has been any attempt to deceive landowners. The DEIS Proposed Action, and the plan subsequently presented in the FEIS, has been prepared and modified in a manner that is responsive to the comments received by landowners within and adjacent to the project area. Please also refer to the response to comment 3a .1.

38.2 Please refer to the response to comment 3a.3. We have not yet approached any landowners with offers to purchase their property. This document is being prepared to inform the public and the agency decision makers of the environmental impacts that would result from implementing the Proposed Action, or alternatives to the Proposed Action. After a decision has been made, an independent appraisal of the value of the properties within the project will be made and then landowners will be contacted. Please refer to the response to comment 29.3.

Regarding compensation for USDA contract provisions, please also refer to the responses to comments 12.3 and 29.3.

38.3 Please refer to the responses to comments 3a.2 and 3a.3.

38.4 Regarding the appropriateness of eminent domain, please refer to the responses to comments 3a.3 and 8a.7.

JAN. 14. 2004 10:57AM THE UPS STORE, RC SD

NO. 240 P. 1

Comment Letter #39

UTS INDIAN TRIBE
TRIBAL BUSINESS COMMITTEE

RECEIVED

JAN 14 2004

RESPONSE TO:

LOWER DUCHESNE RIVER WETLANDS MITIGATION PROJECT

DRAFT ENVIRONMENTAL IMPACT STATEMENT
NOVEMBER 2003

January 13, 2004

Mr. Ron Groves, Director
Wasatch Wetland Project
Ute Indian Tribe
PO Box 190
Pt. Duchesne, Utah 84026

Background information: I am responding to the Draft Environmental Impact Statement (DEIS) as a Research Biologist (Ph.D.) with 32 years of professional scientific experience and as a rancher/farmer at Myton with our family's private lands directly impacted by the proposed Project.

INTRODUCTION

Overall, the Project addressed by the DEIS is poorly conceived, with weak justification and analyses throughout for all concerns and alternatives. There will be huge impacts to the local public and communities. For example, human disease is a critical issue, yet weakly addressed with the potential for increased mosquito borne diseases to the local public. Elevated water tables, around homes and lands are a potential for disease and will directly impact humans in the area. Huge economic impacts will result to individual landowners, local cities and the county with the loss of private lands. The economic analyses in the DEIS are subjective and biased, primarily based on land taxes. Agriculture crops, livestock, lands going back to non-productive alkali conditions, machinery, livestock needs (barns, corrals, etc), loss of livelihoods, displacement of people and possible closing of schools are other examples where the economic impacts analyses failed. Finally, the scoping process to inform the public was inadequate. It was very clear in the document that the intent was to bypass the local public for input to the DEIS. The local public have excellent input and ideas for alternatives and health issues, but essentially they were ignored. This DEIS did not adequately address the mitigation for all alternatives for wildlife, plants, water, soils etc. because of the qualitative (subjective) methodology, analyses and weak or incomplete data sets.

My comments are as follows:

1. When and where was the notice of intent to prepare the DEIS published for the public, in particular for those persons whose lands are affected? The DEIS states that in 1995 the Utah

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Responses to Comment Letter No. 39

39.1 A Notice of Intent to prepare an EIS was published in the Federal Register on April 25, 2001 (66 FR 20827). Public notices announcing the initiation of public scoping on the project were also published in the Salt Lake Tribune (May 11, 2001) and the Vernal Express (May 9, 2001). In addition to the public notice, the Salt Lake Tribune published a separate article on the proposed project in May 2001. Flyers publicizing local scoping meetings were posted at many conspicuous locations throughout the Uinta Basin in May 2001. Announcements regarding the Uinta Basin meetings were made on two local radio stations (KNEU and KUEL).

During the planning phases of this project, from 1995 to 2001, the Tribe prepared a feasibility plan and report considering a variety of alternatives for a wetlands project that would meet the mitigation obligations of the federal government to the Tribe. This plan underwent extensive review within the Ute Tribe Business Committee the Department of the Interior, Mitigation Commission and other cooperating agencies before it was adequate to develop viable alternatives for final consideration.

Please also refer to the response to comment 4a.1 for a discussion of the public review process.

Reclamation Mitigation and Conservation Commission provided funding to the Tribe to initiate planning for the LDWP Draft Environmental Impact Statement. Notice of Intent to prepare the EIS was published in the Federal Register on April 25, 2001, six years after initial planning in 1995. Why did it take so many years to inform affected citizens after the LDWP was already in the process of preparing the DEIS?

2. The DEIS failed to provide adequate time and opportunity for input by local and private land owners for Scoping. Tribal Representatives failed to notify our family and other private landowners individually as required by law, contrary to what was stated in the DEIS.

- a. Planning and Scoping meetings were held in Salt Lake City, Heber and Fort Duchesne, locations not proximate to the affected areas. The team in April 1997 and May 2001 held Scoping meetings, without adequate public notice and without individual notice to all affected within the Project and adjacent property owners including the public in Duchesne, Bridgeland, Myton, Roosevelt, and Randlett.
- b. Field tours were conducted July 28-29, 1997, October 29, 1997, and May 6, 16-17, 2001 for members of the planning team and interested Tribal members and interested individuals. These tours were held without adequate public notice to the cities listed above including individual notice to all affected private landowners within the Project and adjacent property owners.
- c. Public presentations were made by the team members in Salt Lake City on March 5, 20, and February 27, 2001. Affected and adjacent property owners remain unaware of when and where public notice of the presentation and its agenda were published.
- d. Notice of Intent to prepare an EIS was published in the Federal Register in April 2001. Notice announcing the initiation of Scoping was published in the Salt Lake Tribune May 11, 2001 and in the Vernal Express May 9, 2001. No explanation is offered of why these notices were not published in the Uintah Basin Standard, a local newspaper that reaches most of the impacted public.

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Notification to develop the EIS and Scoping is inadequate, very narrow and does not meet NEPA requirements.

1. Environmental Analyses and Assessments are inadequate for the Project. Planned mitigations for landowners and local communities of Duchesne, Bridgeland, Myton, Roosevelt and Randlett are inadequate for addressing adverse impacts on the economy, health, agriculture and the lands. Impacts at the county level will be devastating because of erosion of the tax base. Heavy impacts on landowners, the local public and government were not addressed for:

- a. Individual economic losses and livelihoods. Some people will lose their business

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39.2 a) Please refer to the responses to comments 4a.8 and 23.2.

operations and will be displaced from the community. Welfare may be the only resort.

b. Counties will be affected by loss of taxes from crops, livestock and loss of agriculture land. Elevated water tables will destroy productive lands and will increase the potential for diseases that affect people, horses and livestock. Occurrences of infections from viruses including West Nile, Western Equine Encephalitis and St. Louis virus may become more common. Analyses were diluted by extrapolating economics at the county level and by the use of weak data sets. The financial impacts for the Project area were skewed by spreading projected financial impacts across a two county area, rather than studying impacts to the 5 communities and Project area.

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c. The local economies of Duchesne, Bridgeland, Myton, Roosevelt and Randlett will be impacted in ways not addressed. Sales of farm machinery, livestock industry sales and feed will be affected. Cost of increased burdens to medical staff and hospitals will potentially occur with increased disease and health problems due to increased wetland resulting from a rising water table and mosquitoes. Livestock and crop production will be negatively affected by this mitigation.

4. As proposed in the DEIS, Myton will be a floating island. Historically in the "Old Town of Myton", subwater (elevated water table) destroyed basements of homes, and foundations decomposed due to salts. Lawns were essentially saltgrass. Adjacent farmers and ranchers will experience the same problems with a rise in water table level within the proposed Project. Most of the people in Myton moved their homes to higher elevations. However, there were still major problems with high water tables. Homes had to be moved out from the South side of Myton. The Ureah drain helped to alleviate some of the problems. These concerns and problems are not addressed in the DEIS.

39.3

5. Myton Cemetery: I remember in my earlier years at Myton, observing high water tables that coincided with sodic soils in and around the cemetery. Water and alkali soils were present throughout the lower part of the cemetery. Caskets were popping out of the ground. It is expected that these same problems will occur with implementation of this Project, since adjacent lands are to be managed for more wetlands. This is not addressed in the DEIS.

6. Human wastes in the impacted area will seep into the ground water, especially with the increased level of the water table. Manure from livestock will also contaminate the ground water from adjacent lands. Both are sources for disease to humans. This is ignored in the DEIS.

7. Other Alternatives based on new and additional Scoping need to be considered. Considerations that have less impact on the private landowners and the outlying cities, will be required: health, economic, agriculture, sub water tables, salt deposits in wetlands and soils becoming more saline and sodic. Some alternatives were briefly addressed, but not considered for full analyses. Primary justification for not considering these problems and alternatives is weak to

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39.2 b) Economic models, such as IMPLAN, are restricted to county-wide analyses because statistics are assembled on a county-wide basis. Forecasting impacts to individuals and discrete communities can only be done in a limited, qualitative manner. Please refer to the responses to comments 23.2 and 30.2 for additional information on this issue.

39.2 c) Please refer to the responses to comments 23.2 and 30.2.

39.3 The groundwater levels and water table gradient between Myton and the Uresk Drain were analyzed to evaluate the potential impacts of the wetlands on the Myton area water table. For this analysis, the effects of the proposed treatments were evaluated separately for each of the subareas in the Uresk Drain site: the Goose Ponds area, the Main site (east of Mallards Springs), the West Drain (west of Mallard Springs but south of county road 8000 South), the West Fields (west of 1000 West) and the Head of the Drain (north of 8000 South).

The greatest amount of wetland development would occur within the Main site and the Head of the Drain. In general, the water table on the Main Site would rise within an area approximately 600 feet north or south of the Drain. It is unlikely that the water table would rise north of 8000 South or River Road as a result of the berms placed within the Main Site. No change in wetland extent in the Head of the Drain subarea is planned under the Proposed Action. However, three berms are proposed to be constructed in this subarea under the Pahcease and Topanotes alternatives. The increased water table in this subarea would result in an increased water table within the grasslands to the east of the LDWP boundary.

There is a strong west to east groundwater table gradient between Myton and the Uresk Drain site that would prevent the proposed impoundments from affecting the Myton cemetery. The historic high water tables at the Myton cemetery have been attributed to a number of factors, including the historic flooding of Myton by the Duchesne River in the 1920s and leakage from an unlined irrigation ditch traversing the cemetery. Most of the graves have been moved upgradient of the irrigation ditch and ditch has been placed in a pipe. However, there is still an existing high groundwater table potentially intercepting some of the graves. Further details regarding the groundwater analysis results can be found in section 4.5.6 of the LDWP FEIS. The groundwater analysis methods are in section D.5.2 .

Regarding the potential for fecal contamination of groundwater under the LDWP, the only area in which the groundwater would rise and which would still be grazed would be the area east of the Head of the Drain under the Pahcease or Topanotes alternatives. This area is currently flood irrigated. As a result, the potential for water intercepting manure to transport fecal matter into groundwater or surface water currently exists. Additionally, the potential for ground or surface water to intercept with manure exists on the majority of the Uresk Drain site under baseline conditions. With the elimination of grazing within the Uresk Drain, the potential for livestock fecal contamination of water would be reduced not increased. It is too speculative to attempt to identify the amount of the change as previous water quality sampling within the Uresk Drain has not detected fecal contamination.

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There are no known sources of human fecal wastes within the area adjacent to the Head of the Drain or associated with residences outside of the project boundary. It is possible that the increased water table could intercept otherwise intact septic systems associated with residences to be acquired within the project area. Such systems would be removed as part of the land acquisition process. Existing leaking septic systems would be the responsibility of the landowner to repair, regardless of the ground water level.

39.4 The project partners believe a full range of alternatives was considered in the process of developing the most feasible Proposed Action. Alternatives considered but rejected for further analysis are presented and discussed in Section 1.5. Reasons for rejection of these alternatives were based on fundamental issues of feasibility (lack of water, lack of funds, inability to meet the minimum mitigation objectives) and are not, therefore, unsubstantial.

The comment proposes mitigation following the model of the Mallard Springs, a state of Utah wildlife management area adjacent to the Uresk Drain. Mallard Springs is primarily managed to provide upland game bird habitat and associated public hunting experiences. Recently, the State of Utah allowed the construction of wetland ponds on the property as mitigation for salinity reduction projects that removed other wetland habitats in the local area. The project partners intend that operations of the Uresk Drain wetlands of the LDWP will be similar to, and in coordination with, Mallard Springs to provide additional wetland-waterfowl benefits.

Please also refer to the responses to comments 3a.1 and 4a.1.

non-existent. The main point is that because of limited Scoping, not all alternatives nor adequate input to the process have been presented.

a. An example for mitigation with many fewer impacts at the Ureack drain site, would be to use the model developed by the State of Utah referred to as "Mallard Springs". This model could be implemented east of Mallard Springs to achieve the goals of increasing wetland wildlife. Leave the West and Northern part of the Ureack Drain as is to alleviate the subwater problems at Myton City. The Scoping process was inadequate and the public did not have an opportunity to respond and provide input to the process.

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8. All wildlife data used for this DEIS are extremely weak and are suspect. Sampling methods for species lists and counts, time of sampling, experimental designs and statistical analyses are not presented for plants, birds, mammals, reptiles, amphibians and insect species. Species lists are incomplete or non-existent; major species are missing from some lists. Methods to map and assess habitats and alternatives with statistical analyses are not presented in the DEIS. Accuracy levels are not presented with analyses, results or in the text throughout the DEIS. Conclusions drawn from weak data sets, analyses and results are meaningless and have no validity or accuracy.

9. Data concerning water chemistry and soil chemistry, water table levels and salting loads are incomplete. Analyses and calculations are not consistent throughout the DEIS. The current project as proposed will decrease productivity of private and adjacent lands; many will revert to "Alkali Flats" that have been very common in the project area. The shallow analyses as presented will not produce the wildlife values as stated. Projected results are not supported because the DEIS data sets are so poor and incomplete.

39.5

10. Impacts to private land owners, adjacent land owners and the local cities were evaluated superficially. A dilution effect of economics, business and livelihoods was analyzed by extrapolating the impacts to the county level. Economic values, wildlife, agriculture, livelihoods, businesses and health issues primarily ended at the boundaries defined or at the fence line. In fact the impacts go beyond the boundaries defined. The procedure minimizes impacts and effectively excludes the local areas and impacted landowners.

11. The DEIS admits that the models to analyze the data were qualitative (subjective) and are basically "Best Guesses." Accuracy is low with these types of models, often less than 50% accurate. Quantitative scientific models were not used for the analyses that give the public an estimate of confidence outputs that provide an accuracy level. Quantitative analyses are required, especially for the health issues and diseases that are concerns to humans in the area. Quantitative data with proper sampling protocol will obviously need to be collected at the field level. New analyses will be required to provide a sense of reliability in the mitigation assessments with a degree of accuracy.

39.5 CEQ regulations for implementing NEPA, Section 1500.1 states that the primary purpose for NEPA is to ensure that the environmental impacts of a proposed federal action are made known to responsible federal officials and citizens prior to implementing those actions. The analysis is to be based on scientifically accurate information in sufficient detail to sharply define and compare the environmental impacts of alternatives. Section 1500.1(b) states that, “most important, NEPA documents must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail.” Section 1500.4(c) states that NEPA documents should discuss, “only briefly issues other than significant ones” and Section 1500.4(f), “emphasizing the portions of the environmental impacts statements that are useful to decision makers and the public.” We believe scientifically accurate data and analysis has been provided in the EIS to sufficiently describe and compare the environmental impacts of the Proposed Action and alternatives.

The economic analysis presented in the FEIS has been updated utilizing a new model and is described in more detail in section 4.9.6 of the LDWP FEIS.

12. Increased wildlife production and diversity is a major objective for this mitigation. However, wildlife surveys for species lists and density estimates are incomplete especially by habitats, including Russian Olive. Comparisons of Russian Olive habitats vs. Cottonwood habitats were not evaluated for wildlife. Sampling protocol and methodology are not defined and the data presented are highly questionable for quality control. Scientific literature shows many benefits for wildlife from Russian Olive trees. However, this tree is considered a noxious plant, although it is extremely important for wildlife. The DEIS does not address the importance of Russian Olive for wildlife and wildlife values. Cottonwood trees will not grow in the saline, sodic soils in the Urcak Drain site. Placement of the cottonwood plantations needs to be re-evaluated based on soil type and soil and water chemistry. The expense of planting cottonwoods has to be evaluated economically vs. other cheaper methods. None of these comparisons and analyses was conducted in the DEIS.

39.6

13. Techniques for monitoring mosquitoes for public health as presented in the document are inadequate. Sentinel chickens placed at limited locations will not detect diseases transmitted by mosquitoes at a high level of accuracy. Human lives will be highly impacted by disease with inadequate monitoring as proposed. Scientific sampling protocol for monitoring with proper sampling designs and a high degree of accuracy is mandatory for detection of diseased birds and other animals. The sampling and monitoring protocol is not adequately addressed in the DEIS. A high accuracy level for detecting diseases transmitted by mosquitoes to humans is vital to prevent catastrophic consequences to people in the area. This is a major concern, especially when many humans can be affected within a very short time period by mosquito borne diseases.

39.7

Scientific monitoring protocol, with scientific review, is required with a minimum of two years of pre-sampling for baseline data. These data will be used to evaluate the impacts of increases or decreases of mosquitoes and the potential for disease in the project area. As stated in the DEIS, the mosquito issue is based on acres of wetlands and this is a very superficial evaluation. The public needs to know the density (numbers) of mosquitoes before the project and after the project to evaluate the potential for transmittal of diseases with a high degree of accuracy. This project as proposed may improve mosquito habitat in existing wetlands, therefore, monitoring pre and post project is required. These points are not addressed in the DEIS.

14. References (R-1 to R-10). Most of the references have not been scientifically peer reviewed. Literature cited that has not been through scientific peer review system is extremely weak and suspect for the DEIS. Personal communications (with no data) from only a single person cited on the reference list may have a larger impact on natural resources than justified. The overall reference list is weak for the DEIS, especially personal communications and non-referenced literature cited.

39.8

The public has been told that management of our resources and environmental impact analyses and assessments are to be based on the best science available. This is not so with this DEIS. Scientific documents, methods and literature that have been through the peer review process directly related to this DEIS are available, but are not cited or used. Models used are primarily

39.6 For details regarding sampling methods and protocols, please refer to Appendix D of the LDWP FEIS.

It is unclear what scientific literature the comment refers to that shows the benefits of Russian olive for wildlife. Although Russian olive produces fruits that are edible by some birds and provides some habitat structure, ecologists have found that bird species richness is actually greater in areas with a higher concentration of native vegetation. Other research shows that Russian olive is not as palatable to wildlife as cottonwood (Pearce and Smith 2001), reaches a maximum height half as tall as cottonwoods, thereby reducing habitat structural diversity and typically supports much less diverse wildlife populations than native riparian species (Knopf and Olsen 1984). Russian olive trunks also do not grow as thick as cottonwoods and the wood is denser. As a result, cavities that are important to cavity nesting birds (e.g., woodpeckers, chickadees) and small mammals (e.g., squirrels) are not created as well when Russian olives die or decay.

The wildlife surveys conducted for the LDWP also showed greater wildlife use in cottonwood stands over those dominated by Russian olive. Koehler (2000) observed more songbird species, along with more riparian obligate species (90 percent of nests or occurrences are in riparian habitat as defined in BLM [1999]) and more riparian dependant species (60 percent of nests or occurrences are in riparian habitat) at sites that contained more cottonwood habitat. Koehler (2000) attributed the high songbird abundance observed on the Ted's Flat site to the existence of larger stands of mature cottonwood trees with a native shrub understory than observed elsewhere in the project area. Subsequent songbird surveys conducted between 2000-2006 also showed similar results. Additional details can be found in Koehler (2000) and Zeigenfuss et al. (2007).

Please also note that the LDWP DEIS did not identify Russian olive as a noxious plant for project purposes. Russian olive has been declared a noxious plant by the State of Utah and both Duchesne and Uintah counties according to Section 4-17-3 of the Utah Noxious Weed Act. This Act requires control of noxious weeds identified by the state and/or individual counties.

Regarding planting of cottonwoods in the Uresk Drain site, the northeast corner (the Goose Ponds area) of the Uresk Drain borders the current Duchesne River channel. The LDWP proposes to plant cottonwoods only within the current Duchesne River corridor where they are appropriate, and not within the main site of the Uresk Drain where the project partners agree that soil and moisture conditions are not appropriate. Table 2-1 in section 2.1 of the FEIS has been revised to clarify this point.

39.7 The project partners agree that it is important for the LDWP to incorporate a mosquito monitoring program. This is why the LDWP DEIS indicated in section 2.1.4.5 that monitoring would be conducted. The FEIS has been expanded to include additional details about both the monitoring and mosquito control plan in Appendix G. However, the project partners disagree that human health impacts can only be predicted based on baseline mosquito densities. Instead, the project partners believe that implementation of a sound integrated pest management (IPM) approach (which includes

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standardized monitoring) according to the CDC guidelines would be the most effective manner in which human health issues can be addressed. The reasons for this are listed below.

WNV is mosquito-borne virus with a complicated life cycle. It is referred to as a “zoonose.” This means that the mosquito-borne encephalitis virus has a primary transmission cycle among mosquitoes and wild birds, with transmission to mammals incidental to the basic transmission cycle. The degree to which mosquito-borne diseases turn into human health epidemics vary among areas and within years, depending on a large number of factors associated with different mosquito life cycle stages, viral factors and hosts. These include: mosquito densities, viral amplification, mosquito competency, mosquito sex ratios (only competent adult females can transmit the virus), presence of intermediate hosts, competency of intermediate hosts, presence of receptors, weather (air temperature, relative humidity, precipitation) and presence of overwintering habitat (Meredith and Walton 2005).

There are no models that have been developed to predict future human health risks from previous year mosquito density data as there is not a direct correlation between mosquito density in one year and human health risks one or two years later. This is especially true for the main WNV vector in the Uinta Basin, *Culex tarsalis*. This species overwinters as an adult and does not produce eggs able to overwinter. The number of adult mosquitoes in the spring has a greater relationship to winter conditions than previous year egg raft or larval densities. Another key factor is that the disease transmission rate is affected by the degree of viral activity within a given year. For example, several outbreaks that occurred in parts of the US in 2002 occurred in areas with relatively low mosquito densities, but high infection rates that year. Since infection rates, overwintering survival and many other key factors associated with disease transmission can vary on an annual basis, the predictive value of a model developed from pre-project baseline mosquito density data would be very low.

The US Department of Human and Health Services, Center for Disease Control (CDC) has developed guidelines for monitoring, prevention and control of WNV (CDC 2003). These guidelines stress that “a universally applicable arbovirus surveillance system does not exist,” but recommends a combination of live bird, dead bird and mosquito monitoring on an annual basis. This is the monitoring system currently being used by the MAD’s in Uintah and Duchesne counties. Instead of trying to develop a separate disease transmission model for the Uinta Basin, the LDWP proposes to supplement the current monitoring being done by these agencies in accordance with the CDC monitoring guidelines (see Appendix G of the LDWP FEIS).

The impact analysis presented in the LDWP FEIS is habitat-based to identify a general level of anticipated impacts. This impact analysis is combined with an ongoing mosquito monitoring and control plan to reduce any adverse impacts on an annual basis.

39.8 Please note that all of the reports and conversation records cited in the DEIS were available for review at the Ute Tribe Wetlands Office. These reports contain numerous peer-reviewed references and data sets. The references cited in the FEIS have been revised to include these references as well as other new data available as of the time of the FEIS.

Please also refer to the response to comment 39.5.

subjective (qualitative). Results and outputs are also subjective in the DEIS. Quantitative methods, models and scientific peer review literature are required to add validity, refute or substantiate all the analyses and results. This is not accomplished or considered in the DEIS.

SPECIFIC COMMENTS BY CHAPTER

Chapter 1: GENERAL OVERVIEW

1. Page 1-5 and 6. Some loss of the flooded backwaters had an impact on waterfowl use of the corridor as stated. The DEIS states that habitats were lost for other wetland and riparian-dependent species such as deer, raptors, wading birds and songbirds. Where are these data? When and how were they collected to determine this change? More deer, raptors, non-game and game birds are reportedly observed by the local public today than in the past.

39.9

2. Landscape approach is for broad scale analyses and was used for developing alternatives. However, the accuracy is questionable for plant communities, acres of open water, wetlands, trees, plant and animal habitats. For example, historically Buffaloberry was the most common shrub, far greater than willow, yet the document always states that willow was the dominant understory. This is simply not true. Expectations are that Buffaloberry was lumped with Russian Olive on the maps. Separation of Buffaloberry and Russian Olive on the maps is required to evaluate the wildlife habitats. This is not addressed in the DEIS. How accurate is the ground truthing data for all habitats compared with the landscaping mapping, especially for Russian Olive and Buffaloberry? Accuracy is low with landscape mapping when compared to ground truth data. Where are the data to show that willow thickets were dominant and extensive throughout the river system? Without ground truthing data to evaluate and correct the landscape mapping with a high degree of accuracy, results would mislead the decision maker.

39.10

3. Page 1-7 and 8; 1-16. The backwaters during flooding were mainly used by Carp, a nonnative species. Some catfish have been observed at the edges of the backwater, but mainly stayed in the main channel of the river. Carp preferred the backwaters and wetland pools.

Most emphasis in the DEIS is placed on noxious weeds, including Russian Olive. However, Carp and a new non-native mammal to the area, the Raccoon, are completely ignored and are considered pests. Raccoons destroy bird nests and eat the young wildlife. Carp destroy aquatic plants important to wildlife. These concerns are not addressed in the DEIS.

39.11

Cottonwoods are only defined as 100- 150 years old (Data?), however, there are young cottonwoods currently in the system. Planting to provide seral stages (Plant Succession Stages) for wildlife use is not well defined. Only early and late seral stages would be on sites for cottonwoods. Wildlife require all stages of succession. This scientific concept applies to all vegetation types. The justification for increasing cottonwoods, when Russian Olive is highly

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39.9 In 1965, the FWS predicted that the construction of SACS would impact river-connected wetlands (i.e., oxbows) used by waterfowl in the Duchesne River corridor between Bridgeland and Ouray. To mitigate this impact, and to provide the additional wetland-related benefits and opportunities promised to the Tribe, the FWS recommended the development of 6,640 acres of waterfowl management areas between Bridgeland and Ouray. At that time, there was no quantification of the specific existing wildlife use or the predicted wildlife loss, or of the specific acreage of wetlands and intermixed riparian habitats to be lost. The mitigation and Tribal commitment were accepted by Reclamation and carried forward in subsequent CUP plans as an outstanding mitigation requirement. With the passage of CUPCA in 1992, emphasis was refocused on completing unfulfilled environmental commitments of the CUP. Under CUPCA's ecosystem restoration standards, the LDWP planning team has reformulated the original plan while substantively accomplishing the similar objectives as the 1964 and 1965 plan and commitments.

The mitigation commitments are being implemented more than 40 years after they were first recommended. Because the mitigation requirement was based on a need to compensate for habitat losses, historical and current aerial photographs was compared to identify the habitat types that had actually changed following SACS implementation. This analysis identified that the primary habitats lost were willow thickets, marshy estuaries and cottonwood forest. (Please also refer to the responses to comments 20.1 and 20.2 for additional discussion of the historical wetland conditions.) Because there were no pre-project wildlife surveys conducted in 1965, habitat type losses were used to identify wildlife groups both likely to have been impacted by SACS operation and to benefit from the LDWP mitigation. The wildlife data reported in the LDWP DEIS were from surveys conducted in 1996, 1998 and 1999. These surveys were conducted by Dr. Elisabeth Ammon, University of Nevada/Great Basin Bird Observatory, and biologists Ted Koehler and Larry Zeigenfuss, under the direction of Dr. Lucy Jordan of the FWS. Details of these studies can be found in Ammon (1997), Koehler (2000), and WWS (1998 and 2000). This data is available to the public and on file at the Tribe office in Fort Duchesne and at the FWS office in Vernal. Please refer to sections 5.6 and S.6.3 which identified that technical reports referenced in the LDWP DEIS were available from the Tribe.

Additional wildlife surveys were conducted in 2004, 2005 and 2006, and will be conducted through the construction and post-construction periods.

39.10 The data regarding historic species descriptions were developed from multiple sources, including historic aerial photographs and written descriptions of the project area dating back to the early explorers of the Uinta Basin. Descriptions of historic conditions were not edited for the LDWP DEIS and were cited as stated in historic documents. As such the "historic conditions" referenced in the DEIS extend from the Dominguez and Escalante expeditions in the 1700s through the initiation of the largest CUP diversions in 1967.

The baseline conditions represented in the LDWP DEIS were mapped based on 1997 aerial photographs at a scale of 1:12000. The aerial photograph mapping was followed by ground truthing of the individual habitats, with data collected on species composition within each of these habitats. The entire project area was walked with ground truthing of habitat boundaries within a subset of these habitats. Native riparian species habitats were of particular concern and all habitats in which native riparian species occurred were noted.

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Buffaloberry and Russian olive provide different canopy shapes which are discernible on low altitude aerial photography. Additionally, buffaloberry and Russian olive are quite distinctive and easy to identify in the field (e.g., buffaloberry has opposite leaves and Russian olive has alternative leaves; for a full description of species characteristic please refer to Welsh et al. 2003). Buffaloberry and Russian olive were not lumped on the project maps. Russian olive is mapped under the category "Russian olive/tamarisk," which refers to all habitats in which Russian olive and/or tamarisk provided at least 30 percent canopy cover at the time of the mapping. Buffaloberry is mapped within the mesic shrub habitat category. Maps depicting all habitats types are on file with the Ute Tribe-Wetland Office. Descriptions of habitats can be found in WWS (1998, 2000), also on file with the Ute Tribe-Wetland Office. Appendix D of the LDWP FEIS has been revised to include these additional details regarding the habitat mapping.

The project partners agree that buffaloberry was historically more common than under baseline conditions. That is why restoration of native shrub habitat is a project priority. Section 1.1.3 of the LDWP FEIS has been revised to clarify this point.

39.11 Measures that may include water level manipulation, mechanical and chemical removal, and burning will be used to discourage the production of carp in the LDWP wetlands. Control measures such as trapping or netting may be applied if needed. Nuisance raccoons on private property will be subject to the same depredation and wildlife nuisance policy of the Utah Division of Wildlife Resources. Nuisance raccoons on Tribal land will be managed by the Tribal Fish and Wildlife Department.

39.12 The comment that the LDWP defines cottonwoods only as 100 to 150 years old is a misreading of the LDWP DEIS. Section 1.3.3 of the LDWP DEIS states that "many of the remnant cottonwoods along the Duchesne River are estimated to be from 100 to more than 150 years old with recent cottonwood establishment limited in the corridor." This statement does not imply that all cottonwoods are older than 100 years nor does it imply that there has been no recruitment of cottonwoods in the last 100 years. One can in fact find young cottonwoods along the Duchesne River; however, young cottonwoods are scattered and do not comprise a large portion of the current riparian. For further details on cottonwood age estimates and recent recruitment history, please refer to WWS (1998) and WWS (2000) which are on file at the Ute Tribe-wetlands office.

Please refer to the response to comment 36.6 regarding the wildlife benefits of Russian olive. In general conservation agencies encouraged Russian olive to be planted during the mid 1900s. However, Russian olive has been identified as a noxious weed by the State of Utah and currently no state or federal conservation agencies operating in Utah promote the use of Russian olive for wildlife purposes. Additionally, the State of Utah, and both Uintah and Duchesne counties require the removal of Russian olive.

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The specific results and analyses that the commenter finds “suspect” are not stated. To the extent that the commenter feels that additional data is necessary to justify the conversion of Russian olive to native vegetation, please refer to the response to comment 39.6 and Section 4-17-3 of the Utah Noxious Weed Act.

beneficial to wildlife, deer, game birds, non-game birds and small mammals is not addressed in the document. See scientific literature on Russian Olive. The data in this document does not justify reducing or eliminating Russian Olive vs. Cottonwood, when the objective in the DEIS is to increase wildlife habitat. Data in the DEIS to support a habitat type conversion from Russian Olive to cottonwoods based on wildlife is extremely weak. The DEIS does not address this conversion for wildlife improvement (birds, mammals, reptiles, amphibians and insects). Only subjective results and analyses are presented in the DEIS and they are highly suspect with no level of accuracy stated.

↑
39.12
cont

CHAPTER 2: DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

1. Most comments concerning this chapter have been addressed earlier.

2. Page 2-28 and 4-133. Public Access. It is stated throughout Summary Sections that access for Native Americans and the public will benefit from this project. This includes hunting, birding, scenic and aesthetic value; however only 5- 25 vehicles can park at limited sites. The management proposed in the DEIS states that the "Tribe does not encourage general non-consumptive recreation from non-Indians." Thus, the public will not be encouraged to visit and enjoy the wetlands. Many controls are listed and with limited parking, it is clear that the public will be discouraged from using these areas. It is interesting to note that public dollars are being used for the project. The DEIS language in this section attempts to conceal a practical loss of public access and direction by disguising it as improved public access.

39.13

3. Page 2-30,31. Mosquito Control: Proposed plans to control and monitor for disease are very weak. This issue needs to be addressed scientifically with science-based sampling and sampling designs and review by scientists to detect diseases and the spread of diseases at a high and accurate level. Human lives are a very high priority, when considering the increased possibility of contracting one or several of the diseases. Current write-ups for monitoring and control will not provide high quality, accurate information required to detect or stop mosquitoes from transmitting diseases. The DEIS did not present adequate analyses and protocol for monitoring. The accuracy levels for detection of disease before it spreads to the human population needs to be presented in the DEIS.

39.14

CHAPTER 3: COMPARATIVE ANALYSIS OF PROPOSED ACTION AND ALTERNATIVES

1. Most concerns are addressed in the above sections.

39.13 The commenter is correct that the LDWP DEIS states that parking will be limited to five to 25 vehicles at a few locations as stated on page 2-28, and that access to the Duchesne River is generally limited in the project area under current conditions. The commenter incorrectly asserts that page 4-133, section 4.11.5 of the LDWP DEIS indicates that under the LDWP, the “public will not be encouraged to visit and enjoy the wetlands.” Section 4.11.5 provides a description of the “Affected Environment” or pre-project conditions for local recreation resources, in which access is currently limited. Section 4.11.6 describes how recreation resources would change under the Proposed Action. Section 4.11.6.2 of the DEIS states that the Proposed Action would increase access to the Duchesne River. The DEIS does not indicate that recreation access would be discouraged under the Proposed Action. The DEIS does note, as the commenter points out, that the increase in wildlife resources would be tempered by the general lack of parking and by the requirement to obtain appropriate permits or permissions to hunt. Section 4.11 of the FEIS has been revised to clarify these points.

It is not clear what controls listed on pages 2-28 and 4-133 of the LDWP DEIS the commenter is referring to that would discourage public access. The only restrictions on access listed on the pages cited are those that might be necessary to protect sensitive resources (such as fawning areas during the fawning period) and the requirement to obtain appropriate statutory permits. These restrictions are very similar to those employed by the DWR on its Wildlife Management Areas (requires appropriate statutory permit to hunt; has authority to close areas to certain activities during breeding seasons) and the FWS (requires appropriate statutory permit to hunt; has authority to close areas to certain activities during breeding seasons) and these wildlife management activities do not have the effect of discouraging public access.

39.14 Please refer to the response to comment 39.7.

2. Page 3-12. Cultural Resources: Inventories are incomplete as stated. There are Native American burial sites within and next to the Uresk Drain site and in the areas under the Riverdale Canal sites. In addition, the Fremont Indians inhabited the area as abundant past evidence shows. Ancient Indian artifacts could be lost or negatively impacted. The draft DEIS does not adequately address cultural resources.

39.15

CHAPTER 4. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

1. Pages 4-2,3. Contrary to the DEIS statement that the Project area has no prime or unique farmlands, prime lands are scattered throughout the Project area. Other factors such as short length of growing season, high depth to shallow ground water and soil profile characteristics were issues mentioned, but not addressed in characterizing agricultural lands in the Project area.

39.16a

2. Pages 4-4,5. Habitat types (Vegetation types?) Description is based on aerial photographs. How accurate are these based on ground truthing data? It appears that Russian Olive and Buffaloberry were lumped in the analyses. Willow thickets were not the dominant plant, but Buffaloberry was most dominant throughout the system. Secondly, no cottonwoods were bordering the Uresk Drain site as stated in the DEIS. These trees came in with irrigation at the ends of field and irrigation ditches after the drain was completed. Cottonwood will not grow in the Uresk Drain site because of highly saline, sodic soils. Russian Olive can tolerate these high levels and provide for excellent wildlife habitats (See Scientific Literature). This tree provides the best wildlife habitat for many birds and mammals, but is not addressed in the DEIS. Wildlife surveys and vegetation surveys are not defined nor methods and analyses presented in the DEIS. Results are shallow and incomplete for evaluation of all proposed sites with an acceptable degree of accuracy in the DEIS.

39.16b

Not all Riparian Shrub species are included in lists. Species lists are very limited and common species are missing.

3. Pages 4-33,34,35,37,38,41,43,44,45 present tables of wildlife species and some densities. These data are extremely weak. For example, Uresk Drain sampled over a two-year period only reported a total of 9 waterfowl. All local residents and hunters know that thousands of waterfowl use the area. I have personally observed more than 9 waterfowl over a two year period on this site. From my own observations which are confirmed by contacts with personnel of Utah Division of Wildlife Resources, thousands of waterfowl utilize this site during the seasonal migration.

39.17

Species lists are incomplete or lacking data for small mammals, reptiles, amphibians, and insects in the DEIS. Environmental assessments cannot adequately be made with any degree of accuracy with these poor data sets.

39.15 As stated in Section 4.15.1 of the EIS, a “Class I” cultural resource inventory of the project area was completed by Alpine Archaeological Consultants, Inc. in 2002. This work consisted of site file searches, background research, and a review of the pertinent literature. In addition, the Uinta and Ouray Ute Indian Tribal cultural resource specialist checked Tribal files and ascertained that no significant Tribal sites are present in the project area (see also Section 4.15.5). No burial locations are documented in the site records filed with the Utah State Historic Preservation Office (SHPO) or with the Tribe. A Programmatic Agreement has been developed among the project partners and SHPO for the “protection and preservation of cultural resources” in the LDWP project area (see Appendix F). An intensive (“Class III”) field inventory of all areas of potential effect will be conducted prior to project implementation, and all evidence of prehistoric and historic occupation and use of the project area will be thoroughly documented. Sites determined to be eligible for the National Register of Historic Places will either be avoided or will be subjected to an approved form of treatment to mitigate the project’s adverse effects.

39.16a Prime farmland is defined as “land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion” (7U.S.C. 4201(c)(1)(A)). Unique farmland is “land other than prime farmland that is used for the production of specific high-value food and fiber crops ... such as, citrus, tree nuts, olives, cranberries, fruits, and vegetables” (7 U.S.C. 4201(c)(1)(B)). The NRCS is required to maintain “Important Farmlands Inventory/Important Farmlands Maps” (7 CFR Part 657.1) that designate Prime and Unique Farmlands and develop a statewide list of soil mapping units that typically support Prime Farmland (7 CFR Part 657.4). Designation of Prime and Unique Farmland is determined by the NRCS on a statewide basis, and is not done on a project by project basis. The determination of whether or not any land within a project area represents Prime and Unique Farmland is made by consulting existing NRCS data (7 CFR Part 657.4). According to the Utah State Office maps and data, there are no designated Prime and Unique Farmlands within the LDWP project area. Section 4.1.3 of the LDWP FEIS has been revised to clarify this item.

39.16b Please refer to the responses to comments 39.6, 39.10 and 39.12. As noted in the response to comment 39.6, the LDWP proposes to plant cottonwoods only within the current Duchesne River corridor where they are appropriate, and not within the main site of the Uresk Drain where the project partners agree that soil and moisture conditions are not appropriate. Young cottonwood trees were clearly visible in the 1939 aerial photographs along the edges of the Uresk Drain site and continue to border the site adjacent to the Duchesne River. These photographs were obtained for the CUP project as a whole and can be reviewed at Utah State University.

The commenter is correct that detailed plant species lists were not provided in the DEIS. The detailed species lists are provided in the project feasibility reports and additional wetland data, which the DEIS noted was on file at the Tribal wetland office and available for public review.

39.17 Waterfowl surveys were conducted during spring migration in existing open water habitat, according to established scientific survey protocols and conducted by qualified wildlife

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biologists. The protocols are summarized in Appendix D, with more detail provided in Koehler (2000) which the DEIS noted was available at the Ute Tribe-Wetlands office. Spring migration was chosen as the survey period, as long-term data collected at nearby wildlife refuges indicated that waterfowl were most abundant regionally during this period. One waterfowl survey point was established at the Uresk Drain, within the Goose Ponds area of the Uresk Drain. This contains a 10-acre open water-marsh complex and is the only open water area within the Uresk Drain site except for the Drain itself. Waterfowl migration use at the Goose Ponds has been reduced over time as the ponds have gradually been encroached on by dense emergent vegetation. Waterfowl observations made during other surveys conducted on the Uresk Drain (e.g., songbird surveys) were sparse and limited to an occasional pair of waterfowl on the Drain.

The data source for the numbers of waterfowl noted by the commenter was not provided, and it is unclear where in the Uresk Drain, or when, the waterfowl were observed. To the extent that the commenter is referring to observations on the State-owned Mallard Springs, please note that even though Mallard Springs is adjacent to the LDWP project, it is not part of the project area and was not surveyed. Mallard Springs is actively managed for waterfowl and higher densities of birds in this area would not be surprising. Winter waterfowl use of the Drain was noted, but not quantified, in section 4.3.5.3.2 of the DEIS. Please also refer to the responses to comments 39.4 and 39.5.

The Raccoon is not native to the area and is a major pest to other wildlife and agriculture. It destroys bird nests and eats young and small wildlife, however, this is not addressed in the DEIS. The Carp is not a native fish and can be a major pest in wetlands and impact aquatic plants. This also was not addressed. However, Russian Olive, considered a noxious tree is highly beneficial to wildlife, but is to be eliminated. In certain areas of the Project, this is the only tree that will grow in wet, saline and sodic soils. Cottonwoods will not grow under these conditions. The importance of Russian Olive for wildlife habitat in the Project has not been assessed in the DEIS.

4. Page 4-43. It is stated that a reduction of or no grazing will be beneficial to wildlife. This is not totally true. It will be beneficial to some wildlife and detrimental to other wildlife. A range of grazing conditions is required to manage for species diversity. Some wildlife species, birds and small mammals require grazing, some very heavy grazing. This scientific concept is not adequately addressed in the DEIS.

39.18

It is also stated that there is a historical loss of winter thermal cover for deer with a reduction in deer numbers. Yet, the local residents see more deer today than in the past years. The documentation of loss of thermal cover is a result of a personal conversation, possibly someone with limited experience in the area and no data. This point reflects the extremely weak references listed in the DEIS for this mitigation. Scientific peer reviewed literature and science reviewed field surveys are lacking in the DEIS. The above reference alone makes some of the literature suspect and not credible, except for the few published scientific articles listed in the DEIS.

5. Page 4-73,76,78. Tables clearly show large increases for water requirements in acre-feet at each wetland site under proposed action for the Project. As a result, water tables and salts will also increase. Impacts to private land owners, adjacent land owners and the local public have not been evaluated in the DEIS.

39.19

6. Page 4-90. Table presents salt loads to the Project areas. Overall salt loads to the wetlands increase approximately 8% per year. At the Uresk Drain site the salts increase at approximately 21% per year. Salt loads to some areas will be very high, especially prorating this out over several years. The Uresk Drain site will become a salt marsh within a few years. Alkali Flats will be common once again and will appear throughout the Project system. The ranching and farming community and also people in the local communities have worked extremely hard with their time, money and effort to eliminate these problems to promote a better and healthy livelihood. Projected results in the DEIS are poor and incomplete.

39.20

7. Pages 4-101 to 112. Agricultural production values presented in the DEIS are low including animal unit months (AUMs) of livestock per acre. The economic analyses and numbers to calculate the tons of hay, grain, livestock and dollars are not consistent in the text. Calculations show large errors, primarily toward the low end. The intent of the DEIS is clearly to show low economic impacts for the Project by deflating the numbers. This section basically contains useless information with very poor results. The loss to the current agricultural industry, landowners and

39.21

39.18 The project partners agree that this project, including changes in grazing practices, would affect wildlife species differently. To that end, section 4.3.6 of the LDWP DEIS provided information on species that might be adversely affected by the project. For example, three species that are often associated with grazing, brown-headed cowbird, European starling and Brewer's blackbird, are expected to decrease under the Proposed Action. Other species may be temporarily impacted by the project. Please refer to section 4.3.6 for additional details on both the beneficial and adverse impacts of the project.

One of the purposes of this project is to provide and enhance habitat for waterfowl and other native wetland-wildlife species. Livestock grazing can be used to manage grassland habitats and as a weed management tool under certain circumstances. Appendix B of the LDWP DEIS identified that grazing might be used for weed control. The need for and efficacy of using grazing to manage habitat for waterfowl and wetland species will be specified in the Management Plan.

39.19 Tables 4-31, 4-32 and 4-33 of the LDWP DEIS depicted the difference between project water requirements and the water available with the land in the project area. Each table shows that there is sufficient water available with each site to operate the project. The plus sign is used in the table to indicate that sufficient water is available for the project. A minus sign, if used, would indicate that there was not enough water associated with project lands to operate the project. The plus sign in these tables does not indicate that the project would increase the water use at any site as the commenter suggests.

Please also refer to the response to comment 39.3.

39.20 It appears that the commenter misunderstood the data presented in table 4-36 of the LDWP DEIS. This table compares the potential salt load contributed by each site to the Duchesne River through deep groundwater percolation between baseline and project conditions. Table 4-36 does not identify the salt inflow to the wetlands nor the salt accumulation within the wetlands. In fact, the water supporting the wetlands at the Uresk Drain would be derived directly from the Myton Townsite Canal which has an average TDS level of 500 ppm, which is low for the area (see Table 4-34 of the DEIS). All wetlands would be operated as flow-through systems to prevent salt accumulation.

39.21 The AUM data presented in the DEIS was based on a parcel by parcel evaluation of production on all land in the project area conducted by the BIA in 2001 and updated in 2006. This evaluation showed that AUM values in the area ranged from 0 to 4.5 AUM's per acre. The average AUM values used in the DEIS were derived by a weighted average of each category type.

Average AUM per Agricultural Land Use type = $\text{SUM}([\text{Parcel 1 acres} * \text{AUMs/acre}] + [\text{Parcel 2 acres} * \text{AUMs/acre}])$ all divided by the total sum of acres in the category.

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This value provides equal weight to all parcels included in the project area in each agricultural land use type to derive an average category AUM. The method does not skew data, but simply averages the production by land category. The agricultural production data presented in the FEIS was also updated in 2006. This data was also developed on a parcel by parcel basis and averages presented in the FEIS. The full data set can be found in Appendix H.

The calculations that the comment refers to that show large errors are not identified. To the extent that this comment refers to the effect of multipliers on a product, please refer to the response to comment 4a.9.

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the local communities will be very high.

8. Page 4-121. Tax Table: Taxes in this table are based only on the land value. Loss of agriculture products (livestock, hay, grain), machinery, livestock equipment, food, clothing and loss of business and livelihoods are ignored in the DEIS. The results of this section are suspect with poor data and analyses.

9. Other concerns have been addressed earlier.

Chapter 5. CONSULTATION AND COORDINATION

1. Scoping was extremely limited. People affected by the Project did not have adequate input to the process. See earlier comments.

2. Other concerns have been addressed earlier.

List of Preparers:

The listed preparers are inexperienced or have limited scientific backgrounds. It is clear in the DEIS that most of the preparers lacked professional field experience. Scientists from Universities and Federal Research Agencies had extremely limited input as shown in the document. The State Division of Wildlife Resources also had limited input into the process. As a result, the DEIS clearly shows shallow analyses, results and recommendations with disregard to the impacted public.

APPENDICES

Appendix B. Weed Control

1. Russian Olive in the Project area is the only tree that will grow in the saline, sodic soils. It is highly beneficial for wildlife, but this is not addressed in the DEIS.
2. Carp and Raccoons are not addressed in the DEIS as pests.

Appendices C-D that address analysis methods and assessment results are qualitative (subjective) and not quantitative (Based on scientific data, models, analyses reviewed by the scientific community). The analyses, comparisons and results are weak in the DEIS.

Maps are poorly constructed for some of the following reasons:

1. No section lines.
2. No secondary roads.
3. Farms and Ranch dwellings are absent.

39.22

39.22 Please refer to the response to comment 4a.18.

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Detailed comments and analyses have not been fully addressed within the current time constraints. Overall, it is disappointing that the local public and communities did not have adequate notice and time for Scoping. This project will have long term effects on the affected communities and their residents. They certainly deserved more consideration during this assessment process.

Sincerely,



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ACRONYMS AND ABBREVIATIONS

AASTHO. American Association of State Highway and Transportation Officials

AUM. Animal Units per Month

BIA. U.S. Bureau of Indian Affairs

BLM. Bureau of Land Management

BTI. *Bacillus thuringiensis*

CDC. U.S. Center for Disease Control

CEQ. Council on Environmental Quality

cfs. Cubic feet per second

COE. U.S. Army Corps of Engineers

CUP. Central Utah Project

CUPCA. Central Utah Project Completion Act

CUWCD. Central Utah Water Conservancy District

CWA. Clean Water Act

DBA. A weighted decibel scale (a unit used to measure noise)

DEIS. Draft Environmental Impact Statement

DEQ. Utah Department of Environmental Quality

DO. Dissolved oxygen

DOI. U.S. Department of the Interior

DPR. Definite Plan Report

DRACR. Duchesne River Area Canal Rehabilitation Program

DWQ. Utah Division of Water Quality

DWRi. Utah Division of Water Rights

EIS. Environmental Impact Statement

EPA. Environmental Protection Agency

ESA. Endangered Species Act

ET. Evapotranspiration

FEIS. Final Environmental Impact Statement

FW. Periodically flooded mosquito habitat

FWCA. Fish and Wildlife Coordination Act

FWS. U.S. Fish and Wildlife Service

GLO. Government Land Office

HABS/HAER. Historic American Building Survey/Historic American Engineering Record

I/O. Input/output model

LDWP. Lower Duchesne River Wetlands Mitigation Project

LOS. Level of Service

MAD. Mosquito Abatement District

MOA. Memorandum of Agreement

Mg/L. Milligrams per liter (equivalent to ppm)

Mitigation Commission. Utah Reclamation Mitigation and Conservation Commission

MLWUA. Moon Lake Water Users Association

MSWMA. Mallard Springs Wildlife Management Area

MTC. Myton Townsite Canal

NAAQS. National Ambient Air Quality Standards

NEPA. National Environmental Policy Act

NRHP. National Register of Historic Places

NOA. Notice of Availability

NOI. Notice of Intent

NPDES. National Pollutant Discharge Elimination System

NRCS. Natural Resources Conservation Service (formerly the Soil Conservation Service)

O & M. Operation and Maintenance

ONWR. Ouray National Wildlife Refuge

PILT. Payment in Lieu of Taxes

ppb. Parts per billion

ppm. Parts per million

PA. Programmatic Agreement

PRP. Provo River Project

PSD. Prevention of Significant (air) Deterioration

Reclamation. U.S. Bureau of Reclamation

RIP. Recovery Implementation Program (for the Colorado River fishes)

RWIP. Riverdell Water System Improvement Project

SACS. Strawberry Aqueduct and Collection System

SHPO. Utah State Historic Preservation Office

SLE. St. Louis Encephalitis

SOP. Standard Operating Procedure

SP. Semi-permanently flooded mosquito habitat

SVP. Strawberry Valley Project

Tribe. Ute Indian Tribe

TDS. Total Dissolved Solids

TMDL. Total Maximum Daily Loads

UBIC. Uinta Basin Irrigation Company

UIIP . Uintah Indian Irrigation Project

UBRP. Uinta Basin Replacement Project

uS/cm. Microsiemens per centimeter

WEE. Western Equine Encephalitis

WNE. West Nile Encephalitis

WNV. West Nile Virus

GLOSSARY

Acre-feet. A unit of measurement of volume of water, equivalent to an acre of water one foot deep.

Allotted Indian Lands. Land held in trust by the United States for individual Tribal members.

Alluvial. Formed by flowing water.

Alternative. A proposition or situation offering a choice between two or more proposals. An opportunity for deciding between two or more courses or propositions.

Ambient. Referring to conditions in the encompassing atmosphere.

Anastomosing. A stable, multiple-channel stream with vegetated islands.

Animal Units per Month (AUM). The amount of forage consumed by a cow and a calf in one month.

Aquifer. A subsurface body of water.

***Bacillus thuringiensis* (BTI).** A biological control agent.

Backwater. A hydraulic (flowing water) habitat type characterized by slackwater on the downstream side of meander bends.

Bankfull. Water flowing in a channel at the elevation of the channel banks. Any additional flow would cause water to leave the channel and overtop the banks.

Base flow. Late summer low stream flows.

Baseline. The set of starting conditions from which changes and impacts are quantified.

Berm. A raised area or mound of material. For this project, the proposed berms are to be constructed of compactable earth and will be used to disperse water in the oxbows.

Bonneville Unit. One of six units of the Central Utah Project. The Bonneville Unit extends from Starvation and Upper Stillwater Reservoirs west to the Great Basin.

Candidate species. Any species for which substantial biological information exists to support the biological appropriateness of proposing to list the species as endangered or threatened under the Endangered Species Act.

Canopy coverage. A measure of the percent of ground covered by vegetation.

Class I Cultural Inventory. A professional study of existing data that includes a compilation, analysis and interpretation of all available archaeological, historic and paleoenvironmental data. Investigators conducting a Class I Inventory use all relevant data sources except extensive field work to gather new data.

Class II Attainment Area. An air quality category in which air is typically rated as good to excellent.

Class III Cultural Inventory. A professionally conducted continuous intensive survey of the entire area of potential effect. Detailed protocol must be followed for a Class III Cultural Inventory.

Cofferdam. A temporary dam constructed in a channel to isolate certain areas and keep them relatively dry during construction.

Conservation easement. An agreement between a resource agency and an individual landowner to protect specific resources on the land in exchange for monetary compensation. Under a conservation easement the individual landowner continues to hold fee title to the land.

Critical habitat. Specific areas that contain physical or biological features essential for the conservation of a listed species and that may require special management considerations or protection.

Crop. One of three categories developed by the Bureau of Indian Affairs to evaluate current uses of land. The *crop* category describes land currently in production for alfalfa, corn and/or small grains. See also *other* and *pasture*, the other two land use categories.

Cumulative effects. Defined by the Council on Environmental Quality as “the impact on the environment which results from the incremental impacts of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such action” (Section 1508.7).

Cyprinid. Any fish belonging to the minnow family (*Cyprinidae*).

Decibel. A unit for expressing the relative intensity of sounds on a scale from zero for the average least perceptible sound to 130 for the average pain level.

Detailed design. The final design of a project that includes engineering details and specific locations and measurements of all project features.

Draft Environmental Impact Statement (DEIS). See Environmental Impact Statement.

Ecosystem. A community of animals and plants and their interrelated environment.

Eligibility for the National Register of Historic Places (NRHP). A quality of cultural resource properties that meet the criterion for inclusion in the NRHP, determined by the BLM in consultation with the State Historic Preservation Officer (SHPO) and the Keeper of the National Register.

Eminent domain/condemnation. A process by which the federal government can acquire private land from non-willing sellers needed for a project. Eminent domain is the legal authority to acquire properties; condemnation is the process of acquiring properties through eminent domain authority.

Encephalitis. A virus carried by mosquitoes that can cause encephalomyelitis.

Encephalomyelitis. A disease caused by various strains of encephalitis viruses.

Endangered species. Any species that is in danger of extinction throughout all or a significant portion of its range.

Endemic. Native to a particular region.

Environmental Impact Statement (EIS). A document that discusses the likely significant impacts of a proposal, methods to lessen the significance of impacts and alternatives to a proposed action. This documentation is required by the National Environmental Policy Act.

Environmental justice. A requirement that federal agencies ensure that their actions do not have a disproportionately high and adverse human health or environmental effect on minority or low income populations. Low income is defined as income below the federal poverty guidelines.

Evapotranspiration. A term used to describe the sum of evaporation and plant transpiration from the earth's land surface to the atmosphere.

Feasibility analysis. A preliminary analysis of a project to determine if it can be constructed within project parameters such as costs, acreage requirements, legal requirements and physical features.

Fee Owned Lands (“Homestead Lands”). Land owned by non-Tribal members within the boundaries of the Uintah and Ouray Indian Reservation as established in 1861 and amended in 1882.

Final Environmental Impact Statement (FEIS). See Environmental Impact Statement.

Floodplain. The area covered by floodwaters from channel overflows. A floodplain is generally associated with a particular recurrence interval (e.g., a 100-year floodplain is the area covered by floodwaters from a 100-year flood).

Floodwater Habitat (FW). Refers to a seasonally, irregularly or periodically flooded habitat that can support a specific type of mosquito species adapted to laying eggs on moist soil that is then subsequently flooded by shallow water.

Flow-through system. A wetland water management system designed to provide water in excess of the wetland water requirements to control salinity.

Foliar. Of or pertaining to a leaf.

Freeboard. The additional height provided by a berm as a safety factor to prevent overtopping.

Gradient. The land surface slope between two identified points.

Herbaceous. Non-woody vegetation.

Historic standing structure. A historic standing building with walls and roof still intact; also intact engineering structures such as canals, bridges and culverts.

Hydrograph. The pattern of river flows.

Hydrologic. Dealing with the properties, distribution and circulation of water.

Irretrievable and irreversible commitment of resources. Resources that would be permanently committed to a project and could not later be recovered.

Impoundment. Ponds created by constructing berms to restrict (i.e., impound) water flow.

Inlet. The opening to a waterbody.

Interim Duty Schedule. An agreement that allows water to be diverted into a given canal based on a rate of 4.0 acre-feet of water per irrigable acre.

Input/output model. A model that estimates multiplied economic effects resulting directly or secondarily from an initial stimulus to other economic sectors within any given defined economy (e.g., the Uinta Basin economy).

Interrelated projects. Projects that could cause cumulative impacts if any one of the alternatives, including the proposed action, was implemented.

Interspersion. The degree to which different habitat types are mixed within a given site.

Inverted siphon. A pipe used to convey water under an existing feature.

Levels of Service (LOS). A highway rating system that evaluates traffic flow patterns on various road segments.

Listed species. Any species listed by the U.S. Fish and Wildlife Service under the Endangered Species Act as threatened, endangered, candidate or proposed threatened or endangered.

Management change. A change in the management of a cover type without changing the cover type itself. Examples include the removal of grazing or protection from possible future threats through preservation.

Mean annual flood. Water flow that occurs on average every 2.3 years.

Meander. A bend in the channel alignment of a river or stream.

Mitigation. Compensation for adverse impacts of a project. Mitigation can include enhancement, restoration or creation.

Neotropical migratory songbirds. Birds that migrate to North America during the spring and back to the tropics or the southern hemisphere in the fall.

Nonconsumptive recreation. Wildlife-associated recreation that does not include hunting or fishing or other activities that would result in wildlife mortality for the purposes of sport or food consumption. Non-consumptive recreation includes observing, feeding and photographing wildlife.

Noxious weed. A plant species that is listed by either the State of Utah or an individual county that is mandated to be controlled under Section 4-17-3 of the Utah Noxious Weed Act.

Operating agreement. An agreement among lead agencies to identify areas of responsibility and authority, commit funding sources and identify management responsibilities once the project is constructed.

Other. One of three categories developed by the Bureau of Indian Affairs to evaluate current uses of land. This category describes all land that is not defined as crop or pasture. It includes non-irrigated land, wetlands, riparian areas and dry hillsides. Some lands in this category are grazed. See also *crop* and *pasture*, the other two land use categories.

Oxbow. The abandoned meander of a former river channel.

Parasite. An organism that obtains food, shelter or other life needs from another host organism without benefit to the host. An example of a parasite is the brown-headed cowbird, which disrupts the nest and eggs of another bird species and lays its own eggs for the host bird to raise. In this manner, the host bird expends resources (food, nursing, shelter) caring for the cowbird young believing them to be its own.

Passerine: A scientific term that refers to most songbirds or perching birds.

Pasture. One of three categories developed by the Bureau of Indian Affairs to evaluate current uses of land. This category describes lands consisting only of irrigated or potentially irrigated pasture. See also *crop* and *other*, the other two land use categories.

Payment in Lieu of Taxes (PILT). Federal payments made to counties to offset the costs of having non-taxable federal lands within their jurisdictions.

Perennial. A plant species that lives more than one year.

PM₁₀. Particulate matter and dust in the air less than 10 microns in diameter.

Point bar habitat. Riparian habitat typically underlain by a gravel or other coarse-textured substrate occurring in the 2- to 5-year floodplain of a river.

Point count technique. A bird survey technique that lists all birds observable at a randomly selected point for a specified period of time.

Prehistory. The study of the life and activities of humankind up to the beginning of recorded history.

Project area. The areas depicted in Chapter 1 of this FEIS.

Projectile points. Pointed projectiles usually made of chipped stone used 10,000 years ago as spear points and more recently as dart and arrow points.

Proposed Action. The proposal or proposed project by a lead agency in an EIS.

Proposed endangered species. Any species that has been proposed for listing as endangered under the Endangered Species Act.

Proposed threatened species. Any species that has been proposed for listing as threatened under the Endangered Species Act.

Raptor. Any species identified as a bird of prey including eagles, hawks, falcons and ospreys.

Reasonably foreseeable projects or actions. Those projects or actions that are identified and described in an appropriate public document that have a reasonable chance of being funded or approved.

Restoration. Returning the functions of a disturbed, degraded or altered site to its historical condition.

Riparian. Features of the environment (e.g., vegetation types) living in or located on the bank of a natural watercourse such as a stream or river.

Rip (a road). To loosen compacted soil to a depth of six to eight inches using mechanical equipment.

Riprap. Rocks used to protect and stabilize a stream or river bank to prevent erosion.

River miles. Along the Duchesne River, river miles indicate the distance along the river upstream from the confluence with the Green River.

Riverdell North property. Those lands acquired by the Bureau of Reclamation in 1990 where mitigation activities for the Duchesne River Area Canal Rehabilitation Program (DRACR) were to have been conducted. This parcel of land is within the LDWP project area for the Pahcease Alternative, and is immediately adjacent to the Riverdell South property.

Riverdell North/South property. A term referring to both the federally-owned Riverdell North property and the Tribal Trust and fee land comprising the Riverdell South property.

Riverine. Flowing fresh waters (salinity less than 0.5 parts per thousand) with less than 30 percent persistent vegetation cover; of or relating to a river.

Rookery. A group of nest sites used every breeding season by colonial waterbirds such as herons.

Rotation croplands. Farms on which specific crops, such as corn, small grains or alfalfa, are produced in varying years.

Salt loading. A measurement of the amount of salt in a waterbody derived by multiplying the concentration of total salts in the water times the volume of water. Salt loading can be tabulated as a daily value (e.g., pounds per day) or as an annual value (e.g., tons per year).

Secondary channel. An active river side channel that carries river flow.

Semi-Permanently flooded (SP). Refers to a semi-permanently inundated, shallow water habitat that can support a specific type of mosquito species adapted to laying eggs on the water surface.

Sensitive receptors. Constructed establishments that are especially susceptible to noise impacts such as schools, nursing homes, hospitals and residences.

Sentinel chickens. A flock of birds maintained by the State of Utah in areas subject to encephalitis. The birds are repeatedly tested for the presence of encephalitis viruses to provide an early warning system for a potential disease outbreak.

Seral. A stage of succession in which the existing vegetation is replaced by different vegetation more suited to the new characteristics of the site.

Sill. A solid feature (typically concrete, wood or rock) extending across a channel to prevent down-cutting of the channel and maintain the bottom elevation at a given level; similar to a diversion dam.

Slough. A marshy area containing slowly-moving open water.

Soil quality. The combination of physical and chemical soil characteristics that determines the suitability for the production of food, feed, forage, fiber and oilseed crops.

Spillway. A structure in a dam or canal that allows water to overpour at a controlled location when water levels reach a maximum allowable level.

Substrate. Sediment particles that make up a stream or lake bottom.

Take. A term defined in the Endangered Species Act as an impact to threatened, endangered or candidate species through “harm, hunting, wounding, killing, or harassment.” As further defined by the Act, harassment includes activities resulting in increased stress during critical life history stages such as nesting, migration or wintering.

Threatened species. Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Total Dissolved Solids (TDS). The amount of particulate matter suspended in water; usually expressed as a concentration with units of milligrams of suspended solids per liter of water.

Total Maximum Daily Loads (TMDL). A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

Trans-basin diversion. A water diversion from one hydrologic drainage basin to another.

Transient room tax. A tax levied per nightly stay on persons using a hotel, motel, inn or other temporary lodging facility.

Tribal Trust. Indian Reservation land held by the United States on behalf of the Indian Tribe.

Trust Resources. Lands, minerals, hunting and fishing rights, water rights and other assets or property rights held by the United States for the use and benefit of Indian tribes.

Unavoidable adverse impacts. Adverse impacts to resources that remain after implementation of Standard Operating Procedures and mitigation measures.

Uresk Drain. A 2.5 mile drainage ditch constructed in 1936 to remove the high water table from the land southwest of Myton.

Wasatch Front. The western side of the Wasatch Mountains in Utah where most of the state's population is concentrated.

Waterfowl. Any bird that frequents rivers and lakes, especially a swimming bird.

Water quality control factor. Factors applied to wetland water budgets to account for the extra water required to flow through the wetland to prevent accumulation of salts.

Weed. A plant species that is undesirable, conflicts, restricts or otherwise causes problems with intended land-use goals and objectives.

Weir. A dam in a stream to raise the water level or divert its flow.

Wetland. An area inundated by surface or groundwater often enough to support, under normal circumstances, vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Wissiuks Project. Former name for the Lower Duchesne River Wetlands Mitigation Project.

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**Lower Duchesne River
Wetlands Mitigation Project**

Final Environmental Impact Statement

APPENDICES

APPENDIX A

STANDARD OPERATING PROCEDURES

APPENDIX A: STANDARD OPERATING PROCEDURES

This section defines standard operating procedures (SOPs) for the LDWP. SOPs would be followed during construction and maintenance of the project to avoid, or minimize, adverse impacts to people and natural resources. The mitigation measures identified in section 4 are designed to avoid or minimize the adverse impacts of the project expected to occur after the SOPs have been successfully implemented.

Agriculture

- Farm owners who may be affected by project construction would be notified of construction procedures and schedules to prevent conflicts with agricultural operations. Procedures to avoid conflicts with agricultural operations would be followed during construction to the maximum extent possible. Unavoidable damage to facilities would be replaced or restored during project construction. Farmers and/or landowners who experience additional unavoidable impacts on agricultural facilities and operations would be compensated for their direct cost of moving or reconstructing facilities.

Air Quality

- EPA's recommendations for aggregate storage pile emissions (AP-42, Section 11.2.3) would be followed to the extent feasible to minimize dust generated by the project. This would consist primarily of periodic watering of equipment staging areas and dirt roads used during construction.
- Construction machinery would be routinely maintained to ensure that engines remain tuned and emission-control equipment is properly functioning as required by law.

Aquatic Resources

- Heavy equipment use in stream beds and riparian areas during construction would be restricted to the construction of temporary access roads in the Uresk Drain and the re-connection of the Flume to the secondary channel, and potentially the Ted Flat North oxbow system to the Duchesne River. The duration of heavy equipment intrusion into the existing channel would be minimized to the extent possible and scheduled to avoid high flow periods.
- Impacts on aquatic resources can be avoided and minimized by following hazardous materials procedures included under the health and safety SOPs, revegetation and erosion control SOPs and wetlands SOPs.

Cultural Resources

- A detailed site inventory would be conducted for the selected project after the NEPA process is completed and before construction is started. This would be conducted by cultural resource experts and concentrated in areas that are directly impacted by construction. Data would be recovered, and mitigation procedures used, when adverse impacts are unavoidable. A Programmatic Agreement among the DOI, Mitigation Commission, Ute Tribe and Utah State Historic Preservation Office has been executed and included in this FEIS.

Environmental Justice

- Construction contractors would be required to give preference to members of the Ute Indian Tribe in hiring.

Energy Conservation

- Standard energy conservation measures would be used during construction, operation and maintenance (e.g., avoiding unnecessary idling, and keeping vehicles and equipment tuned and maintained).
- The shortest possible transportation routes would be used during construction to conserve fuel.

Health and Safety

- The Utah Occupational Safety and Health Act and the conditions of the Federal Occupational Safety and Health Standards would be followed during construction. Copies of these publications and the health and safety SOPs would be provided to project workers at construction sites.
- Onsite and offsite construction activities would fully conform with appropriate federal standards. These standards include the following items:
 - Good housekeeping practices for routine scrap removal from work sites
- Proper handling, storage, use and disposal of toxic materials
- Prohibiting use of alcohol, drugs and firearms
- Restricting public access to work areas to the extent possible
- Providing onsite training to employees exposed to hazards associated with work assignments

- Weekly safety meetings conducted by supervisors for employees under their supervision
- Providing adequate first-aid supplies, trained personnel and emergency evacuation procedures
- Dissemination of information on the hazards of chemicals used, stored or produced in workplaces to employees, contractors, visitors and the public who could potentially be exposed
- Mandatory use of appropriate protective work clothing
- Use of dependable, trained and qualified signal and flag persons wearing high-visibility apparel for traffic control
- Adherence to a detailed fire protection plan (e.g., fuel storage and refueling facilities)
- Proper storage of materials used in construction
- Operation of equipment only by employees qualified to operate the type of equipment assigned
- Providing necessary barricades and posting for public protection before the start of excavation operations

Noise

- The location of all residences in the project area would be considered when scheduling construction activities with significant noise levels.
- Construction contractors would be required to follow federal noise exposure and hearing conservation standards and practices to protect potentially exposed project workers and the public from harmful noise levels.
- Idling of engines, unloading and reloading of construction equipment would be prohibited within 50 feet of any residence.
- In accordance with the Duchesne County noise control ordinances, construction would take place only during the hours of 7:00 am and 9:30 pm on weekdays, 8:00 am and 9:30 pm on Saturdays and 9:00 am and 9:30 pm on Sundays.

Revegetation and Erosion Control

- Revegetation and erosion control SOPs would be used where project construction would disturb soil. Disturbed areas would be reclaimed to desired riparian, agricultural and upland plant communities within one year after construction. The contractor would be required to use specified plant materials and reclamation techniques.
- If possible, water levels within the oxbow systems would be managed during the first three to five years following construction to promote the establishment of desired wetland and riparian plants. This would allow the wetland and riparian vegetation to become established until it could provide erosion control.
- Revegetation and erosion control areas would be monitored and repairs made if necessary. Revegetated areas would be monitored for invasion of noxious weeds and other weed species, as required by Section 4.17.3 of the Utah Noxious Weed Act, and appropriate weed control measures implemented. These measures would include establishing a cover of desirable plant species as quickly as possible after construction, interim seeding of topsoil stockpiles if they would remain barren for lengthy periods of time, completion of weed surveys during the fall and spring after initial seeding, applying pesticides or removing the weeds by hand before they develop seeds or spread roots, and applying pesticides in accordance with federal application and record-keeping requirements. Monitoring for revegetation success would be conducted for a minimum of three years following completion of initial revegetation. Appendix B provides the details of a noxious weed control program.

Threatened and Endangered Species

- Prior to construction, field surveys of construction impact areas within the selected alternative will be made for threatened and endangered species with potential habitat in the construction area. Riparian wet meadow habitats would be surveyed for Ute ladies'-tresses prior to planting with woody vegetation and planting would be restricted on any floodplain surfaces containing the species. Other requirements arising out of ESA Section 7 consultation will be implemented.
- Known Uinta Basin hookless cactus populations and other listed and candidate species or habitat found during pre-construction surveys will be fenced during construction to prevent inadvertent access.
- Temporary displacement of wintering bald eagles by construction activities in November through March (primarily weed control and planting) will be limited by scheduling late fall and early spring activities in areas away from key wintering roosts, as much as possible.

Transportation

- No staging areas for construction material and equipment will be allowed in residential areas. Heavy equipment and worker traffic will be required to use the designated truck route around Myton.
- Traffic control and other safety measures in construction and maintenance areas would be followed to minimize the risks of accidents to vehicles and pedestrians during construction and maintenance of the project.
- Roads damaged by project construction activities would be restored to at least the level that existed prior to construction.
- Deliveries of materials will be scheduled to avoid peak traffic periods, to the extent possible.

Visual Resources

- Disturbed areas would be landscaped to match existing and characteristic land forms. When feasible, disturbed areas would be recontoured and slopes rounded along berm edges to blend with surrounding natural contours.
- New plantings would be blended with natural vegetation at the edges, and would be configured to match existing vegetation patterns and provide horizontal and vertical/visual diversity.

Water Quality

- The SOPs described for aquatic resources also would help protect water quality.
- The hazardous materials procedures included under the health and safety SOPs and the erosion control SOPs would help avoid and minimize adverse water quality impacts.

Wetlands

- Direct and indirect impacts on wetlands would be avoided, unless there are no other practicable alternatives (“practicable” as defined in 40 CFR 230.3 means capable of being done, after taking into consideration cost, existing technology and logistics in light of overall project purposes). Procedures to avoid impacts would include protection of wetlands with silt fencing during construction and avoiding impacts on surface water and groundwater resources that serve as a source of water for wetlands.

- Heavy equipment in wetland areas would be operated on geotextile mats with gravel overlay to minimize soil and vegetation disturbance.
- When necessary, construction barriers would be installed to prevent unnecessary construction damage to adjacent wetlands.
- Wetland topsoil requiring removal would be stockpiled, replaced and disturbed areas would be graded to match previous contour elevations.
- Temporarily disturbed wetland areas would be revegetated with a mixture of native wetland plant species.

Wildlife Resources

- All construction facilities would be located and constructed to avoid the removal of large trees.
- To the extent feasible, construction activities on or around important game or non-game species habitat (e.g., deer fawning areas, raptor nests) would be scheduled to avoid the period of greatest use by these wildlife species.
- Impacts on wildlife resources can also be avoided and minimized by hazardous materials procedures included under the health and safety SOPs, the revegetation and erosion control SOPs and wetlands SOPs.

APPENDIX B

WEED CONTROL PLAN

APPENDIX B: WEED CONTROL

B.1 Introduction

Noxious weed control is an essential component of the LDWP and controlling invasive plants is also crucial for the overall success of the project. Executive Order 13112 requires that federal agencies and federally supported projects monitor and control invasive or noxious species. At present, 18 species are listed as noxious weeds in Utah with Russian olive listed additionally in Duchesne and Uintah counties.

Noxious weed control would take place during all phases of the project, from preconstruction and construction to operation and maintenance (O&M). Weed control would include four main components:

- Initial mapping of weed-dominated areas,
- Remapping of weed populations during final design,
- Treatment of weeds before and during construction, and
- Ongoing monitoring and control during the O&M phase.

This appendix describes methods for controlling noxious weed species currently known to occur in the LDWP project area, and provides a plan to reduce existing weeds and prevent spread of all potential noxious weeds under the LDWP. This plan will be implemented in a manner that is consistent with existing weed control agreements between Duchesne and Uintah counties and the Tribe.

All nomenclature used in this section is based on Welsh et al. (2003).

B.2 Weed Species of Concern – Overview

B.2.1 Introduction

The three species of greatest concern in the LDWP project area are Russian olive (*Eleagnus angustifolia*), tamarisk (*Tamarix ramosissima*) and perennial pepperweed (*Lepidium latifolium*). All three species would require control prior to, during, and after construction.

As with any construction project, the potential exists for other noxious weeds that occur in the project vicinity, such as purple loosestrife (*Lythrum salicaria*), Canada thistle (*Cirsium arvense*), leafy spurge (*Euphorbia esula*) and Russian knapweed (*Acroptilon repens*), to become established

as a result of soil disturbance during construction, project operation or, as a result of adjacent property management.

Other species, such as cattails (*Typha* spp.), common reed (*Phragmites australis*) and water and poison hemlock (*Cicuta* and *Conium* spp.) could affect the wildlife values of the project. Although considered native, these species can become problematic for wildlife habitat enhancement efforts if allowed to become too dense. Additionally, a non-native hybrid of common reed has been shown to be spreading throughout Utah (Saltonstall 2002). This non-native hybrid is much more invasive and problematic than the native species and the species in the LDWP project area may be the non-native hybrid.

B.2.2. Russian Olive and Tamarisk

Russian olive is a tall shrub to small tree (up to 30 feet high) that was introduced to the United States for erosion control, revegetation, and as an ornamental in the late 1800s. It is thought to have been introduced into the Uinta Basin in 1955 (Brink and Schmidt 1996) and has since spread rapidly in pastures and bottomlands. Establishment and reproduction of Russian olive is by primarily by seed, although some vegetative propagation also occurs. Although Russian olive produces fruits that are edible to some birds and provides some habitat structure, most research has shown that richness of bird species is actually greater in areas with a higher concentration of native vegetation. Other research shows that Russian olive is not as palatable to wildlife as cottonwood (Pearce and Smith 2001). Because Russian olive reaches a maximum height half as tall as cottonwoods, it reduces habitat structural diversity and typically supports much less diverse wildlife populations than native riparian species (Knopf and Olsen 1984). The trunks of Russian olive also do not grow as thick as cottonwoods, so do not create the cavities when dying or decaying that are important to cavity nesting birds (e.g., woodpeckers, chickadees) and small mammals (e.g., squirrels).

Starting in the 1850s, several species of tamarisk were also imported to the United States as ornamentals and for erosion control. The date of tamarisk introduction into the Uinta Basin is unknown. Since its introduction, tamarisk has spread into wetland and riparian habitats where it tends to form dense thickets, displacing native trees such as cottonwood. Tamarisk can spread rapidly because it produces viable seed able to establish throughout the growing season. The plant can also propagate vegetatively. Tamarisk has little wildlife value and is usually considered detrimental to native animals. The leaves, twigs and seeds are extremely low in nutrients, and, as a result, very few insects or wildlife will use them. In one study along the lower Colorado River, tamarisk stands supported less than one percent of the winter bird life that would be found in a native plant stand.

B.2.3 Perennial Pepperweed

Perennial pepperweed is a mustard that occurs in pastures, agricultural fields, roadsides, wetlands and riparian areas. It has a broad ecological amplitude and is classified as a facultative wetland plant, which means it occurs in both uplands and wetlands (Reed 1988). It often occurs in seasonally moist habitats that are very dry in late season (Young et al. 1995). It is a significant weed

as it can reduce agricultural productivity and interfere with native riparian plant regeneration and reduce food and cover for birds and other wildlife. Controlling perennial pepperweed is a high priority of the LDWP weed control plan.

As for many noxious weeds, the species has the ability to spread a number of different ways: via seeds, transported rhizome parts and vegetative expansion. Dispersal from one area to another can occur through a variety of mechanisms: through both natural waterways and irrigation ditches, runoff from precipitation or flood irrigation, movement of soil from one location to another, on vehicle or other machinery tires, transport of agricultural products, dried flower arrangements and man, livestock and wildlife. It is often increased by cultivation, which breaks up roots into smaller pieces, most of which can re-sprout.

B.2.4 Other Noxious Species of Concern

Purple loosestrife is a wetland species that produces large amounts of seed during a long growing season (June through September). Purple loosestrife also readily reproduces vegetatively through underground stems at a rate of about one foot per year.

Canada thistle is a perennial that grows from a deep, complex root system. The roots spread horizontally and send up new stems, forming dense colonies. It grows in a wide range of soils and environmental conditions. It is aggressive, spreading by root and seed. The deep root system makes it difficult to control.

Russian knapweed is a noxious weed in the sunflower family. It grows on a variety of soils, typically invading degraded areas, and dominating the plant community and desirable plants. It spreads by seed and rootstock and can produce up to 27 rootshoots a year. The deep, extensive root system (up to 23 feet) makes it difficult to control.

Leafy spurge is a perennial plant that tolerates moist to dry soil conditions but is most aggressive under dry conditions where competition from native plants is reduced. It is capable of invading disturbed sites, including pastures, abandoned fields and roadside areas. Leafy spurge reproduces readily by seeds that have a high germination rate and may remain viable in the soil for at least seven years, enhancing its chances of recovery over time. Leafy spurge also spreads vegetatively at a rate of several feet per year. The root system is complex, can reach 15 or more feet into the ground, and may have numerous buds.

B.3 Initial Mapping of Weed-Dominated Areas

Baseline habitats, including all habitats in which weed species dominate the vegetation cover, were identified based on 1997 aerial photographic interpretation and field verification. Because of their tendency to occur together in the Duchesne River floodplain, Russian olive and tamarisk were mapped as one habitat type. Pepperweed did not dominate any habitats in 1997 and was not mapped separately. The 1997 conditions are used in this document to represent baseline conditions. The baseline habitat maps are on file at the Ute Tribe wetlands office in Fort Duchesne.

Under baseline conditions, Russian olive and tamarisk dominate 339 acres of the Proposed Action project area. These species often occur together within the former Duchesne River floodplain. Outside of the floodplain, Russian olive is much more common than tamarisk and has mostly established along wetland and irrigated pasture edges in which either the water table is highest in the spring or in which the water table is high during irrigation but drops rapidly in the fall. Russian olive establishment in wetlands is limited. Conversely, most tamarisk establishment outside of the Duchesne River floodplain has occurred in wetland (natural or irrigation-induced).

Pepperweed was not mapped as a separate habitat type in 1997. However, between 1997-2006, pepperweed has expanded considerably. Currently, populations are most noticeable in the Flume area (which is not included in the Proposed Action), in the Uresk Drain immediately downstream of Mallard Springs along the Drain (as well as on Mallard Springs), and along portions of the Ted's Flat South Oxbow system. In the LDWP project area, the species generally occurs along the upland edges of wetlands.

Other noxious or invasive species of concern were not mapped as separate habitats under baseline conditions with the exception of 15 acres of giant reed within the Goose Ponds area of the Uresk Drain.

B.4 Remapping of Weed Dominated Areas

The LDWP would be constructed in phases over approximately seven years. A final construction design would be developed prior to construction on individual sites. During the design phase, all habitats would be remapped, including those dominated by weed species. This subsequent mapping would be used to refine the specific areas in which weed treatment would be required before, during and after construction.

B.5 Pre-Construction and Construction Treatment

The LDWP would employ an integrated program of chemical, mechanical, biological (if available), and cultural methods to keep invasive species manageable during both the pre-construction, construction and O&M phases of the project. Treatment methods for the weed species currently known to occur in the project area are listed below. Additionally, the following Best Management Practices (BMPs) would be employed during construction to reduce the potential for noxious weed establishment and spread:

- Construction disturbance would be kept to a minimum to decrease the area of bare exposed soil. Noxious weeds are better suited than native plants to colonize bare soil. Excess soil following construction would either be disposed of off-site or placed only within areas disturbed by construction to minimize areas of bare soil.
- Newly disturbed upland areas would be seeded with rapidly growing, innocuous species (e.g., Re-Green, annual rye) to minimize the length of time the soil is

exposed. Disturbed wetland soil would be seeded with rapidly growing wetland species such as, but not limited to, three-square bulrush and alkali bulrush.

- Any soil that may contain perennial pepperweed rhizomes would be hauled off site and properly disposed.
- All newly establishing weed populations would be treated immediately to prevent expansion or spread (see also section B.6).

B.5.1 Russian Olive and Tamarisk

All areas identified as dominated by Russian olive or tamarisk on aerial photos (greater than 30 percent canopy cover) will be treated before and during construction. Treatment would occur for two successive years according to the timing of specific areas to be planted. Russian olive and tamarisk in a defined planting block would first be treated in the fall, with riparian planting proceeding on the same block the following spring. Treatment methods may include applying Garlon 4™ to a newly cut stump, aerial spraying of Arsenal™, or mechanical removal of Russian olive and tamarisk.

These techniques, their efficiency and precision, are continually being improved (Christy et al. 2006, Carrithers et al. 2006, Lee 2006) with corresponding reductions in treatment cost. The LDWP would use the most current and cost-effective methods available to treat tamarisk and Russian olive.

B.5.2 Pepperweed

Mechanical control of perennial pepperweed is not recommended. Digging, mowing and tilling will only encourage new plants to sprout from the root crown and creeping roots, and biocontrol is not yet available. Chemical treatment followed by cultural controls (revegetation, prevention of overgrazing) is currently the only viable option for control. As for tamarisk and Russian olive, new treatments would be incorporated into pepperweed control as available. Escort™ has provided the most effective results against perennial pepperweed in the Uinta Basin (Reid et al. 1997), but other chemicals (such as 2,4-D) would be used if they are determined to provide cost-effective treatment or, in cases where aquatic formulations of some chemicals are necessary.

Treatment would generally occur in the fall when water tables are lowest. The exact timing and dose will vary according to site, previous herbicide application history, life-history stage, weather and other factors. In most cases, a single dose of 1 to 2 ounces per acre of active ingredient would be used per year, with a followup application the next year. All chemical treatments would be applied according to label directions, using an innocuous dye so that the evenness of spray can be evaluated and to ensure that no drift enters any areas of saturated soil or standing water. Although most of the known new establishment in the project area has occurred on uplands or irrigated areas that dry in the fall, they occur near open water so that careful application of chemical is required. Revegetation would occur shortly after treatment to prevent pepperweed reinvasion.

B.5.2 Other Noxious Species of Concern

Because the species discussed in this section occur locally but have not been mapped in the project area, the goal would be to eradicate any new weeds before they can establish and expand. To reduce costs and increase effectiveness, ongoing monitoring would occur during the project O&M phase to minimize the time between introduction and detection.

Purple loosestrife is a wetland species that occurs in areas that are generally saturated to inundated during most of the growing season. Small infestations of young purple loosestrife plants would be either pulled by hand, preferably before seed set, or treated with an aquatic approved glyphosate type herbicide (e.g., Rodeo). Although herbicides and hand removal are useful for controlling individual plants or small populations, biological control is seen as the most likely candidate for effective long-term control of large infestations of purple loose strife – should they establish or infest adjacent properties hindering control on project lands.

As of 1997, three insect species from Europe have been approved by the U.S. Department of Agriculture for use as biological control agents. These plant-eating insects include a root-mining weevil (*Hylobius transversovittatus*), and two leaf-feeding beetles (*Galerucella californiensis* and *Galerucella pusilla*). Two flower-feeding beetles (*Nanophyes*) that feed on various parts of purple loosestrife plants are still under investigation. *Galerucella* and *Hylobius* have been released experimentally in natural areas in 16 states, from Oregon to New York. Although these beetles have been observed occasionally feeding on native plant species, their potential impact to non-target species is considered to be low. Use of biological control agents would be in accordance with USDA regulations.

Canada thistle is a creeping perennial that commonly invades sites following construction activities and can occur in both uplands and wetlands. Each area in which soil was disturbed would be monitored for at least two years following construction. Any plants that establish would be chemically treated immediately. Herbicides could include Escort, 2,4-D or others depending on habitat (upland/wetland), adjacent desired species, or other environmental factors such as temperature and weather patterns.

Russian knapweed and leafy spurge most often occur in upland or seasonally moist habitats where chemical choices are not as limited as in wetlands. Current research shows that best control can be obtained through chemical treatment followed by re-seeding with desirable species. Curtail (clopyralid + 2,4-D), Tordon 22K (picloram), Telar (chlorsulfuron) or Escort (metsulfuron) have been shown to be most effective. Sowing desirable plant species is necessary after the weeds are controlled. Sod-forming perennial grasses such as streambank wheatgrass, or thickspike wheatgrass help prevent reinvasion better than bunch grasses.

Other potential control strategies for these two upland species could include:

- Stimulating grass growth by irrigation if the Russian knapweed stand is not too old and grasses are still present.

- Grazing by sheep or goats (results vary).
- Biological control (potential for leafy spurge).
- Treatment combinations such as chemical treatment in the fall followed by burning in the spring, which has shown some promise for reducing infestations of leafy spurge.

As noted in section B.5.1, treatment techniques, efficiency and their precision are continually being improved , with corresponding reductions in treatment costs. The LDWP would use the most current and cost-effective methods available to treat any new infestations.

B.5.3. Other Species of Concern

Management plans for other species such as cattails (*Typha* spp.), common reed (*Phragmites australis*) and water and poison hemlock (*Cicuta* and *Conium* spp., respectively), which could affect wildlife habitat values, would be developed during the design phase for each individual site.

B.6 Operation and Maintenance

The LDWP would use a combination of ongoing monitoring to detect new populations, removal of new individuals before infestations are established, and ongoing control of treated populations following construction at any individual site. Monitoring would be an essential part of the LDWP Management Plan. Monitoring would detect noxious weed invasions early when it is most feasible (economically and physically) to eradicate undesirable species. Emphasis would be placed on early detection of new infestations.

Cost estimates for noxious weed control were based on treatment of 25 acres per site per year for the life of the project. This equates to 75 acres per year for the Proposed Action and alternatives. The operation and maintenance weed control goals would focus on:

- Eradication of existing noxious weeds
- Prevention of reestablishment of weeds in the planted and treated areas.
- Prevention of new weed establishment.

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APPENDIX C
WETLAND FUNCTIONAL ASSESSMENT RESULTS

APPENDIX C: WETLAND FUNCTIONAL ASSESSMENT RESULTS

C.1 Introduction

Wetland functions and values were assessed for each of the proposed major wetland complexes within the LDWP project area. Because the ability of a wetland to perform certain functions is strongly related to its hydrogeomorphic position (Smith et al. 1995), two broad classes of wetlands were evaluated: riparian wetlands along the Duchesne River (riverine fringe) and non-riparian wetlands (palustrine depressional). The non-riparian wetland functions were evaluated using the NAI Wetland Evaluation Procedure (Normandeau Associates 1990), as modified to include criteria pertinent to the project area (such as the influence of ditches and irrigation return flows on hydrology). The NAI Wetland Evaluation procedure was developed to provide a rapid functional assessment technique based on hydrogeomorphic setting and readily identifiable wetland topographic, hydrologic and structural characteristics. The model output provides a numeric value for each function, which is then converted to a ranking of low, medium or high.

As a rapid functional assessment procedure, the model output is useful for comparing the relative abilities of wetlands to perform certain functions based on their overall structure, but does not identify the actual performance levels. A relative functional assessment was used in this FEIS because (1) wildlife habitat is the focus of the mitigation project and wildlife benefits/adverse impacts and the results of detailed wildlife surveys are described in section 4.3 and supporting documents, (2) data is provided elsewhere in the FEIS for other functions (such as water quality maintenance) and (3) more detailed assessment methods will be used to identify how close the Proposed Action or alternatives are meeting specific goals listed in the LDWP Comprehensive Conservation and Management Plan. These methods will likely include use of the Habitat Evaluation Procedure and direct measures of wetland function such as water quality sampling and flow measurements.

Riparian wetlands were evaluated qualitatively based on generally recognized functions of riparian wetlands (Briggs 1996, Brinson et al. 1995, Hauer et al. 2002). Riparian habitat was evaluated for the riparian shrub habitat as a whole, as the project proposes to restore riparian shrub habitat along the Duchesne River in a series of discrete floodplain surfaces, which would be difficult to evaluate independently. Cottonwood forest habitat was evaluated for each discrete planting block over 50 acres. The cottonwood forest evaluation units consisted of the Flume terrace, the Riverdell North terrace and the Ted's Flat North terrace.

C.2 Functions Evaluated

Wetland and riparian functions evaluated were (Table C-1):

- Hydrologic functions: Energy dissipation, Sediment stabilization, Flood flow attenuation, Ground water discharge/recharge, Downstream hydrological support.
- Biogeochemical Functions: Water quality maintenance (including both nutrient/contaminant retention and transformation).
- Biological functions: Wildlife diversity/abundance, Aquatic diversity/abundance.
- Social Values: Uniqueness and heritage, Aesthetics.

C.3 Functional Assessment Results

C.3.1. Baseline Conditions

C.3.1.1 Non-Riparian Wetlands

The existing wetlands have the potential to provide a variety of functions under baseline conditions (Table C-2). Most of the wetlands (except the Ted's Flat North Oxbows) have the ability to improve or maintain downstream water quality at a moderate level. In general, the wetlands have a low to moderate capability to provide wildlife habitat, due to the lack of vegetation diversity and interspersion, and the high degree of water level fluctuations associated with variability in irrigation return flow input.

The Goose Pond Wetland, Ted's Flat South Oxbows and the Swamp Wetland have a moderate to high capability to perform most functions, reflecting their lesser degree of hydrologic alteration, and the higher degree of existing vegetative diversity and interspersion. Conversely, the other three oxbow systems and remaining isolated wetlands have a low ability to perform almost all wetland functions, except water quality maintenance.

| Table C-1. Summary of Characteristics Used in Evaluating Potential Wetland Functions. | |
|--|---|
| Function Group | Key Evaluation Characteristics |
| Non-Riparian Wetlands | |
| Hydrologic Functions | Topographic position, hydrologic regime, water level fluctuation, number and type of inlets and outlets, presence of constrictions, presence of ditches, surficial geology, water table slope, known artesian conditions, dominant vegetation class, vegetation density |
| Biogeochemical Functions | Hydrologic regime, basin slopes, number and type of inlets and outlets, presence of constrictions, flow velocity, duration and extent of seasonal flooding and/or soil saturation, presence of channelization, adsorptive properties of soil, wetland size, density and distribution of vegetation |
| Biological Functions | Dominant wetland type, number of wetland types, vegetation interspersions, interspersions of water and vegetation, plant species diversity, proportion of plants with known wildlife food value, vegetation density, water level fluctuation, size, degree of soil disturbance, salinity, variety of depths, dissolved oxygen concentration |
| Social Functions | Wetland type, number of wetland types, percent open water, access, local scarcity, beauty value, degree of management, presence of culturally important wildlife and plant species, support of species with restricted habitat requirements, presence within an area of high degree of wetland alteration |
| Riparian Habitats | |
| Hydrologic Functions | Frequency, depth and duration of overbank flooding, shrub density, herbaceous species density, presence of coarse woody debris |
| Biogeochemical Functions | Hydrologic regime, duration and extent of seasonal flooding and/or soil saturation, presence of channelization, adsorptive properties of soil |
| Biological Functions | Topographic complexity, frequency, depth and duration of overbank flooding, connectivity, dominance of native riparian species, presence of overhanging vegetation, habitat interspersions, number and type of vegetation classes, number of seral stages, presence of species with known wildlife or aquatic habitat value |
| Social Functions | Presence of culturally important wildlife and plant species, support of species with restricted habitat requirements, presence within an area of high degree of riparian alteration |

C.3.1.2 Riparian Wetlands

The riparian habitats have a relatively low capability to perform hydrologic and biologic functions (Table C-3). This is due to a combination of two factors: (1) hydrologic alternation of the Duchesne River, which has resulted in reduced frequency, depth and duration of overbank flooding and (2) a

general low dominance of native riparian vegetation. The exception is the Ted's Flat North terrace, which contains an existing stand of mature cottonwoods. Under baseline conditions, the Ted's Flat North riparian habitat provides moderate wildlife habitat and a high degree of uniqueness/heritage value as this is one of only a few sites along the Duchesne River containing mature cottonwoods-a species with restricted habitat requirements, and one that is of high cultural value to the Tribe.

C.3.2 Changes in Wetland Functions and Values

C.3.2.1 Non-Riparian Wetlands

Under the Proposed Action, the ability of wetlands to perform a variety of functions is increased, with most of the wetlands rated as moderate to high for hydrologic support, water quality maintenance, flood flow attenuation, wildlife habitat, aquatic diversity, aesthetics and unique/heritage value (Table C-4). The increases in functional ability reflect the changes in hydrologic support from return flows to a stable water supply, changes in the size, shape and connectivity of wetlands, removal of ditches, increases in duration of soil saturation and increases in the number of vegetation types, interspersion, plant species diversity and plant density. There would be no decrease in any of the functions performed by the wetland complexes from baseline conditions.

C.3.2.2 Riparian Habitats

The value of the riparian shrub wetlands for energy dissipation and sediment stabilization would increase under the Proposed Action (Table C-5) as a result of increased shrub and herb densities and the potential for increased coarse woody debris input by planting cottonwoods on adjacent terraces. The cottonwood forest habitats would continue to remain of generally low value for hydrologic and biogeochemical functions as they are isolated from the floodplain and the LDWP would not change the Duchesne River hydrology. The greatest increase in functions would be that for (1) wildlife habitat, as cottonwoods and associated shrubs are planted, providing an increase in structural diversity, seral stages, and the wildlife food value of vegetation adjacent to the Duchesne River and (2) uniqueness/heritage values as the extent of cottonwood forest is increased. There would be no decrease in the functional ability of any of the riparian habitats under the Proposed Action.

As explained in section C.1, the following table provides the results of the assessment and converts those results into a ranking of low, medium or high.

Table C-2. Results of the Wetland Functional Assessment for Non-Riparian Wetlands under Baseline Conditions. Both the raw model output and the relative ranking for each function are listed.

| Wetland Complex | Hydrologic Functions | | | | | Biogeochemical | Biological | | Social | |
|-------------------------------|-----------------------------------|---------------------------------------|------------------------|--------------|--------------------|---------------------------|-------------------------------|----------------------------------|-------------------------|-----------------------------------|
| | Energy dissipation ^{1,2} | Sediment stabilization ^{1,2} | Flood flow attenuation | Ground water | Hydrologic support | Water quality maintenance | Wildlife habitat/productivity | Aquatic diversity ^{1,3} | Aesthetics ¹ | Uniqueness /Heritage ¹ |
| Uresk Drain | | | | | | | | | | |
| Main Site | N/A | N/A | 77 M | 40 M | 48 M | 72 H | 79 M | L | M | M |
| West Fields | N/A | N/A | 59 L | 36 L | 36 M | 56 M | 51 L | N/A | L | L |
| Goose Ponds | N/A | N/A | 79 M | 50 M | 24 L | 73 H | 107 M | M | M | M |
| Flume | | | | | | | | | | |
| Flume Oxbows | N/A | N/A | 59 L | 34 L | 30 M | 56 M | 71 L | L | L | L |
| Pit Wetland | N/A | N/A | 71 M | 51 M | 20 L | 57 M | 79 M | L | L | L |
| Full Connector | N/A | N/A | 74 M | 28 L | 2 L | 0 L | 0 L | N/A | L | L |
| Riverdell North/South | | | | | | | | | | |
| South Oxbows | N/A | N/A | 59 L | 32 L | 26 L | 49 M | 54 L | L | L | L |
| Ted's Flat North/South | | | | | | | | | | |
| South Oxbows | N/A | N/A | 60 M | 48 H | 52 M | 54 M | 76 M | L | H | L |
| North Oxbows | N/A | N/A | 57 L | 32 L | 25 L | 49 L | 58 L | L | L | L |
| Swamp | N/A | N/A | 80 M | 48 M | 52 M | 76 H | 113 M | M | M | H |

¹ Assessed qualitatively; no numeric results

² Only assessed if erosive forces present

³ Only assessed if open water present L = Low M=Medium H=High

Table C-3. Results of the Wetland Functional Assessment for Riparian Habitats under Baseline Conditions. Assessment was qualitative and only the relative ranking for each function is listed.

| Riparian Complex | Hydrologic Functions | | | Biogeochemical | Biological | Social | |
|--------------------------|----------------------|------------------------|--|---------------------------|-----------------------------------|------------|-------------------------|
| | Energy dissipation | Sediment stabilization | Flood flow attenuation/ Alluvial recharge | Water quality maintenance | Wildlife habitat/ Productivity | Aesthetics | Uniqueness/ Heritage |
| Riparian Shrub | M | M | L | L | L | L | L |
| Flume Terrace | L | L | L | L | L | L | L |
| Riverdell North Terrace | L | L | L | L | L | L | M |
| Ted's Flat North Terrace | L | L | L | L | M | M | H |

L = Low M=Medium H=High

Table C-4 Results of the Wetland Functional Assessment for Non-Riparian Wetlands under the Proposed Action and Alternatives. Both the raw model output and the relative ranking for each function are listed.

| Wetland Complex | Hydrologic Functions | | | | | Biogeochemical | Biological | | Social | |
|-------------------------------|-----------------------------------|---------------------------------------|------------------------|--------------|--------------------|---------------------------|-------------------------------|----------------------------------|-------------------------|----------------------------------|
| | Energy dissipation ^{1,2} | Sediment stabilization ^{1,2} | Flood flow attenuation | Ground water | Hydrologic support | Water quality maintenance | Wildlife habitat/Productivity | Aquatic diversity ^{1,3} | Aesthetics ¹ | Uniqueness/Heritage ¹ |
| Uresk Drain | | | | | | | | | | |
| Main Site | N/A | N/A | 91 H | 51 M | 62 H | 91 H | 138 H | H | H | H |
| West Fields | N/A | N/A | 91 H | 52 M | 38 M | 86 H | 71 L | N/A | L | M |
| Goose Ponds | N/A | N/A | 84 M | 49 M | 58 M | 82 H | 113 H | M | H | H |
| Flume | | | | | | | | | | |
| Flume Oxbows | H | H | 91 H | 52 M | 62 H | 86 H | 135 H | H | H | H |
| Pit Wetland | N/A | N/A | 77 M | 51 M | 20 L | 61 M | 138 H | M | H | M |
| Full Connector | N/A | N/A | 95 H | 54 M | 20 L | 85 H | 96 M | N/A | M | H |
| Riverdell North/South | | | | | | | | | | |
| South Oxbows | N/A | N/A | 61 M | 48 M | 62 H | 86 H | 124 H | H | H | H |
| Ted's Flat North/South | | | | | | | | | | |
| South Oxbows | N/A | N/A | 61 M | 48 M | 62 H | 57 M | 134 H | H | H | H |
| North Oxbows | H | H | 90 H | 52 M | 62 H | 86 H | 119 H | M | M | H |
| Swamp | H | H | 91 H | 52 M | 62 H | 86 H | 145 H | H | H | H |

¹ Assessed qualitatively; no numeric results

² Only assessed if erosive forces present

³ Only assessed if open water present

L = Low M=Medium H=High

Table C-5. Results of the Wetland Functional Assessment for Riparian Habitats under the Proposed Action and Alternatives. Assessment was qualitative and only the relative ranking for each function is listed.

| Riparian Complex | Hydrologic Functions | | | Biogeochemical | Biological | Social | |
|--------------------------|----------------------|------------------------|--|---------------------------|-----------------------------------|------------|-------------------------|
| | Energy dissipation | Sediment stabilization | Flood flow attenuation/ Alluvial recharge | Water quality maintenance | Wildlife habitat/ Productivity | Aesthetics | Uniqueness/ Heritage |
| Riparian Shrub | H | H | M | M | H | M | H |
| Flume Terrace | M | M | L | L | H | M | H |
| Riverdell North Terrace | L | L | L | L | H | H | H |
| Ted's Flat North Terrace | H | H | L | L | H | H | H |

L = Low M=Medium H=High

APPENDIX D
LDWP FEIS IMPACT ANALYSIS METHODS

APPENDIX D:

LDWP FEIS IMPACT ANALYSIS METHODS

D.1 Introduction

Appendix D summarizes the methods used to analyze impacts for each resource listed in chapter 4 of the LDWP FEIS. Impact methods are presented by resource in the order in which they occur in chapter 4.

D.2 Wetland and Riparian Resources Analysis Methods

D.2.1 Assumptions

The baseline conditions represented in the LDWP FEIS were mapped based on 1997 aerial photographs at a scale of 1:12000. The aerial photograph mapping was followed by ground truthing of the individual habitats, with data collected on species composition within each of these habitats. The entire project area was walked with habitat boundaries proofed within a subset of these habitats.

Thirty-two different habitat types were originally identified on the photo-maps. Each habitat was identified according to wetland status (wetland, riparian, unvegetated open water, upland), dominant structure (tree, shrub, herbaceous, unvegetated) and dominant species. Unvegetated open water habitats were further classified according to type (natural vs. man-made, flowing vs. ponded). Native woody species habitats were of particular concern and this level of mapping detail allowed distinction between different ages of cottonwood stands, as well as differences between dominant species composition in forested and shrub-dominated communities. The detailed mapping was used in the feasibility analysis to identify potential mitigation sites, identify appropriate restoration measures and evaluate potential alternatives to select a subset of alternatives for further analysis.

The detailed mapping was compressed into 11 categories for subsequent analyses. For example, three age classes and four levels of cottonwood forest vigor were mapped for the feasibility assessment. These categories were subsequently combined into cottonwood forest and degraded cottonwood forest. Similarly, 10 types of shrub habitat were originally mapped according to location (wetland, transitional wetland, upland, riparian) and dominant species (cottonwood, tamarisk, Russian olive, willow, silver buffaloberry, mixed native mesic shrub, sagebrush, greasewood). These categories were subsequently combined into the mesic shrub, tamarisk/Russian olive, riparian shrub or desert shrub habitat categories.

Additional details of the 1997 habitat mapping can be found in WWS (1998).

The 1997 habitat conditions are used in this document to represent baseline conditions, except where land use changes resulted in a distinct habitat change (e.g., cropland abandoned, desert shrub or grassland converted to cropland). The habitat maps were updated for such land use changes in January 2007, based on Hanberg (2007, see Appendix H) and visual inspection of the affected habitats in October 2006.

Data used for the impact analysis are summarized from WWS (1998, 2000) and include of all of the raw data collected for these reports including:

- Groundwater data (20 wells) collected between 1996 and 1999 at the Uresk Drain main site.
- Well installation data including soil texture, redoximorphic features, soil horizons according to standard protocols and, also meeting the newer COE (2006) well data installation and data collection requirements.
- Soil profile and groundwater fluctuation data from 30 additional data points in the project area collected in 1998.
- Vegetation plots at each of the 50 soil/groundwater sampling points, with additional plots within each of the habitat types (except cropland).
- Native species/noxious weed regeneration plots near Bridgeland, Myton and Ouray.
- Surveyed cross sections of the Uresk Drain, each of the proposed oxbow restoration sites, and each of the proposed oxbow reconnection sites.

Historical conditions were based on:

- Accounts of the 1776 Dominguez and Escalante expedition which traveled along the Duchesne River from the confluence with the Uinta River to the present day town of Duchesne (Warner 1995).
- 1936, 1939 and 1955 aerial photographs.
- 1939 soil survey data, habitat descriptions and photomaps.
- Depth of organic soils, which typically take years to develop.
- Results of an historical geomorphic study conducted by Utah State University (Brink and Schmidt 1996).
- A comparison of cottonwood age structure to Duchesne River flow history (WWS 1998, 2000).

- Tamarisk age class structure on the Uresk Drain (WWS 1998).
- Other reports and accounts of pre-1964 vegetation conditions (e.g., FWS 1965 Coordination Act report) and including data on the timing of Russian olive and tamarisk introduction into the Uinta Basin.

Irrigation-induced and natural wetlands were distinguished based on an analysis of the 50 repeat groundwater sampling points (and associated soil data) in which the groundwater levels were measured multiple times prior to irrigation, during irrigation and following irrigation. Additional details, including groundwater table graphs and analyses, can be found in WWS (2000).

D.2.2 Impact Analysis Methods

The baseline habitat types were digitized onto rectified orthophotos using the AutoCAD software program. The digitized habitat maps were used to evaluate direct project impacts. Potential direct adverse construction impacts were evaluated by digitally superimposing the location of physical project features (such as access roads, berms and water control structures) and associated temporary impact areas over the habitat maps. Acres of impact by impact type (temporary or permanent) were calculated from the overlay.

Potential beneficial impacts through wetland creation, restoration or enhancement were calculated through a series of steps. The first step was to classify each mapped habitat polygon into more of the following categories based on field evaluation of each polygon:

- **Potential Wetland/Riparian Enhancement Sites:** Existing wetland or riparian habitats that could be improved through changes in water quality, changes in grazing, removal of wetland or riparian weeds, or increasing native species cover or diversity.
- **Potential Wetland/Riparian Restoration Sites:** Habitats along former oxbows, or the current or historic Duchesne River floodplain, that previously supported wetlands but either did not under baseline conditions or supported a highly altered wetland were noted. The historic condition of habitats were identified through review of 1936, 1939 and 1955 aerial photographs, mapping of old river channels by Brink and Schmidt (1986), and a 1939 soils survey of the project area. Typically, the habitats that historically supported wetlands that either did not support wetlands or supported only highly degraded wetlands had been affected by changes in hydrologic support. Those habitats in which wetland hydrology mimicking historic conditions could be restored were identified as potential wetland restoration sites.

Potential cottonwood forest restoration sites were identified by mapping all degraded cottonwood forest polygons and other areas formerly supporting cottonwood forests on the historical aerial photographs that occurred within approximately 10 vertical feet of the Duchesne River low flow levels. Potential riparian shrub restoration sites were identified as those sites within the 2- to 5-year floodplain. Surveyed cross

sections and associated hydrologic analyses (see WWS 1998) were used to identify these surfaces.

- **Potential Wetland/Riparian Creation Sites:** Upland habitats that, due to their location along an oxbow system or adjacent to an existing wetland, could be converted to wetland or riparian habitat were classified as potential creation sites.

Once existing habitats were classified as to their existing condition, their historic condition and their potential condition, a series of surveyed cross sections perpendicular to the oxbows were developed. The surveyed cross sections were used to estimate the lateral expansion of wetlands that could be expected once water was reintroduced and berms placed along the oxbows. Similarly, surveyed cross sections and a surveyed topographic map were used to estimate the expansion and/or changes in wetlands in the Uresk Drain with the proposed berm construction. WWS (2000) contains a more detailed summary of the cross sectional and topographic data.

Net changes in wetland and riparian habitats were identified by summing the acres of habitats to be created or restored and then subtracting the acres of permanent loss of habitats through physical feature construction. The acres of habitats to be enhanced were listed separately as these represent existing habitats in which the project would not change the extent of the habitat or change its hydrologic support but would increase its wetland values.

The acres of wetland and riparian weeds to be removed were identified by summing all habitat polygons in which Russian olive and tamarisk provided more than 30 percent canopy cover.

Methods for the analysis of wetland and riparian functions and values can be found in Appendix C.

D.3 Wildlife Resources Analysis Methods

D.3.1 Assumptions

Baseline conditions for wildlife resources were based on the summary of the following data sources:

- Wildlife survey and habitat assessment results summarized in CUWCD (1996a), WWS (1998a) and Ammon (1997).
- Discussions with the Tribe Fish and Wildlife Office regarding wildlife resources on Tribal Trust lands.
- Mapping of habitat types in the project area based on 1997 aerial photographic interpretation and field verification, which is described in section D.2.
- Field surveys conducted by the Tribe and FWS in the LDWP project area from November 1998 through August 1999 (summarized in Koehler [2000]) and

additional wildlife surveys conducted by the Tribe and FWS in the LDWP project area through 2006.

Three separate types of quantitative surveys were conducted between 1998 to 2006: wintering raptor and deer winter range surveys, migratory waterfowl surveys, and other migratory bird surveys. All surveys were conducted during 1998-1999. In subsequent years, not all surveys were conducted in all years. The details of the survey timing, frequency and number of sample points are summarized in table D-1.

The quantitative surveys used set sampling points at which data was collected over a period of eight years. Sampling was conducted according to established wildlife protocols as described for Ralph et al. (1993) for waterfowl and songbirds, Cooperrider et al. (1986) for raptors, and Giles (1971) for big game. During each survey, all species observed were noted, even if not tallied according to the specific target species protocol. Additional wildlife observations were made during the repeat wetland data collection and other activities for conceptual plan formulation. The observational data were used to supplement and also interpret the census data, but did not replace the quantitative studies.

| Appendix Table D-1. Summary of wildlife surveys conducted during 1998-2006. | | | | | | | | |
|--|-----------------------------|--|--------------------------------|------------------|-------------------------------------|----------------------------|------------------------------|-----------------------|
| Survey Period | General Survey Dates | Survey Years | Target Species | Data Type | Data Points (#) | Sample Periods (#) | Sample Points (Tot #) | Survey Yrs (#) |
| Fall | Nov-Dec | 1998 | migrating waterfowl | census | 5 | 4 | 20 | 1 |
| Winter | Jan-March | 1999 2001 2004 2005 2006 2007 | wintering raptors, big game | census | 2 survey routes (total of 25 mi) | 6 1 3 3 2 2 | NA | 6 |
| Early Spring | March-mid April | 1999 2004 2005 2006 | migrating waterfowl | census | 5 | 4 2 2 2 | 20 10 10 10 | 4 |
| Late Spring | Late April-May | 1999 2000 2001 2005 2006 | migrating songbirds | census | 9 | 3 3 1 1 2 | 27 27 9 9 18 | 5 |
| Summer | June and August | 1998 | all species | observation | 50 | 3 | 150 | 1 |

D.3.2 Impact Analysis Methods

The overall approach of the analysis was to first summarize the existing survey data regarding wildlife species and habitat use in the area, and then project these findings to probable habitat use in the project area both during and after construction.

Since most species require a diversity of habitats to successfully complete feeding, resting, nesting and migrating, multiple important supporting habitats used by each wildlife group were taken into account when conclusions were made regarding ultimate gains or losses of habitat. Therefore, adjacent habitat types were assessed in terms of function and value for each wildlife group to assist in the final determination of habitat gains and/or losses. This allowed an ecological approach to wildlife viability and management.

Wildlife habitat utilization was categorized based on grouping the wetland and non-wetland vegetation types into habitats of principal importance to the species identified. The three habitat categories include:

- Wetland associated wildlife: Includes wildlife primarily dependent upon wet meadow, emergent marsh, or open water.
- Riparian associated wildlife: Includes wildlife primarily dependent upon riparian shrub, cottonwood forest
- Upland associated wildlife: Includes wildlife primarily dependent upon cropland, annual weed/ fallow, desert shrub

Wildlife impacts were assessed by comparing changes in habitat quantity or quality under each alternative to the baseline conditions.

D.4 Threatened and Endangered Species Analysis Methods

D.4.1 Assumptions

Baseline habitat types were identified based on 1997 aerial photographic interpretation and 1997-1998 field verification. The 1997-1998 conditions are used in this document to represent baseline conditions. Details of the 1997 habitat mapping can be found in WWS (1998a) and habitat maps are on file with the Tribe Wetlands Office.

Soil and geologic formation characterization was based on data supplied by the Natural Resources Conservation Service (SCS 1959, NRCS 2002) and U.S. Geological Survey 1:250,000 geologic maps for the Salt Lake and Vernal quadrangles.

D.4.2 Impact Analysis Methods

The FWS identified the threatened, endangered and candidate species and any critical habitat that might occur within the project vicinity, which included all known listed species occurring within Uintah and Duchesne counties (see Appendix E). The first step in the impact analysis was to collect data on the known habitat and life history requirements, and distribution of the species on this list. Data sources used included consultation with individual species experts in the FWS Ecological Services Grand Junction and Salt Lake City offices, Utah Natural Heritage database, literature review including individual species listing proposals, recovery plans and status updates, the results of wildlife surveys conducted by the Ute Tribe and the FWS (Koehler 2000, Zeigenfuss et al. 2007), and plant species lists and habitat characterizations made during the project feasibility analyses (WWS 1998a and 2000).

Once the data was compiled, a list was made of all species with known occurrences in or immediately adjacent to the project area. Data on species' habitat requirements were compared to habitats in the project area to identify if suitable habitat occurred for any of the species. A second list was then prepared identifying all species with known or potential habitat occurring in the project area and for which a detailed impact analysis would be conducted.

The factors considered in the detailed impact analysis varied slightly among plant, fish and wildlife species. The main factor considered for listed plant species was how, or if, the project would change occupied or potential habitat. Direct construction impacts on occupied or potential habitat were identified by overlying the proposed project features on the habitat maps. Indirect impacts through habitat conversion were based on the summary of which habitats would be converted to wetland or riparian habitats provided in section 4.2 and the database on file with the Tribal wetlands office.

Potential project impacts on listed wildlife species included evaluations of how the project would change habitats used for roosting, feeding, nesting and/or migration, as well as any impacts on key food sources. Habitat impacts were identified as described above for plants. Impacts on wetland food sources were based on data provided in the Wetland and Riparian Habitats analysis (section 4.2) and impacts on prey species were based on data provided in the Wildlife Resources analysis (section 4.3). For listed fish species, the main parameters of concern were potential impacts of the project on water quality and quantity and the potential for entrapment in the re-connected oxbows. Potential impacts through hydrologic changes were based on the hydrologic impacts analysis results found in sections 4.5 and 4.6. The potential for entrapment of listed fish species in oxbows was assessed based on the professional judgement of key FWS Colorado River fish researchers.

D.5.5 Water Resources Analysis Methods

D.5.1 Surface Water

D.5.1.1 Assumptions

Duchesne River Flows and Diversions

The surface water hydrologic data used in this analysis is based on mean daily streamflow data for the Duchesne River at Myton (USGS #09295000). The Flume and Uresk Drain sites are located upstream of the Myton gage, and the Riverdell and Ted's Flat sites are located 2 to 5 miles downstream of the Myton gage. Flow data from the Randlett gage (USGS #09302000) are also listed, as the subsequent water quality analysis is based on the Randlett data.

Annual canal diversion data for the Myton Townsite, Ouray School, Grey Mountain and Riverdell canals were obtained from the Utah State Engineer's Office.

Both the Duchesne River flows and canal diversions vary from year to year. Because streamflow at Myton is controlled largely by the magnitude of upstream diversions, and not precipitation within the Uinta Basin, each year in the baseline period of 1989 to 2006 was identified as a "high flow," "average flow," "low flow" or, "very low flow" years based on total stream annual flow at the Myton gage. Using data for the Duchesne River at Myton for the period 1989-2006, the average annual discharge is 163,160 acre-feet per year with a median discharge of 82,059 acre-feet per year. For this analysis, the upper and lower quartile values of 268,526 acre-feet and 40,994 acre-feet, respectively, define the bounds of "high flow" and "low flow" years. Years in which runoff is between these two values are considered "average flow years" (Appendix Table D.2).

Appendix Table D-2. Comparison of Annual Streamflow in the Duchesne River at Myton to UIIP Canal Diversions for Water Years 1989-2006. Values are ranked in ascending order of streamflow. Representative years in each flow class are in bold.

| Flow Class | Water Yr. | Streamflow ¹ (acre-ft/yr) | UIIP Canals/Diversions in LDWP Area (acre-feet) | | | Total UIIP Diversions (acre-feet) |
|-----------------------|-------------|---|--|----------------|---------------|---|
| | | | Grey Mtn ² | Myton Townsite | Ouray School | |
| Very Low | 2004 | 30,634 | 20,025 | 17,430 | 10,379 | 47,834 |
| | 2003 | 31,013 | 21,267 | 16,454 | 10,039 | 47,760 |
| | 2002 | 36,369 | 22,366 | 16,971 | 9,214 | 48,551 |
| Low | 1992 | 37,716 | 22,420 | 19,108 | 9,768 | 51,296 |
| | 1991 | 40,868 | 21,147 | 16,705 | 11,844 | 49,696 |
| | 1990 | 41,374 | 21,806 | 18,341 | 11,266 | 51,413 |
| Average | 1994 | 63,973 | 23,511 | 18,602 | 11,607 | 53,720 |
| | 1989 | 71,204 | 26,306 | 18,065 | 12,575 | 56,947 |
| | 2001 | 81,194 | 23,997 | 18,134 | 9,385 | 51,515 |
| | 1993 | 82,924 | 20,446 | 19,218 | 11,410 | 51,074 |
| | 2000 | 121,291 | 24,683 | 20,186 | 10,065 | 54,934 |
| | 1996 | 154,679 | 24,344 | 20,133 | 11,103 | 55,580 |
| | 2006 | 191,779 | 16,939 | 17,935 | 8,940 | 43,814 |
| High | 1995 | 294,108 | 21,056 | 21,047 | 11,143 | 53,246 |
| | 2005 | 324,900 | 17,393 | 24,672 | 8,757 | 50,822 |
| | 1997 | 371,948 | 20,661 | 19,229 | 8,777 | 48,667 |
| | 1999 | 452,752 | 22,933 | 21,442 | 8,619 | 52,994 |
| | 1998 | 508,147 | 25,066 | 21,045 | 10,407 | 56,518 |
| Average | | 163,160 | 22,020 | 19,151 | 10,294 | 51,466 |
| Std. Deviation | | 157,274 | 2,488 | 2,038 | 1,203 | 3,436 |
| Median | | 82,059 | 22,086 | 18,855 | 10,222 | 51,355 |
| Maximum | | 508,147 | 26,306 | 24,672 | 12,575 | 56,947 |
| Minimum | | 30,634 | 16,939 | 16,454 | 8,619 | 43,814 |

¹ Streamflow is total annual runoff at the Myton gage (USGS #09295000)

² Canal data are tabulated from data available through the Utah State Engineer's Office

³ Grey Mountain Canal diversions listed represent only the UIIP portion of the total diversion

Water Budgets

The water resources analysis relies on water budgets developed for each proposed wetland. Water budgets were developed using standard hydrologic models (Maidment 1992) to estimate the wetland water requirement. These models and the input data required a number of assumptions. Proposed water budgets represent maximum demand and contain some assumptions that will require verification during final design. The following key assumptions were used to estimate water requirements.

The wetland water requirement is equal to the amount of water lost through soil seepage, the amount of water required to meet evapotranspiration demands and the water quality (salinity) control factor. The equation summarizing this formula is:

$$\text{Water Requirement} = \text{Soil Seepage} \text{ PLUS (Evapotranspiration [ET]) PLUS (ET TIMES Salinity Control Factor)}$$

Each of these parameters is described below.

- ***Soil Seepage:*** Soils in the project area are predominantly silty clays and clays, but there is little measured soil permeability data. Estimated permeabilities of these soils range from 0.0001 inches/day to 0.34 inches/day (Basin Hydrology 1997), or 0.002 to 7.65 acre-feet/acre during the irrigation season. Estimates of project water availability were based on local crop water use calculations in Hill (1994), which identify that total annual return flows from irrigated fields in the Myton area are 1.34 acre-feet/acre for alfalfa and 2.05 acre-feet/acre for pasture. The portion of return flows attributed by Hill (1994) to soil seepage, on average, is estimated to be 0.80 acre-feet/acre for alfalfa and 1.23 acre-feet/acre for irrigated pastures. Since the majority of wetlands would be created or restored from irrigated pastures, an average permeability of 1.23 acre-feet/acre was used in wet meadow created along oxbows and 1.66 for emergent marshes. A different permeability was used for the Uresk Drain soils because field observations as well as measured permeabilities indicate the site to be underlain by heavy clay. A permeability of 0.02 inches/day was used in the Uresk Drain which is equivalent to 0.45 acre-feet/year (wet meadows) and 0.61 acre feet/year for emergent marsh complexes. The water budgets assumed that although water would be applied only during the irrigation season, that emergent marsh/open water complexes would remain wet and seep water all year round.
- ***Net ET.*** Annual net evapotranspiration rates were based on crop use data by habitat type for the Myton field area, as summarized in Hill (1994). Habitats were identified as described in section D.5.1.
- ***Salinity Control Factor.*** The salinity control factor represents 27 to 50 percent of the wetland evapotranspiration rate (with a minimum of 0.91 and up to 1.56 acre-feet per acre) depending on the quality of the inflowing water. The salinity control factor

was applied only to the total proposed open water, emergent marsh and wet meadow habitats.

Total maximum water requirements for individual habitats (including all above parameters) were identified as 6.50 acre-feet/acre for open water/ emergent marsh (5.45 acre-feet/acre for the Uresk Drain), 4.91 acre-feet/acre for wet meadow (4.13 acre-feet/acre for the Uresk Drain and 4.0 acre-feet/acre for irrigated pasture habitats. Mesic shrub habitats were assumed to be supported by lateral seepage from the adjacent wetlands. Cropland was not generally included in the proposed water budgets as cropland will be maintained as either acquired cropland (Proposed Action) or acquired under conservation easements with the water rights remaining with the landowner (Pahcease and Topanotes Alternatives). The exceptions were for the Riverdell North property in which new cropland may be established and managed solely for wildlife, or where increased ground water could affect crop production. In these cases a water budget value of 4.0 acre feet/acre was used.

From 40 to 70 percent of existing wetlands in the project area are supported at least partially by irrigation. Water requirements include the water needed to maintain these wetlands in perpetuity.

In the riparian area, the following water budget assumptions were used:

- Temporary irrigation for cottonwoods would require 0.73 acre-feet/acre of cottonwoods placed on 20-foot centers and 0.20 acre-feet/acre for cottonwoods on 40-foot centers for three years per planting block and up to 10 years on sites with large planted riparian areas such as Riverdell North and Ted's Flat.
- Riparian shrubs would obtain their hydrologic support from the Duchesne River.

Non-consumptive uses of water include soil seepage losses and water used for salinity control in a flow-through system. All non-consumptive use of water returns to the Duchesne River as "return flows". Return Flows were defined as follows:

- $\text{Return Flow} = \text{Water applied to land} - \text{Net ET}$, with return flows occurring through both seepage and surface water return.

The following key assumptions were used to identify *water availability*:

- Water would be supplied by the Duchesne River to reconnected oxbows only during high spring flows and would not represent consumptive use of irrigation water.
- All of the water rights associated with land in the project area, except those associated with the Riverdell North Property, are senior (1861) water rights with a diversion right of 4.0 acre-feet of water per irrigable acre on an annual basis. The water rights for the Riverdell North property have either a 1930 or 1950 priority date and total 2,267 acre-feet/year. The water rights for the lands served by the UIIP

represent the water rights associated with the lands within the project areas as defined by the Decker Tabulation.

D.5.1.2 Impact Analysis Methods

Water Availability and Diversions

The overall approach to identifying the water requirements of the Proposed Action and alternatives was to develop a database identifying water needs by habitat type for each site, or portion of a site if there were differences in hydrologic support or potential water sources. Components included in the individual sites or subsite water budgets were:

- Support for newly created or restored wetlands
- Support to maintain and enhance existing wetlands in perpetuity and improve water quality
- Non-consumptive use of water for water quality control or losses through seepage
- Continued irrigation of grasslands
- Temporary irrigation of cottonwoods.

The modeled individual site water budgets were then compared to the amount of water available through water rights appurtenant to the land purchased or leased for the LDWP. An impact was identified if (1) the water requirements exceeded the available water, potentially affecting the legal water rights of downstream users, or if (2) the water requirements would require a change in water diversions.

Effects on Junior Water Rights

Potential impacts to junior water rights holders were based on comparing annual diversions to canals serving the UIIP to streamflow in the Duchesne River at Myton in high flow, average, low flow and very low flow years during the baseline period of 1989 through 2006. An impact was identified if, in any year, diversions are lower than the long-term average. The impact amount, if any, was calculated as the difference in annual diversions, in acre-feet, multiplied by the percentage of anticipated project water use of total UIIP diversions. On average, the water used by the project is estimated to be 24.2 percent of total UIIP diversions.

Duchesne River Flows

An impact to the Duchesne River flows was identified if the LDWP would change diversion amounts outside of the baseline diversions, or if return flows to the river were changed. Potential changes in diversion amounts were identified as described in the above section.

Baseline return flows to the Duchesne River were calculated by the following formula:

$$\text{Return Flow} = \text{Water applied to land MINUS net ET}$$

where return flows occur as both seepage, or deep percolation, beneath irrigated fields and wetlands, and surface runoff.

Under the LDWP, it is assumed that soil seepage rates would not change in currently irrigated parcels and wetlands. Seepage rates would change where wetlands are created from current desert shrub and non-irrigated grassland habitats. Water application rates would remain at 4 acre-feet/acre.

ET rates vary by habitat type. The net change in ET caused by the LDWP depends on the difference (in acres) between pre- and post-project habitats. Water applied for salinity control (in wetland areas only) is assumed to add to surface runoff, but does not result in changes in seepage rates.

Based on the above assumptions the formula for calculation of changes in return flows due to the LDWP is modified as follows:

$$\text{Return Flow} = \text{Water applied to land MINUS total net change in ET PLUS increased soil seepage in some created/restored wetlands PLUS the Wetland Salinity Control Factor}$$

D.5.2 Groundwater

D.5.2.1 Assumptions

The baseline groundwater conditions represented in the LDWP FEIS are based on data collected from 32 groundwater wells, 50 shallow water table sampling points, surveyed cross sections along the Drain and each of the oxbow systems, and water table measurements taken at road crossings and along site boundaries. The 32 permanently installed groundwater wells included 20 wells located perpendicular to the Drain along four transects in the Main Site (see WWS 2000 and Basin Hydrology 2007), with 12 wells located along two transects between Myton and the Uresk Drain (Basin Hydrology 2007).

In the other sites, the groundwater data was generally collected along transects set up perpendicular to the oxbows. Specific details of the groundwater data (locations, sampling dates) can be found in Basin Hydrology 2007, WWS 2000 and Gecy 1999.

D.5.2.2 Impact Analysis Methods

Identification of Groundwater Area of Influence

The measured groundwater and soil surface levels collected between 1996 and 1999 within the vicinity of the proposed wetlands were first plotted on project maps. The proposed physical construction measures under the LDWP were then overlain over the groundwater data to identify the

potential extent of wetlands, including wet meadows, and other areas in which the water table could extend into the plant rooting zone (within 0 to 2 feet of the ground surface, which would generally be classified as wetlands) or rise up to 3 feet elsewhere. This data was used to identify the overall potential area of groundwater influence for each site.

City or county infrastructure and cropland located near each site was identified based on existing maps and databases compiled for the DEIS. All cropland and infrastructure within 3 to 5 vertical feet of the wetlands were identified for further review to ensure that more specific groundwater or topographic data was collected adjacent to potential impact areas. Additional groundwater data was then collected at these areas between 2004-2006. The final location of cropland within or adjacent to each site was based on Hanberg (2007) for the Uresk Drain, Riverdell South property and Ted's Flat sites, with a combination of the DEIS maps and field review used to identify existing cropland in the Flume.

The next step in the analysis was to examine both data sets to further evaluate the groundwater dynamics in key areas, particularly the groundwater flow direction and slope, the soil profile in relation to the groundwater table, and conditions affecting existing high water tables (such as adjacent unlined canals or other water sources outside of the LDWP control). The soil data was particularly important in identifying perched water tables (e.g., water table reflects surface not groundwater influence), soil types in which the groundwater tends to flow and the degree to which the proposed measures would intercept the groundwater and/or the soils in which the groundwater was typically encountered.

The final step in the analysis was to identify if the proposed LDWP water budgets were either (1) insufficient to extend the water table throughout the entire area of potential influence (i.e., groundwater table increase restricted to the wetland footprint only), or if (2) the amount of water proposed for the wetlands could extend further than the estimated wetland footprint.

The above data was then combined to identify any differences between the proposed wetland areas and the areas in which groundwater could rise above baseline levels.

Groundwater Impacts

The significance of groundwater table changes is in how they could affect other resources such as agriculture/land use and socioeconomics (effects on crop production and local infrastructure), and transportation (effects on roads). The level of groundwater rise that would affect each resource varies by resource. In general impacts through groundwater table increases as a result of the LDWP would occur if:

- The groundwater table would be raised to the plant rooting zone (1.5 to 2 feet below the surface) within cropland.
- Water were to pond against paved county roads or otherwise affect the road structure through saturation of the road base.

- Water were to impound against dirt roads needed for local access or otherwise impair local access.
- The groundwater table would be raised to a level that would intercept or raise water tables along sewer lines, other utilities or the Myton cemetery.

D.6 Water Quality Analysis Methods

D.6.1 Assumptions

D.6.1.1 Water Quality Concentration and Physical Parameters

Water quality data has been collected within the water quality area of influence (i.e., the project area and the Duchesne River from Bridgeland to the confluence with the Green River at Ouray) by numerous studies. Each study targeted a different part of the project area of influence, with some studies focusing only on the wetlands in the project area, while other studies focused only on the Duchesne River or on the local irrigation system. Not all studies sampled all water quality parameters and data from multiple studies was necessary to characterize the baseline condition. Data from the following studies were used to represent the baseline conditions for each component of the project area of influence (project area wetlands, canals providing water to the wetlands, Duchesne River).

- The water quality data collected in the project area between 1997 and 1999 by USGS (1998) and WWS (2000) represents the baseline water quality of the existing wetlands in the project area.
- The water quality data collected by the USGS (Mundoff 1977) and the CUWCD (1996b) represents the baseline water quality of the Duchesne River.
- The water quality data collected by the USGS (ReMillard et al. 1995) represents the water quality in the local canals that would be used to supply water to the project area.

Based on the above studies, the water quality parameters of concern for wildlife are salinity, TDS, boron, temperature, dissolved oxygen and pH.

D.6.1.2 Federal Water Quality Standards

There are two federal programs that regulate Duchesne River water quality: the Clean Water Act and the Colorado River Salinity Control Program. The constituents of concern in the Duchesne River under both programs are salts: total salt load (in tons) for the Colorado River Salinity Control Program and TDS concentrations under the Clean Water Act.

Both salinity analyses used the same hydrologic input data, which was derived from the water resources section (see section D.5). This data includes the following:

- Water requirements and seepage rates for each site as described in section D.5.1.1.
- Consumptive water use (ET) demands for each site as estimated from tables in Hill (1994) for the Myton area.

Other assumptions used were:

- Addition of water for salinity control would not change soil seepage rates.
- Return flows equal the amount of water applied to the site minus consumptive water demand (ET). Assumptions used to determine site water budgets (section D.5.1.1) are used to calculate the difference in return flows between baseline conditions and the action alternatives.
- Following (Hill 1994), return flows are partitioned into 60 percent seepage runoff and 40 percent surface runoff, on average, unless site data suggests otherwise.
- Sub-surface return flows in the lower Duchesne River are assumed to contribute a salt load of 2.58 tons per acre-foot.
- Wetland acres and the changes in habitats were based on the 2007 LDWP habitat maps and associated data as described in section D.2.

D.6.2 Impact Analysis Methods

D.6.2.1 (Wetland) Water Quality Concentration and Physical Parameters

The existing or baseline water quality conditions were based on the water quality data sources identified above. Potential water quality impacts of each alternative were identified by comparing the baseline water quality conditions to the conditions expected under the Proposed Action and alternatives.

Wetland water quality was assessed following the methods of Christensen and Low (1970) in which a percentage of water greater than the consumptive water demand is added to the water budget in order to limit salt (TDS) accumulation to levels that might be harmful to wildlife. The amount of water added varies depending on source water quality. When TDS levels in the source are between 500 and 1,000 parts per million, an amount of water equal to 27 percent of the consumptive water use is added to the site water budget. When TDS concentration of the source water is greater than 1,000 ppm, an additional 50 percent of the consumptive water use is added to the site water budget.

Changes in physical parameters (temperature, pH, dissolved oxygen) were assessed by comparing the physical parameters in the existing wetlands to those of the proposed water sources to identify any differences. Because differences in physical parameters were minor, impacts of the proposed changes on physical parameters were qualitatively assessed.

D.6.2.1 Federal Salinity Standards

Colorado River Salinity Control Program

The methods and associated assumptions used by Reclamation in their Salinity Control Program Policy were used in the LDWP as far as completing estimates of salt loads and their effects on the Colorado River at Imperial Dam. This program measures gross changes in salt loads within the entire Colorado River Basin. The method assumes that (1) rewatering of historic water sources, previously irrigated and subirrigated land or adding water to existing wetlands do not contribute new sources of salts and that (2) the salt concentration in groundwater return flows is 2.58 tons per acre-foot of all seepage in the lower Duchesne River area.

The general procedure in calculating the change in salt loading as a result of the LDWP was to identify the areas in which wetlands would be created, restored or enhanced and determine if these areas fell within historic watercourses, such as oxbows or recent river floodplains. If the wetlands would be located within historic watercourses, they were considered not to represent new sources of salt. All proposed wetlands located outside of the historic watercourses were then classified as to whether or not they were currently irrigated or subirrigated. Only the areas in which wetlands would be created on lands currently not irrigated would represent sources of new salt to the Duchesne River. These areas and their size (acres) were derived from the 2007 habitat maps on file at the Ute Tribe wetland and the Mitigation Commission's offices.

The net difference in salts through sub-surface return flow was calculated by the following equation:

New Wet TIMES SS Rate Times 2.58, where

- New Wet= Proposed Acres of Wetlands to be created from desert shrub or non-irrigated grassland habitat AND which are located outside of historic watercourses.
- SS Rate= General soil seepage rate as described in Swanson (2007)
- 2.58= Soil salt concentration as identified by Reclamation

The effects of the resultant salt load on the Colorado River were evaluated by comparing the results to the salt concentrations at Imperial Dam.

Clean Water Act

The effects of the LDWP on the Duchesne River TDS were evaluated by a mixing model or mass balance analysis which was based on the site-specific water budget components described in section D.5.

This analysis evaluated changes in return flows from both surface and ground water and included the following inputs.

- Existing wetland TDS concentrations
- TDS of the inflowing water
- ET
- Subsurface percolation
- Surface water run-off which includes both the baseline runoff and the Salinity Control Factor

The return flow components are partitioned based on Hill (1994) as described in section D.5.1. The existing wetland TDS and the TDS of the inflowing water are listed in Tables 4-34 and 4-37 of section 4.6.

The general equation used in the model is:

$$Q_1C_1 \text{ PLUS } Q_2C_2 \text{ PLUS } \dots Q_nC_n = Q_fC_f, \text{ where}$$

Q=Flow volume in acre-feet for each individual water budget component inflow (positive inputs to the equation) or outflow (negative inputs to the equation)

C=TDS concentration of the individual water budget component

Q_f=The sum of all inflows and outflows.

The resultant return flow concentration (C_f) is then calculated by rearranging the equation as follows:

$$Q_1C_1 \text{ PLUS } Q_2C_2 \text{ PLUS } \dots Q_nC_n \text{ DIVIDED BY } Q_f = \text{Return Flow Concentration}$$

The net change in return flow TDS concentrations was used to calculate the effect of changes in both surface runoff and ground water seepage on the Duchesne River TDS concentrations at Randlett. TDS values were compared as weighted averages, using the baseline Duchesne River flow data summarized in section 4.5 5 and appendix Table D-2.

D.7 Soils Analysis Methods

D.7.1 Assumptions

The available soil data pertaining to the project area varies in age, scale and level of detail. Tribal Trust lands within much of the project area have not been mapped since the 1950s. Soils information for the Myton area (which includes the Flume, Uresk Drain and part of the Riverdell North/South site) is based on a 1959 soil survey (SCS 1959), as verified by soil profile data collected between 1996-2004. Although soil taxonomy and drainage definitions in the 1959 survey are not equivalent to those used today, the soil survey is accurate when compared to more recent, but less comprehensive, field surveys. Soil data for portions of Uintah County was updated between 2002-2004. The soil data for the Ted's Flat site is based on this data (NRCS 2007), also as verified. by soil profile data collected between 1996-2004.

D.7.2 Impact Analysis Methods

D.7.2.1 Soil Erosion and Stability

Construction plans were reviewed to identify the location of potential stream channel modifications, oxbow connections, berms, borrow areas and other areas in which soils might be disturbed during construction. Areas of potential soil disturbance were then examined to assess the potential impact of construction activities on soil erosion. SOPs associated with erosion issues were reviewed to assess their potential effectiveness once implemented.

D.7.2.1.2 Soil Productivity

The first step in the analysis was to identify the soil series and types within the project area, their productivity and their key characteristics related to productivity according to the sources listed in section D.7.1. As defined by the NRCS, degraded soil conditions occur when “site productivity, use, and potential for restoring the original plant community are seriously threatened” as a result of project construction or operation. Therefore, the potential natural community was also listed for each soil type. Where the potential natural community had been modified to cropland, this was also noted.

The second step in the analysis was to identify the proposed treatments and final plant community types for each soil type.

Finally, the treatments and proposed plant communities were compared to the potential natural community type (or cropland if irreparably altered from the natural community) to identify if any of the activities would change the soil productivity to the point that the original plant community could not be restored.

A similar analysis was conducted for soils outside of the project boundary that could be affected by a change in the ground water table. The area of potential water table change was identified in the groundwater analysis according to the methods described in section D.5.2

D.8 Agriculture and Land Use Analysis Methods

D.8.1 Assumptions

Information on crop and livestock production in Duchesne and Uintah counties was obtained from several sources, including the US Department of Agriculture and Utah Agricultural Statistics databases. Additional information was provided in Hanberg (2007). and BIA (2000). Information from these sources was assembled to represent baseline conditions and market values in the two-county area. The agricultural and land use analyses made the following assumptions:

- Project implementation would create permanent changes in the agricultural sector as grazing is eliminated from project lands and either conservation easements or outright cropland purchase restrict the amounts of marketable crop production on established cropland (see methods in section D.9 regarding the socioeconomic impact analysis for this change).
- Lands in the project area consist of a mix of irrigated pasture land, other land and cropland, with land categorized according to Hanberg (2007). Definitions used for this categorization were:

Crop. Land currently in production for alfalfa, corn and/or small grains. Established cropland is cropland that has been in production for at least five years.

Irrigated Pasture. Pasture consists only of irrigated or potentially irrigated pasture. Most pasture land in the LDWP area is dominated by saltgrass and is considered unimproved pasture.

Other. All other land including non-irrigated land, wetlands, riparian areas and dry hillsides.

Where categorizations were missing, a combination of field review and current aerial photographs were used to identify the baseline status of individual parcels used in the agricultural analysis.

- The estimated number of AUMs which could be supported by pasture land in the project area, as well as, the current market value for AUMs and cropped hay was based on data provided by the BIA (2000) and Hanberg (2007). This information was developed by field visits to individual parcels.

- Grazing in the project area is primarily devoted to cow/calf pairs during five months out of the year

D.8.2 Impact Analysis Methods

D.8.2.1 Livestock Grazing and Production

Changes in livestock production were assessed in terms of how local changes would affect total agricultural production in the two counties. The value of grazing in the project area under baseline conditions was based on the number of AUMs that the land supports, multiplied by the 2006 market value for an AUM of \$15 (Hanberg 2007). This figure provided an estimate of the monetary changes to the agricultural sector with elimination of grazing.

Because the counties compile livestock data in terms of number of animals and the BIA production estimates are based on AUMs, a different methodology was used to evaluate what percentage of livestock production in the two counties would be lost as a result of project implementation. Grazing in the project area is primarily devoted to cow/calf pairs during six months out of the year. One AUM was estimated as equaling one cow/calf pair. Total AUMs on project lands were then divided by six to determine the number of cow/calf pairs that would be eliminated by project development. This figure was then compared to the total number of cow/calf pairs currently produced by the two counties.

D.8.2.2 Cropland and Crop Production

The baseline value of crops produced on lands in the project area was determined by multiplying the estimated crop production per acre by the 2006 market value of the crop.

Under the Proposed Action, most cropland would be avoided, but all cropland within the project boundary would be acquired and managed for wildlife. Crop value under the Proposed Action was determined by multiplying the pre-project value by zero percent, the amount of crop that would be sold under project conditions. Under the Pahcease and Topanotes alternatives, conservation easements would be purchased on cropland (see section 2.2.3.2 regarding conservation easement purchase), 20 percent of the crop would be left for wildlife use and not sold. Crop value under these alternatives was determined by multiplying the pre-project value by 80 percent, the amount of crop that would be sold under project conditions.

The post-project value of marketable cropland was then compared with the pre-project or baseline value to identify changes in crop production both within the LDWP project area and the two-county area to identify how the local change in marketable yield would affect the agricultural economy.

D.8.2.3 Land Use Plan Compatibility

Duchesne and Uintah counties both have general plans containing policies and objectives for the land uses and management in the two counties (Duchesne County 1997, Uintah County 1996).

These plans were provided by the counties to the LDWP technical team for review. Tribe does not have a formal land use plan, but does have a number of general policies regarding Tribal land use.

Land use plan compatibility was evaluated by comparing the individual plan policies and objectives to the LDWP project as described in chapters 1 and 2 of the LDWP FEIS, with particular emphasis on LDWP goals, changes in land use and changes in land ownership. Both areas in which the LDWP would be compatible with, and areas in which the LDWP would conflict with, these plans were noted.

D.8.2.4 Partial Landholding Acquisition

Land ownership both within the LDWP project boundaries and adjacent to it was mapped by individual parcels based on Uintah and Duchesne County plat maps. Those land holdings in which a portion of the property fell inside the LDWP boundary and a portion fell outside of the boundary were noted. Each land holding was then reviewed to identify if the LDWP boundaries could be shifted without affecting the project feasibility to avoid partial land acquisitions.

Land holdings that still would be split under the project were classified as to the amount and proportion of land to be acquired versus the amount remaining and the type of land use in each portion of the parcel.

The impacts of partial land acquisitions were evaluated in relation to the federal appraisal methodology for acquiring only part of an entire parcel, as well as qualitatively regarding personal impacts.

D.9 Socioeconomics Analysis Methods

D.9.1 Assumptions

Baseline socioeconomic conditions in Uintah and Duchesne counties were characterized by using the most recent data available, which ranges from 1999 to 2006. In most instances, data previously presented in the DEIS was updated in the FEIS. Baseline data was gathered from a variety of sources. The value of grazing lands, measured in animal units per month (AUMs) was taken from information supplied by the BIA (2000) and Hanberg (2007). Statistics on population, employment, per capita income, total county economic output, agricultural output and income, and other direct economic measures were taken from the annual 2006 Economic Report to the Governor (GOPB 2006). Specific information on crop and livestock production and prices was found in reports prepared by the Utah Dept. of Agriculture and U.S. Dept. of Agriculture. This data was generally from the year 2004, although more recent data was occasionally available.

The statistical data employed in the IMPLAN input-output model to predict economic impacts from the Proposed Action is derived from national data sets from the year 2003.

Statistical information on socioeconomic factors such as health, education, and law enforcement is not available. Information on the quality and availability of these public services was obtained through interviews with officials in agencies that provide these services.

Information about socioeconomic conditions on the Uintah and Ouray Indian Reservation was provided by the BIA.

D.9.2 Impact Analysis Methods

D9.2.1 Economic Impacts in the Uinta Basin

The DEIS evaluated economic impacts to the Uinta Basin economy from the Proposed Action by using a computer-generated input/output (I/O) model that was developed in the late 1990s by the Governor's Office of Planning and Budget (GOPB). At this point in time, the GOPB no longer utilizes or maintains this model, and the databases associated with the model are now out of date. In view of this, the FEIS employed the nationally-known IMPLAN input-output model, which has been used for other federal projects in the Basin such as the 2004 EIS on the Operation of Flaming Gorge Dam (BOR 2004). Databases employed in IMPLAN model for Uintah and Duchesne counties were from the year 2003.

Both the IMPLAN model, as well as the discontinued GOPB model, are input-output models (I-O) that employ similar methodologies and underlying mathematical approaches. These I-O models generate multipliers and estimate regional economic impacts based on a region's inter-industry trade linkages. However, the IMPLAN model does offer the advantage of more current databases as well as the capacity to generate a wider variety of reports, such as tax impacts. Additionally, IMPLAN offers a number of different multipliers and can be customized to reflect current developments in local economic conditions. In the FEIS, Social Account Matrix or SAM multipliers were utilized in order to present the greatest range of economic effects from changes in the counties' economies. In contrast to other multipliers, the SAM multipliers account for spending in the local economy that occurs when employees spend additional wages that are generated by the initial expenditures that are being evaluated.

The FEIS adopted the same basic approach for modeling of economic impacts as employed in the DEIS. Two different periods were chosen for evaluation: one year during the construction period when employment and construction-related activities are expected to be at a peak, and one year during the maintenance and operation phase. All project-related activities expected to occur during either of those two periods were given a dollar value and assigned to one of the industry categories in the IMPLAN input-output model. Economic losses that could be attributed to the project, such as losses in grazing fees, were also estimated and inserted into the model. The model was then processed to evaluate how these new economic inputs would affect baseline economic conditions in the Basin

In the DEIS, the GOPB model provided predicted changes in three main categories: new jobs created, personal earnings, and total economic output in the Basin. In using the more complex

IMPLAN model, it was also possible to generate additional reports on multipliers as well as tax impacts.

The IMPLAN model provides a variety of measures of economic change, including the number of new jobs created, increases in personal income, increases in total economic output, and tax impacts. The results also include indirect and induced economic effects that reflect the working of multipliers in the model.

D.9.2.2 Population, other Socioeconomic Variables

Impacts on population, social services, and other socioeconomic conditions were evaluated qualitatively using professional judgment. The assumption was made that the project could affect population in the Basin if it created jobs that brought people in from other regions. Once population impacts were determined, social services were evaluated to determine whether they could handle any population impacts without experiencing a decline in the existing levels of service. Theoretically, the project could impact social services in the area in other ways, such as through increasing personal income, but such impacts would be minor and difficult to quantify.

Potential tax impacts on the Uintah and Duchesne counties were evaluated in several different ways. The IMPLAN input-output model provided a summary of tax impacts that would result from expenditures associated with the project, including income taxes as well as small increases in transient room taxes, gasoline taxes and sales taxes. In addition, separate analysis was provided on impacts to county property taxes as private land in the project area is acquired and transferred to the Tribe or federal government. These impacts would vary considerably depending on the alternative being addressed. Current tax revenues on these lands were evaluated by determining their taxable value under the Farmland Assessment Act (Green Belt) and multiplying that value by an estimated tax rate that would approximate taxes in both counties. Finally, the analysis offered a rough estimation of the amount of tax revenue that would be lost to the counties if houses were acquired by the project and taken off the tax rolls. A precise estimation of such tax impacts was not possible since the exact number and value of homes in the project area is not known at the present time.

The analysis also addressed the question of whether these changes in ownership would affect payments-in-lieu-of-taxes (PILT) from the federal government to the two counties. Payments In Lieu of Taxes (PILT) is a federal program that provides funds to counties to offset the costs of having non-taxable federal lands within their jurisdiction, up to a specified maximum amount. This analysis was conducted by first identifying the total number of acres that would change ownership from a fee status to a non-fee status, if any. The number of acres to be placed in a non-fee status within each county were then compared to the current county PILT data maintained by the Washington office of the BLM to determine the amount of PILT funds available for the county, as well as any ceiling limits on PILT funds. An impact was identified if the PILT funds would not be sufficient to replace the current tax revenues.

D9.2.3 Socioeconomic Impacts to the Uintah and Ouray Reservation

Socioeconomic data on conditions on the Reservation is incomplete and outdated, so impacts were assessed qualitatively, relying on professional judgment and evaluations provided by the BIA and others.

Due to high unemployment and relatively low personal income on the Reservation, the assumption was made in the DEIS that if the project generated any economic benefits to the Tribe, this would be considered significant. The FEIS retains this assumption, because unemployment remains a problem for the Tribe even though the recent surge in oil and gas mining has improved the employment situation in the Basin as a whole.

D.10 Public Health and Safety Analysis Methods

D.10.1 Assumptions

The Public Health and Safety section addresses the potential for the LDWP to increase habitat for nuisance and/or potential disease-carrying mosquitoes. There are two parts to this analysis: (1) how the LDWP wetlands would affect mosquito habitats and (2) how the LDWP would control mosquitoes.

D.10.1.1 Mosquito Habitat

The mosquito impact analysis presented in the LDWP FEIS is habitat-based, and focuses on the change in potential mosquito-breeding habitats under both the action and no action alternatives. The following assumptions were made about potential mosquito breeding habitats.

- Habitats with the potential to produce mosquitoes within the Uinta Basin include all habitats in which standing water can collect for a period of more than five to seven days in the summer.
- There are two main mosquito species in the Uinta Basin: *Aedes* (= *Ochlerotatus*) *dorsalis*, a nuisance mosquito, and *Culex tarsalis*, both a nuisance mosquito and a WNV vector. Each mosquito species has different habitat requirements.
- None of the habitats produce solely one type of mosquito (*Aedes* vs. *Culex*) as water level gradients, depressions, edges and other microsites within each habitat affect production and species composition.
- The scale of habitat mapping, as well as the year to year variability in habitat microsites, makes it impossible to quantify the exact number of breeding habitat acres by mosquito species.

- However, the habitats subject to flooding/dry cycles either seasonally (such as wet meadows) or within a given year (such as irrigated grassland) will generally produce more floodwater mosquitoes (*Aedes* [= *Ochlerotatus*] *dorsalis*) and the habitats that contain shallow, standing water for longer durations (such as irrigation ditches and emergent marsh complexes) will generally produce more semipermanent/permanent water mosquitoes (*Culex tarsalis*).
- Baseline and post-project habitats within the project area were identified as described in section D.2. Wetlands and other potential mosquito breeding habitats within the LDWP area of influence were identified through aerial photograph, field inspections, or published documents such as the Utah State Water Plan for the Uinta Basin (DWRe 1999).

D.10.1.2 Mosquito Control

The following assumptions were made about mosquito control:

- Mosquito control is an essential component of the LDWP.
- Mosquito control would continue to occur on lands adjacent to the LDWP by the Mosquito Abatement Districts (MADs) of Duchesne and Uintah counties. Mosquito control within the LDWP boundaries would be implemented by the Tribe according to the Plan described in Appendix G under the Proposed Action, and according to a mixed strategy under the other action alternatives.

D.10.2 Impact Analysis Methods

The first step in the impact analysis was to identify all potential mosquito breeding habitat within the LDWP boundaries based on the project habitat maps. Each habitat was classified according to its dominant hydrologic condition:

- Semi-permanently flooded
- Seasonally, irregularly or periodically flooded
- Not regularly flooded or irrigated.

This classification was based on the groundwater and surface water data collected for the wetland analysis as described in section D.2. All habitats were classified according to a single hydrologic regime. This regime was then used to identify the primary potential mosquito breeding habitat type (and the corresponding primary mosquito species) for each habitat as described in section D.10.1.1. Total baseline acres of potential mosquito-breeding habitat, and habitat by primary mosquito species, were then derived by summing the acres of the individual habitats.

This analysis was conducted both for the entire project area and also just for the Myton residential area. In the case of the Uresk Drain, in which approximately 80 percent of the site is located within 2 miles of Myton, the entire site was included as being within the Myton residential area. Approximately half of the Flume site is within 2 miles of Myton and half farther than 2 miles. Only the portion of the Flume site within 2 miles of Myton was included in the residential analysis for the Pahcease and Topanotes alternatives. Neither the Riverdell North/South or Ted's Flat sites are located within 2 miles of the Myton residential area and therefore were not included in the Myton residential analysis.

There are microsites within any habitat (e.g., depressions, habitat edges, deeper areas, small mounds) that could support both types of mosquitoes, or conversely, neither species. As a result, habitat along a series of detailed, surveyed cross sections was also classified in a similar manner as the large-scale habitat maps. Because the number of cross sections was limited, the data from the cross sections were used primarily to interpret the habitat summary derived from the large-scale maps. This type of interpretation was useful in addressing small scale items, such as how edge habitat would change with expansion of wetlands or how increased open water within an individual wetland would affect mosquito habitat. The cross section data was summarized according to (1) overall patterns within oxbows and (2) overall patterns within large wetlands such as the Uresk Drain.

The next step in the analysis was to identify how the hydrology, and therefore the potential mosquito breeding habitat would change under the project conditions using both the large scale habitat map and the surveyed cross sections. Each habitat was then reclassified as to its new potential to produce mosquitoes. The net change in potential mosquito habitat was derived from the difference between the baseline and post project habitats.

The net change in mosquito habitats within the project area was subsequently compared to the regional extent of mosquito habitats for further perspective on the overall habitat change within the Uinta Basin. Habitat results were presented for both local and regional impacts.

Finally, the mosquito control plan as outlined in Appendix G and the Operating Agreement and Management Plan framework (as outlined in chapter 2, sections 2.1.4.3, 2.1.4.4 and 2.1.4.5 and corresponding sections from the Pahcease and Topanotes alternatives) was compared to the existing mosquito control strategies for the lands within the LDWP boundaries to identify what changes in mosquito control would occur under the Proposed Action and alternatives. This analysis was done qualitatively.

D.11 Recreation Analysis Methods

D.11.1 Assumptions

Baseline recreation conditions were obtained by interviewing personnel of the Fish and Wildlife Department of the Ute Indian Tribe, members of the Tribe and management personnel of the Utah State Division of Wildlife Resources regarding recreation at Mallard Springs. It is assumed the

information gathered from these interviews regarding recreation within the project area most accurately reflects the recreation resources within the project area at this time.

D.11.2 Impact Analysis Methods

Potential changes in recreation were evaluated by comparing the present level with the projected level of recreation use within the project area. Since quantitative data were not available for either present or projected level of use, qualitative information was used in conjunction with other attributes of the project area to estimate potential changes in recreation opportunities. These include the qualitative information gathered from interviews regarding present recreation use and Tribal goals for the project area, the rules and regulations regarding non-Indian access to Tribal Trust lands and the changes in parking accommodations within the project area.

D.12 Transportation Analysis Methods

D.12.1 Assumptions

The transportation analysis assumed that U.S. Highway 40, which is the main arterial route through the Uinta Basin, would be the primary route used by construction workers, management, equipment, and material transporters to reach the general project area around the town of Myton. There are other less-traveled roads in the impact area as well, such as River Road, 1000 West and 8000 South, but use of these roads would be intermittent and unpredictable. Accordingly, Level of Service impacts to these roads were evaluated qualitatively, but not quantitatively.

Nearly all workers and supervisory personnel are expected to be hired from communities within the impact area. Although there is a possibility of carpooling, a “worst case analysis” was used, assuming that there would be one construction worker per vehicle. There was no attempt to evaluate whether personnel on the project might be commuting on these same roads to other employment in the absence of the project. The majority of construction materials and other supplies will come from within the impact area and, if necessary, will be scheduled to avoid peak traffic conditions. However, for the analysis, construction deliveries were added to the total number of worker vehicular trips during peak periods on U.S. 40.

Traffic statistics were available only for segments of U.S. 40, and were taken from the Traffic Book 2006, compiled by the U.S. Department of Transportation. Baseline traffic volumes and road conditions for other roads in the area were evaluated through conversations with employees of the local highway departments.

D.12.2 Impact Analysis Methods

The impact analysis for the local road network relied on the “Level of Service” (LOS) methodology developed for highway engineers. Highway segments were given one of five different ratings from A to E, depending on traffic volumes, vehicular speed, passing frequency, and other parameters.

The analysis assumed that traffic increases generated by the project would be significant only if they caused a particular highway segment to fall into a lower LOS classification.

Various construction, management, and maintenance activities, as well as material deliveries, were identified to predict the number of daily vehicle trips these activities would generate during different phases of the project. This data was evaluated to determine what phase of the project would likely generate the greatest amounts of traffic, as well as the time of day when that traffic would occur.

Peak traffic estimates generated by the project were subsequently compared to traffic volumes on U.S. 40 to determine whether the project would cause a change in the LOS. Although daily traffic data is available for Highway 40, there is no time-of-day data available to evaluate morning and evening peak flows. Accordingly, local highway officials were consulted to evaluate what portion of the daily traffic volume occurs during the peak hours between 4 and 6 p.m. The maximum number of daily trips generated by the project was then added to estimated high volume flows which occur on Highway 40 during the evening peak.

Impacts to smaller roads in the area were assessed qualitatively with input from local highway officials. Standard Operating Procedures (SOPs) for the project, such as a requirement to repair any highway damage caused by the project, were also taken into account in this evaluation.

Operational impacts to local roads were evaluated by first reviewing the area in which the wetlands and associated open water surface water would occur based on the LDWP habitat maps and treatment prescriptions. Secondly, the area in which any additional rise in ground water could occur was identified, as described in section D.5.2. Finally, all paved roads adjacent to or traversing the proposed wetlands were examined and the road base type and depth, presence of road drainage ditches, and the presence and size of culverts noted. Impacts to local paved roads were identified if wetland operation would cause water to pond against the road or if the ground water table could rise to a level that could affect the road structure.

D.13 Air Quality Analysis Methods

D.13.1 Assumptions

Typical emission factors defined by the U.S. Environmental Protection Agency (EPA) were used to represent emissions during construction of the Proposed Action and alternatives. A worst-case scenario was used in which all equipment that would feasibly be used on the project at one time would be running continuously eight hours per day for a nine-month period.

D.13.2 Impact Analysis Methods

The Uinta Basin's status as an attainment area was confirmed and applicable air quality standards defined by contacting the Utah Air Quality Board. Information concerning construction procedures, schedules and equipment was provided by the project feasibility design team and summarized in chapter 2 of this FEIS. Typical EPA emission factors were defined and applied to determine the

maximum emissions that would occur during construction over a one-year period. The projected air quality impacts of the project were reviewed to determine if the maximum allowable limits for attainment areas would be exceeded.

Results of the recreation and transportation impact analysis were used to assess potential air quality impacts related to the recreation impacts of the Proposed Action and alternatives. Unlike construction-related air quality impacts, these would not be subject to air quality regulations.

The proposed construction procedures and related SOPs were reviewed to assess the potential for dust impacts or emissions during construction.

D.14 Noise Analysis Methods

D.14.1 Assumptions

The noise impact analysis assumed that typical noise levels associated with construction activities during the Proposed Action and alternatives would be the same as those defined in the Handbook of Noise (EPA 1979), which in turn presumes that all noise mufflers on equipment are functioning properly. The analysis also assumed that sensitive receptors (locations especially susceptible to noise impacts, such as schools, hospitals, nursing homes and residences) would be in the same location when considering either baseline or proposed conditions.

D.14.2 Impact Analysis Methods

Proposed construction procedures were reviewed to identify activities that would generate noise. Typical construction noise levels were defined by project engineers. Project maps were reviewed to determine the proximity of any sensitive receptors that may be affected by noise generated by construction activities. Noise significance criteria were based on studies by the EPA (1971) and CEQ (1970). Projected noise levels generated by the Proposed Action and alternatives were compared to these criteria to determine the potential for significant noise impacts.

D.15. Cultural Resources Analysis Methods

D.15.1 Assumptions

The cultural resources analysis assumed that research and limited field assessment sampling of the impact area of influence in the Duchesne River corridor would provide sufficient data to conduct the impact analysis for this document. The analysis also assumed an intensive cultural resources survey would be conducted in areas that would be disturbed by construction before beginning work. A Programmatic Agreement (PA) has been developed among the project partners and the SHPO to guide the intensive cultural resources survey and documentation of survey results.

D.15.2 Impact Analysis Methods

Analysis of potential impacts on cultural resources is based on research from pre-existing historical and prehistorical data for the impact area of influence. The research was conducted in July and August 2002 and the following major data sources were consulted for the Class I Inventory:

- Internet search of the BLM General Land Office records for Land Patents
- General Land Office plats for the townships contained within the project area, on microfilm at the BLM, Utah State Office Public Room
- Site file search at the Division of State History, Antiquities Section
- Internet search of the National Register of Historic Places (NRHP)

Baseline conditions were defined based on the results of the Class I survey. The location of features identified during the survey were plotted in relation to specific construction features, including locations of berms, intensive planting areas and areas subject to inundation to identify if any known cultural resources would be impacted by the project.

The Tribe reviewed the Tribal database to identify if there were any traditional or religious use areas within the LDWP project areas that would require further documentation or research.

APPENDIX E

CORRESPONDENCE FROM FWS REGARDING THREATENED AND ENDANGERED SPECIES

Please refer to the Final EIS and Fish and Wildlife Coordination Act Report for more complete descriptions of the biology, ecology and ranges of these species, and a discussion of project effects.

The updated (December 2006) species list follows:

Duchesne County, Utah

| | | |
|---|------------------------------------|---|
| Bald Eagle ► * | <i>Haliaeetus leucocephalus</i> | T |
| Barney Ridge-eress | <i>Lepidium barnebyanum</i> | E |
| Black-footed Ferret ◀ ▲ | <i>Mustela nigripes</i> | E |
| Bonytail ◎ ± | <i>Gila elegans</i> | E |
| Canada Lynx | <i>Lynx canadensis</i> | T |
| Colorado Pikeminnow ◎ ± | <i>Ptychocheilus lucius</i> | E |
| Humpback Chub ◎ ± | <i>Cila cypha</i> | E |
| Mexican spotted owl (suitable habitat occurs in Southern Duchesne County, including Nine-Mile & Argyle Canyon) | <i>Strix occidentalis lucida</i> | T |
| Razorback Sucker ◎ ± | <i>Xyrauchen texanus</i> | E |
| Shrubby Reed-mustard | <i>Schoenocrambe suffrutescens</i> | E |
| Uinta Basin Hookless Cactus | <i>Sclerocactus glaucus</i> | T |
| Ute Ladies'-tresses | <i>Spiranthes diluvialis</i> | T |
| Yellow-billed Cuckoo ☞ | <i>Coccyzus americanus</i> | C |

Uintah County, Utah

| | | |
|-----------------------------|--|---|
| Bald Eagle ► | <i>Haliaeetus leucocephalus</i> | T |
| Black-footed Ferret ◀ | <i>Mustela nigripes</i> | E |
| Bonytail ◎ ± | <i>Gila elegans</i> | E |
| Canada Lynx | <i>Lynx canadensis</i> | T |
| Clay Reed-mustard | <i>Schoenocrambe argillacea</i> | T |
| Colorado Pikeminnow ◎ ± | <i>Ptychocheilus lucius</i> | E |
| Humpback Chub ◎ ± | <i>Gila cypha</i> | E |
| Mexican Spotted Owl ◎ | <i>Strix occidentalis</i> | T |
| Razorback Sucker ◎ ± | <i>Xyrauchen texanus</i> | E |
| Shrubby Reed-mustard | <i>Schoenocrambe suffrutescens</i> | E |
| Uinta Basin Hookless Cactus | <i>Sclerocactus glaucus</i> | T |
| Ute Ladies'-tresses | <i>Spiranthes diluvialis</i> | T |
| White River Beardtongue | <i>Penstemon scariosus var. albifluvis</i> | C |
| Yellow-billed Cuckoo ☞ | <i>Coccyzus americanus</i> | C |

SYMBOLS:

- * Nests in this county of Utah
- © There is designated critical habitat for the species within the county
- ü Migrates through Utah, no resident populations
- ▶ Wintering populations, only eight known nesting pairs in Utah
- ▼ Critical habitat proposed in this county
- ◀ Historical range
- ▲ Experimental non-essential population
- # Introduced, refugia population
- Ж "Western" Yellow-billed Cuckoo = distinct population segment in Utah
- ± Water depletions from any portion of the occupied drainage basin are considered to adversely affect or adversely modify the critical habitat of the endangered fish species, and must be evaluated with regard to the criteria described in the pertinent fish recovery populations.

Effects Determination The following determination only pertains to the Proposed Action as described in the Final EIS. Most species occur in both Duchesne and Uintah Counties. "D" identifies a Duchesne County occurrence; "U" identifies a Uintah County occurrence.

Bald eagle (D,U) The bald eagle is a threatened species that occurs within the project area, however it is primarily a winter resident and no nests are known to occur within or near proposed project features. There is a possibility of some temporary disturbance of winter visitors during construction but overall the species is expected to greatly benefit from the restoration of riparian forest habitat and the increase in open marsh habitat.

Black-footed ferret (D,U) The project area is within historical but not currently occupied range for this endangered species only. An experimental non-essential population of ferrets has been introduced in eastern Utah outside the project area. No effects on the species from the LDWP are anticipated.

Canada Lynx (D,U) The Canada lynx (North American lynx) is limited to boreal forest with cold winters and deep snow. It is a highly specialized predator on the snowshoe hare. Abundant hares are necessary to support a lynx population. There have been only 10 verified lynx records in Utah since 1916, nearly all for the Uinta Mountains along the Wyoming border. There is no evidence of lynx reproduction in Utah and all occurrences are deemed to be dispersers, not resident animals. The LDWP project area does not contain any boreal forest habitat and the project is well south of the Uinta Mountains where such habitats might occur.

Bonytail (D,U) The bonytail is an endangered fish of the Colorado and Green River basins. It does not occur in the Duchesne River within the project reach. Because the project does not alter the flow regime of the Duchesne River, no effects are anticipated.

Colorado pikeminnow (D,U) Entrapment of the endangered Colorado pikeminnow with project oxbows is possible at the Riverdell and Ted's Flat sites but is not expected to be an impact because studies have shown that the Colorado pikeminnow is not a species prone to entrapment. Adult fish appear to leave flooded areas once the water starts to recede (T. Modde, pers. commun.).

Humpback chub (D,U) The humpback chub is an endangered fish that occupies the deep, slower eddies and pools of the Colorado and Green River basins. It does not occur in the

Duchesne River within the project reach and since the project will not alter the flow regime of the Duchesne River, no effects are anticipated.

Mexican spotted owl (D,U) The most significant Utah population of this threatened owl species appears to occur in Zion National Park, although surveys from 1987-90 have noted birds as far north as the Manti-La Sal National Forest. Current surveys show 28 pairs + 19 single birds in Utah. The bird uses primarily forested mountains and canyons containing dense, closed canopy, uneven-aged, mixed conifer communities. Distinct “mature forest” characteristics are most favorable habitat. The bird commonly roosts in canyon bottom riparian zone habitats, and on ledges and cavities in canyon walls. In Utah the bird may occur year-round at 4,400 – 6,800 feet elevation. Suitable habitat occurs in Nine-mile Canyon and Argyle Canyons in Duchesne County. The Fish and Wildlife Service determined that Critical Habitat was not determinable for this species (58 FR 14248). Suitable habitat does not occur in the project area, therefore no effects are anticipated.

Razorback sucker (D,U) Razorback suckers, endangered fish species, have recently been caught in the Duchesne River up to river mile 12, approximately 2 miles downstream from the project area. In 2003 researchers did not observe any razorback suckers in the Duchesne River above the reach that is influenced by the Green River and concluded this was the only reach of the Duchesne River used by razorback suckers. The lower 2.5 miles, about 12 miles downstream from the project area, is designated as critical habitat under the Endangered Species Act. Because the LDWP will not alter flow regimes in the Duchesne River, no effects on the species are anticipated.

Shrubby reed-mustard (D,U) (Also known as the genus *Schoenrambe*, toad-flax cress.) This account is taken largely from the Federal Register listing notice (52 FR 37416). This endangered plant species is endemic to Uinta basin in eastern Uintah and Duchesne Counties. Habitat for the species appears to be calcareous shale stratum underlain by oil shale deposits. Habitat for this species is distinct knolls or ledges resembling small, extremely dry desert islands.

There are nine known populations of the species totaling about 3,000 individuals. Two main populations are near one another in eastern Uintah County. One is between Green River and Hill Creek and the other between Hill Creek and Willow Creek (Little and Big Pack Mountains). A third population is about 20 miles west in Duchesne County.

Reasons for decline of the species are unknown but may be attributable to building stone removal, overgrazing and/or oil and gas development.

The LDWP is approximately 35 miles northeast of the nearest known population of the mustard. Moreover, habitats for the species do not appear similar to those existing in the project area. While oil and gas potential may exist in the LDWP project area, it is not known for oil shale deposits or described as having such potential. Thus we conclude the project will not adversely affect the shrubby reed-mustard.

Clay Reed-mustard (U) This threatened species is endemic to clay soil types rich in gypsum. The only two known clusters of the population are found between the Green River and Willow Creek in southwest Uintah County. The habitats for this plant are vulnerable to oil and gas and

oil shale development in eastern Utah and western Colorado. The known locations for this plant are well to the east of the LDWP project area. Moreover, soil types unique to this species are not found within the project area.

Uinta Basin hookless cactus (D,U) The threatened Uinta Basin hookless cactus usually occurs between 4,500 and 5,900 feet in elevation on coarse gravelly or rocky deposits on south facing slopes. The only known population exists on the Riverdell North property. This property would only be included within the Pahcease Alternative, not the Proposed Action. Suitable habitat may also occur on portions of the Uresk Drain and Ted's Flat parcels although no populations have been identified. Soils suitable for this species are not compatible with the development of wetland or riparian habitats and so no suitable habitat will be adversely affected.

Ute ladies'-tresses orchid (D,U) Ute ladies'-tresses orchid is a threatened species that occurs throughout the Uinta Basin. The nearest known population of the species exists along the Duchesne River approximately 20 miles upstream from the project area. No Ute ladies'-tresses were found in the project area and suitable habitat is quite limited due to the high clay content of the underlying soils. However, surveys will be conducted at potentially suitable sites prior to construction activities and the FWS will be notified immediately if the species is found. No adverse effects on the species are anticipated.

Barneby ridge-crest (D) This endangered plant species is known from one small, limited population in Duchesne County. It occurs on marly shale barrens near Indian Creek Canyon three miles south of Starvations Reservoir and the town of Duchesne, Utah. The occupied habitat is less than 500 acres. Uncontrolled off-road vehicle use and oil/gas developments have potential to affect species. The nearest unit of the LDWP is near Myton, Utah, about 18 miles east of Duchesne. Soil and habitat types in the project area do not correspond with those favored by the species and it would not be expected to occur in the project area. Thus no effects on the species are anticipated.

White River beardtongue (U) White River beardtongue, a candidate species, is found on sparsely vegetated shale slopes of the Green River Formation at 5,000 to 7,000 feet elevation. The current known range extends in a band about 6 miles wide and 20 miles long from the vicinity of the White River between Ignatio and the Colorado State line then south for approximately 20 miles and in Colorado at the southern end of Raven Ridge west of Rangely Colorado. Suitable habitat is raw, shale knolls and slopes derived from Green River Geologic formation. The plant appears to grow only on surface exposures of the richest oil shale bearing strata of the Mahogany ledge and associated strata. Suitable soils are thin, highly basic clays that overlie thinly bedded parent shales that are organically rich in kerogen (oil shale precursor). Moreover, it is associated with a suite of species adapted to xeric growing conditions on highly basic, calcareous shale soils. Thus, the plant is primarily vulnerable to oil shale and tar sands exploitation.

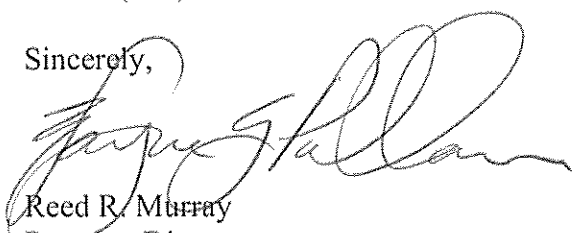
Suitable habitat does not occur for the beardtongue within the project area which is dominated by Duchesne River floodplain alluvial soils. Oil shale/tar sands deposits are not known to be in the project vicinity. The nearest known occurrence of the species is over 50 miles east of the project. Therefore, no effects on this species are expected.

Yellow-billed cuckoo (D,U) The yellow-billed cuckoo is a candidate species with potential habitat within the project area although no individuals have been observed. The yellow-billed cuckoo needs tall large canopy tree cover with dense understory. One of the project objectives is to create and restore such areas and it is anticipated that the project will provide permanent benefits for this species.

We request your concurrence that the Lower Duchesne River Wetlands Mitigation Project proposed action alternative may affect but is not likely to adversely affect the bald eagle, Colorado pikeminnow, Uinta Basin hookless cactus, or Ute ladies'-tresses.

For further discussion please call Ralph Swanson at (801) 379-1254.

Sincerely,




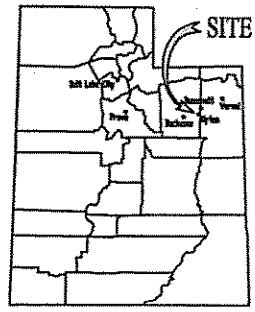
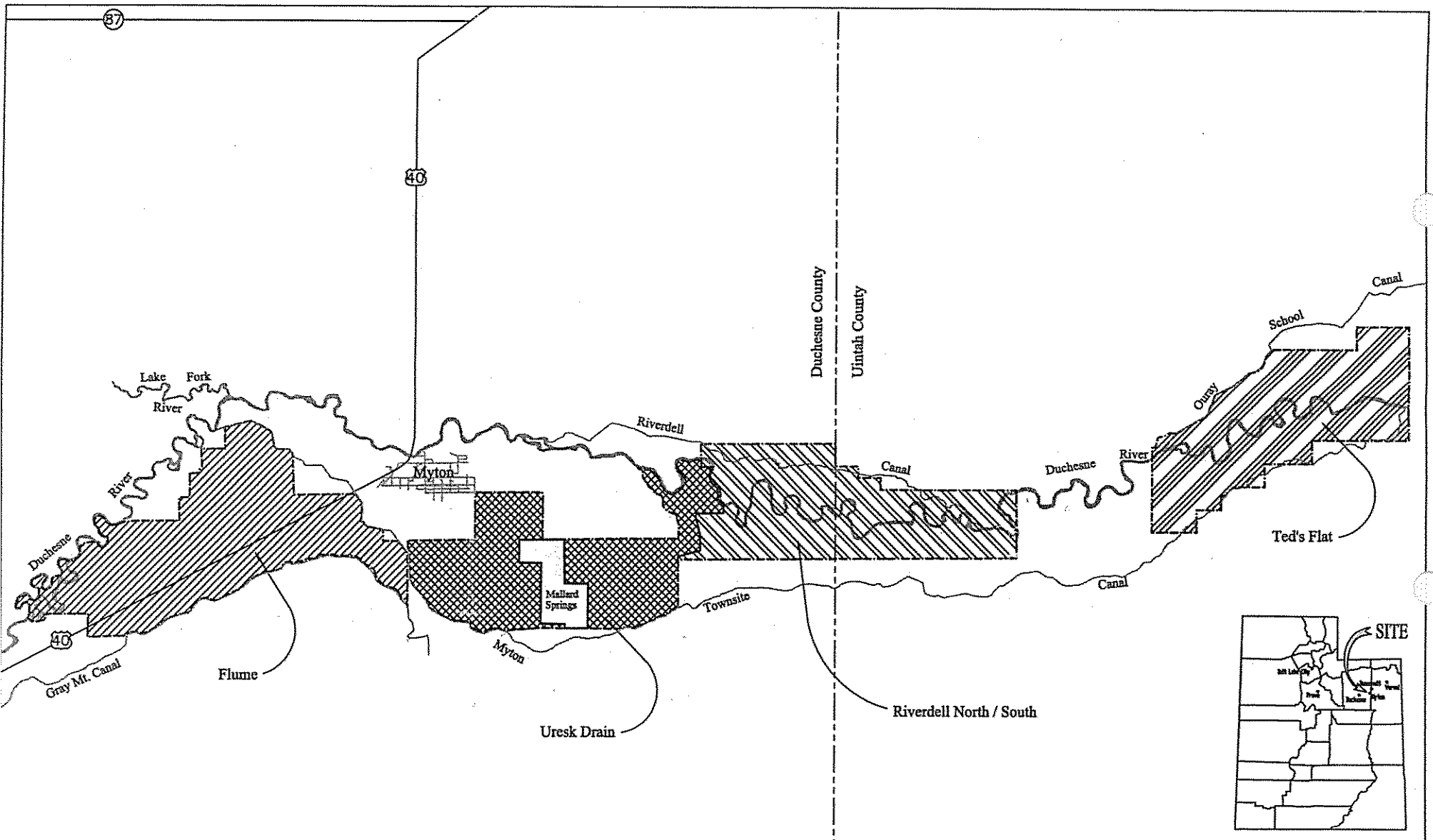
Reed R. Murray
Program Director

ACTING FOR

Attachment

cc: Utah Reclamation Mitigation and Conservation Commission, 230 South 500 East,
Suite 230, Salt Lake City, UT 84102
Ute Indian Tribe, Wisiups Wetlands Office, P.O. Box 190, Fort Duchesne, UT 84026
Mr. Leslie Gecy, Western Wetland Systems, 13740 Red Fox, Baker, OR 97814

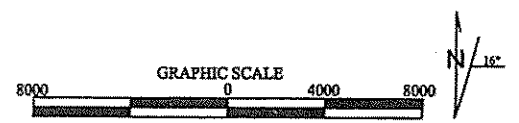
| | |
|---|---------------------------------------|
| <input type="checkbox"/> | Concur No Effect |
| <input checked="" type="checkbox"/> | Concur Not Likely to Adversely Affect |
| <input type="checkbox"/> | No Comment |
|  | |
| | Utah Field Supervisor |
| | Date <u>2/7/07</u> |



LEGEND

| | |
|--|--------------------|
| | Site Boundary |
| | Major Roads |
| | Rivers |
| | Streams and Canals |
| | County Boundary |

Figure 1-2. Sites Included in the Proposed Action and Alternatives



APPENDIX F

**CULTURAL RESOURCES
PROGRAMMATIC AGREEMENT**

PROGRAMMATIC AGREEMENT FOR THE
PROTECTION AND PRESERVATION OF CULTURAL RESOURCES
LOWER DUCHESNE RIVER WETLANDS MITIGATION PROJECT

UTAH RECLAMATION MITIGATION AND CONSERVATION COMMISSION
U.S. DEPARTMENT OF THE INTERIOR
UINTAH AND OURAY UTE INDIAN TRIBE
AND THE
STATE of UTAH HISTORIC PRESERVATION OFFICE

WHEREAS the Utah Reclamation Mitigation and Conservation Commission (Commission) and the Department of the Interior (Department) propose to partially mitigate for the impacts on wetlands and associated wetland-wildlife resources resulting from construction and operation of the Strawberry Aqueduct and Collection System (SACS) by restoring, creating, and enhancing wetland and riparian habitat along the Duchesne River. This undertaking is described in the Uintah and Ouray Lower Duchesne River Wetlands Mitigation Project (LDWP) Final Environmental Impact Statement (2007) and in the Class I Overview prepared by Alpine Archeological Consultants (Chandler and Berry 2002); and

WHEREAS the Commission is the lead Federal agency in the Project for purposes of compliance with Section 106 of the National Historic Preservation Act as amended (16 USC 470) in cooperation with the Department, and the Uintah and Ouray Ute Indian Tribe (Ute Tribe); and

WHEREAS the Commission has established the area of potential effects (APE) for the LDWP as the lands shown on the attached map; and

WHEREAS the effects on historic properties cannot be fully determined prior to approval of this undertaking and the parties have determined that a Programmatic Agreement (PA) is the most appropriate vehicle to address cultural resource concerns pursuant to 36 CFR 800.14(b)(1)(ii).; and

WHEREAS pursuant to 36 CFR 800.6(c)(2) the Commission has invited the Ute Tribe to sign this Programmatic Agreement, because the Ute Tribe will own and manage the project lands and the Ute Tribe has historical ties and potential traditional cultural properties within the APE; and

WHEREAS the Commission has consulted with the Cultural Rights and Protection Department Director for the Ute Tribe and they have verified that no traditional cultural properties or sacred sites have been identified within the APE; and

WHEREAS the Advisory Council on Historic Preservation has been invited to participate in this agreement pursuant to § 800.14(b) of the National Historic Preservation Act;

NOW, THEREFORE, the Commission, the Department, the Ute Tribe, and the SHPO agree that the following stipulations will be implemented in order to take into account the effects of the Project on historic properties, and that these stipulations shall govern the Project until this PA expires or is terminated.

PROJECT BACKGROUND

The LDWP consists of the acquisition of approximately 1,592 acres of private lands and the lease of approximately 3,215 acres of Ute Tribal lands for a total project area of 4,807 acres. Wetlands and riparian habitats within the project area would be restored by:

- Rewatering abandoned oxbows by re-connecting them to their active floodplain.
- Enhancing water quality in oxbows that receive agricultural return flows.
- Filling drainage ditches to create large marsh complexes.
- Replanting riparian areas and adjacent uplands with native woody trees and shrubs and removing non-natives invasive species.
- Changing land management practices to enhance wetland and wildlife habitats.

Private lands acquired for the project by the United States would be transferred to the Ute Tribe.¹

STIPULATIONS

1. The Commission and the Ute Tribe shall insure that intensive cultural resource inventories shall be completed in accordance with the Secretary of the Interior Standards and Guidelines prior to ground disturbing activities on the following project lands. Inventories may be completed all at one time or over a period of time as the project is phased in over a period of years.

- All private lands acquired by the United States to be transferred to the Tribe.
- All LDWP lands, including Tribal Trust lands and Allotted Lands that will be physically disturbed by project activities. For the purposes of this agreement, the removal of non-native species, planting of native species and changing land management practices (grazing and cropping) are not considered ground disturbing activities because such activities will be confined to hand removal, chemical treatment, mowing with light equipment, and burning at a low temperature. If the Ute Tribe proposes methods for the removal of non-native vegetation with potential impacts greater than those described above, such as bulldozing or chaining, then they will first consult with the State Historic Preservation Office regarding mitigation of potential impacts. The Ute Tribe

¹ If private lands needed for the project cannot be acquired on a willing seller basis and are acquired through the Federal authorities of condemnation, then the property would remain in the name of the United State. Such acquisitions are anticipated to be rare.

shall be consulted prior to the removal of plants to determine if they are culturally significant to the Tribe. The removal or modification of plants, landforms or other objects for the project shall be at the discretion of the Ute Tribe.

2. The Commission and the Ute Tribe shall insure that a final report on the inventory and evaluation of historic properties, prepared in accordance with the Secretary of the Interior Standards and Guidelines and containing all supporting documentation shall be submitted to the Utah SHPO and the Uintah and Ouray Ute Indian Cultural Rights and Protection (CR&P) Office in a form acceptable for inclusion in SHPO and Tribal records. Intermountain Antiquities Computer System (IMACS) or Historic Building forms, acceptable to the SHPO and the CR&P Office and containing high-quality photographs, shall be filed with the SHPO and the CR&P Office in hard copy format. The necessary encoding sheets shall be completed and filed for inclusion in the statewide database.
3. The Commission, in consultation with the Ute Tribe, shall make a finding to the SHPO as to the eligibility of the inventoried properties to the National Register of Historic Places and a determination of effect of the undertaking on eligible properties. The Commission shall submit the finding and determination to the SHPO for their review and comment following 36CFR800.4 and 36CFR800.5 as applicable.
4. If effects are determined to be adverse, the Commission, in consultation with the Ute Tribe and SHPO, shall ensure that a comprehensive Treatment Plan that will address adverse effects of the proposed undertaking on eligible properties be prepared and implemented. The Treatment Plan shall identify the nature of the effects to which each historic property will be subjected and the treatment strategies proposed to avoid, minimize or mitigate the adverse effects of the undertaking. The Treatment Plan shall also include a monitoring plan.
5. The Commission and the Ute Tribe shall ensure that all work carried out pursuant to this MOA is carried out by or under the direct supervision of a person or persons meeting, at a minimum, the Secretary of the Interior Professional Standards for Archaeology (48 FR 44739).
6. Any party to this PA may propose to the Commission that the PA be amended, whereupon the Commission and the Ute Tribe shall consult with the other parties to consider such an amendment.
7. If either the Commission or the Ute Tribe determines that it cannot implement the terms of this PA, or if the SHPO determines that the PA is not being properly implemented, the Commission, SHPO, or Ute Tribe may propose to the other parties that the PA be terminated. The party proposing termination shall so notify all other parties, explaining the reasons for termination and affording them at least 30 days to consult to try and resolve any objections or seek alternatives prior to termination. Should the consultation fail, any of the parties may terminate the PA by notifying all other parties in writing. Upon termination, the Commission and the Ute Tribe shall either consult in

accordance with 36 CFR 800 to develop a new PA, or request the comments of the Advisory Council on Historic Preservation.

Execution of this PA by the parties hereto and implementation of its terms, evidence that the Commission has considered the impacts of the undertaking on eligible resources and has afforded others with the opportunity to comment. The Commission shall comply with the regulations outlined in 36 CFR Part 800 -- Protection of Historic Properties, whether specifically included in this agreement or not.

UINTAH AND OURAY AGENCY UTE INDIAN TRIBE

By: Cynthia Crosspoint Date: 6/21/07

UTAH RECLAMATION MITIGATION AND CONSERVATION COMMISSION

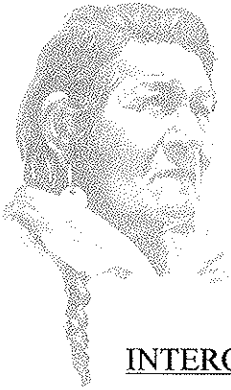
By: [Signature] Date: 6/27/07

DEPARTMENT OF THE INTERIOR

By: [Signature] Date: 5/29/07

STATE of UTAH HISTORIC PRESERVATION OFFICER

[Signature] By: [Signature] Date: 5-17-07



UTE INDIAN TRIBE


UINTAH AND OURAY AGENCY

P.O. Box 190
Fort Duchesne, Utah 84026

In Reply:

INTEROFFICE MEMORANDUM

TO: Ronald A. Groves, LDWMP Manager Director

FROM: Betsy L. Chapoose, Cultural Rights and Protection Director 

DATE: March 28, 2002

SUBJECT: Cultural and Archeological Background Review

I have reviewed the land located within your proposed project areas. At this time there are no cultural resources that will be impacted. As with all land disturbing project we ask that this department be notified in the event that any cultural resources are located and that all construction stop until a plan of action can be implemented. We will respond as quickly and appropriately as possible. If you have further questions I can be contacted at my office, 722-4992.

Bc

Cc: LDWMP File

APPENDIX G
MOSQUITO CONTROL PLAN

APPENDIX G: LDWP MOSQUITO CONTROL PLAN

G.1 Introduction

Mosquito control is an essential component of the LDWP and will be implemented for this project by Tribal mosquito control personnel. The LDWP would follow an Integrated Pest Management (IPM) approach to mosquito control that would be consistent with the mosquito control measures recommended by the US Center for Disease Control (CDC). According to the CDC,

“Prevention and control of arboviral diseases is accomplished most effectively through a comprehensive, integrated mosquito management program using sound integrated pest management (IPM) principles. IPM is based on an understanding of the underlying biology of the transmission system, and utilizes regular monitoring to determine if and when interventions are needed to keep pest numbers below levels at which intolerable levels of damage, annoyance, or disease occur. IPM-based systems employ a variety of physical, mechanical, cultural, biological and educational measures, singly or in appropriate combination, to attain the desired pest population control.” (CDC 2003, p.27).

The CDC recommends that mosquito control plans address the following elements:

Ecological Monitoring

- Ecological Surveillance (Mosquito and intermediate host monitoring)

Control Measures

- Physical Control measures
- Chemical Control Measures
- Biological Control Measures

Education

- Education
- Personal protection

Emergency Management/Phased Approach

- Vector Management in Emergencies
- Development of a Phased Control Approach to WNV Surveillance Data

The mosquito control plan listed below addresses each of these recommended plan elements and how they would be implemented for the LDWP.

Although the LDWP would increase wetlands (see sections 4.2 and 4.10), is anticipated that the increased ecologic surveillance, habitat monitoring, water quality improvement and the potentially increased use of larvicides within the project area, as outlined under this plan, would contribute to a greater level of mosquito management and control than currently exists in the project area. Under this plan, routine coordination and consultation between the Ute Tribe mosquito control personnel and the MADs of Duchesne and Uintah counties would occur, making use of technical assistance, training and advice offered to the Tribe by the MADs.

G.2 Ecologic Monitoring

Detection of WNV activity in bird and mosquito populations on an annual basis is the first component of the LDWP mosquito control plan, which is consistent with the CDC (2003) recommendation that “effective mosquito control begins with a consistent surveillance program that targets pest and vector species ... and documents the need for control.” Even though WNV is present in the Uinta Basin, ongoing annual monitoring will serve to (1) identify infection levels and risks on an annual and intraseasonal basis, (2) evaluate the effectiveness of mosquito control measures, and (3) determine if a higher or different mosquito control response level is necessary (see section G.5).

Under the LDWP, there would be two monitoring components:

- Monitoring of WNV activity of birds (Avian monitoring), and
- Mosquito monitoring.

Each component is described separately below.

G.2.1 Avian Monitoring

Wild Bird Mortality

The detection of high levels of WNV within birds generally precedes reports of human cases and can be used to estimate annual human risks within a localized region. The LDWP would document all dead bird observations made during project bird surveys. A subset of dead birds would be

collected and submitted to the DWR for WNV testing. Birds would be handled according to the most current CDC protocols for worker safety.

It is important to note that birds are highly mobile so that the site of death is often distant from the site of infection. As a result, the WNV test results from any dead birds found within the LDWP could only be used to identify the general local infection rates, which would not be specific to the LDWP project area. The influence of the LDWP on avian mortality would not be discernible from the adjacent Mallard Springs wetlands, irrigation ditches, flood irrigated pastures and other local mosquito breeding sources during this monitoring.

Live Bird Monitoring

Live bird surveillance is the traditional method used to detect and monitor viral activity during each growing season. In this method, sentinel chickens are kept outdoors where they are subject to mosquito bites. Poultry are effective sentinels as they can be infected by WNV (and are infected earlier than mammals), but are neither affected by the virus nor able to develop sufficient viremia to re-infect a mosquito and perpetuate the virus life cycle. Blood drawn from captive chickens is then analyzed to determine blood virus levels.

One advantage of using the caged sentinel chickens is that it helps detect focal transmission and that it is a flexible system that can be expanded or contracted as necessary. As for the dead bird monitoring, the influence of the adjacent Mallard Springs wetlands, irrigation ditches, flood irrigated pastures and other local mosquito breeding sources would need to be addressed in evaluating results, especially for any sentinels near Myton.

The MAD of Duchesne County currently maintains two sentinel chicken flocks near Myton. Under the LDWP, the Tribe would obtain periodic updates from the MADs regarding the level of viral activity identified in the existing sentinels. If necessary, the Tribe would also work with the county MADs to place sentinel chickens within or adjacent to the project area for periodic blood testing.

G.2.2 Mosquito Monitoring

The LDWP would follow the WNV mosquito monitoring guidelines and program guidelines identified by the CDC (2003)

“While dead-based bird surveillance has proven to be the most sensitive method of detecting WNV presence in an area, mosquito-based surveillance remains the primary tool for quantifying the intensity of virus transmission in an area, and should be a mainstay in most surveillance programs for WNV and other arboviruses.” (CDC 2003, p15)

The LDWP mosquito monitoring would primarily rely on larval monitoring using standard mosquito dip samplers in representative habitats. The larval sampling would be conducted by the Tribe with samples analyzed as to species identification, classification into vector vs non-vector species groups and life cycle stage

Additionally, the Tribal mosquito staff would coordinate with and obtain updates from the county MADs regarding the results of their adult mosquito light trap monitoring. These traps are used by the MADs to catch flying mosquitos, with the results used to determine adult mosquito densities and the level of WNV activity within adult mosquitoes.

This data, along with the avian surveillance data, would be used to evaluate the effectiveness of the overall control program on an ongoing basis, to identify specific actions to be taken during the season and to set Action Thresholds (see section G.5).

G.3 Control Measures

G.3.1 Physical Measures

There are a number of physical measures that can be used to reduce mosquito breeding habitat (i.e., source reduction techniques) that are appropriate for use in or near wetlands. The CDC lists two general source reduction types: (1) sanitation or cleaning of human by-products that can contribute to mosquito habitat, and (2) water management. Specific measures that may assist in wetland source reduction include:

- Increasing interspersation of open water with emergent marsh which allows greater access for mosquito control and reduces breeding/hiding habitat
- Increasing open water depth and incorporation of plant-free zones which provide habitat for predacious aquatic insects and salamander larvae
- Restoration of a healthy aquatic food chain
- Use of a flow-through system. “The flow of water through a wetland (and its related volumetric turnover rate) will help reduce mosquito production ... not by flushing out the larvae per se, but rather through helping to eliminate the accumulation of stagnant, organically-rich waters that attract standing water mosquitoes such as Culex, and to maintain good water quality (e.g., high oxygen levels, removal of toxic metabolites) to ensure survival of mosquito-larvae predators.” (Meredith and Walton 2005).
- Improving water quality as there are numerous correlations between increased mosquito production and poor water quality, especially water high in organic material, low in DO, high temperatures; additionally, the effect of larvicides on mosquitoes can be reduced in areas of low water quality
- Site selection “Sites with a pre-existing land use that is favorable for mosquito production should be ranked higher for selection [for wetlands] than sites without existing mosquito problems. ... This will result in the lowest net effect of the project on increasing mosquito populations” (Knight et al 2003).

These measures have been incorporated into the LDWP design, particularly the selection of sites in areas with “pre-existing land uses favorable for mosquito production.” None of these measures can guarantee that mosquito production will not occur. However, numerous researchers have noted that wetlands habitats with diverse invertebrate and vertebrate fauna often produce fewer mosquitoes than intermittently flooded habitats without predators (Chipps et al. 2002, Knight et al 2003, Meredith and Walton 2005). Use of these measures in project design and operation are one component of an IPM approach that may or may not achieve desired control levels. That is why they would be used in conjunction with a larger IPM control program.

G.3.2 Chemical Control Measures

Chemical control would be employed by the LDWP to supplement the physical design and operation features. Application of larvicides would be the method most routinely used as it allows treatment of breeding habitat only and treatment can cover a smaller area than after adult mosquitoes emerge. The most commonly used larvicides include:

- Mosquitodal oils such as Golden Bear which kill larvae by interfering with their air intake at the water surface; these oils generally volatilize within 48 hours.
- Bacterial toxins such as BTI, which are ingested by mosquito larvae and are specific to mosquito larvae.
- Insect juvenile growth hormones such as methoprene, which prevent larvae from molting into adults
- Organophosphates such as Temephos.

These are the same chemicals currently being used by the local MADs. Other larvicides may need to be incorporated into the LDWP mosquito control plan, either as they are developed, or to address development of larvicide resistance.

Adulticides would be used when larval control has not been effective in reducing the number of adult mosquitoes or when the ongoing ecologic surveillance indicates high mosquito or bird virus infection rates. At this point, stronger chemical controls would be used, such as organophosphates (e.g., malathion) or synthetic pyrethrins.

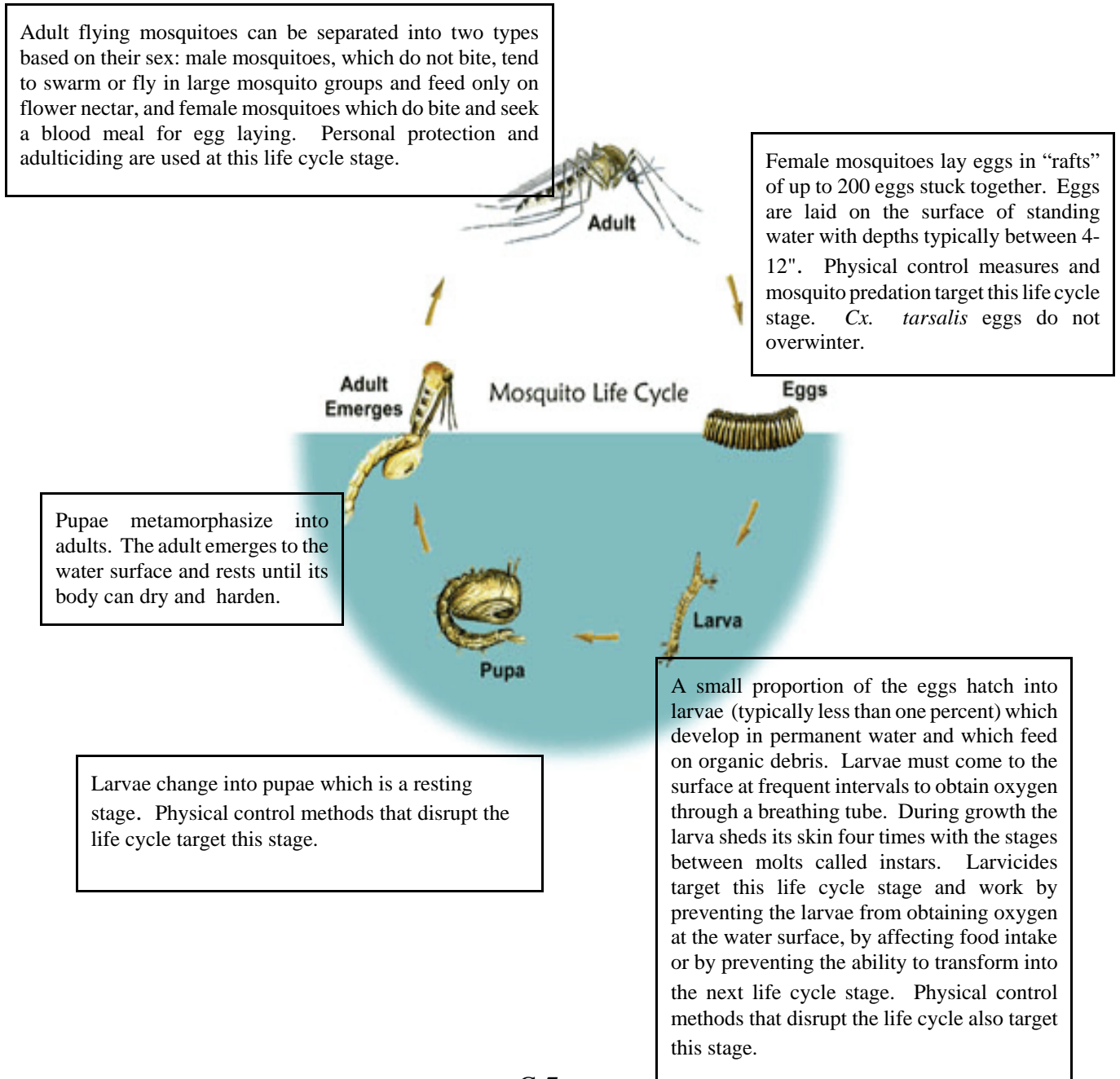
These treatments, as well as the sequence of treatments, are similar to the approaches currently used by the local MADs.

G.3.3 Biological Control

Biological control (Biocontrol) is the use of other organisms to control mosquitoes. There is no known effective biological control for adult mosquitoes, so mosquito biocontrol focuses on larval mosquitoes. Biocontrol of mosquito larvae includes measures such as the introduction of predatory aquatic organisms to reduce larval mosquito levels or habitat development to sustain natural predators. Because of the potential adverse effects of some predatory fish on native fish, the use of introduced fishes for biocontrol is not feasible for the LDWP. However, development of habitat for native predatory invertebrates would be incorporated into final design. Until further advances are made in mosquito biocontrol, the LDWP would use these measures solely to supplement other control methods. As research and testing of other aquatic biocontrol agents (e.g., predatory mosquitoes, predatory invertebrates) advances, these agents would be incorporated into the LDWP IPM approach as feasible.

Figure G-1. Mosquito control methods in relation to the *Culex tarsalis* life cycle.

The mosquito life cycle contains four distinct stages: egg, larvae, pupa and adult. Appropriate mosquito control methods vary according to life cycle stage. The diagram below shows how each of the WNV control methods discussed in the LDWP Plan would be used as part of an IPM approach. The life cycle details are adapted from Clements (2000), Knight et al. (2003) and Marra et al. (2004). The diagram is from AMCA (2005).



G.4. Education and Personal Protection

One of the components of an IPM approach is to provide information to individuals regarding prime mosquito activity periods and personal protective measures. According to the CDC (2003) such information needs to be presented in a manner that acknowledges the potential for disease but emphasizes the feasibility of individual actions or measures to reduce health risk. Information must not be presented in a way that promotes and preys on people's fears. The LDWP staff would cooperate with the local MADs in their education programs, particularly education materials targeted to Tribal members and operations on Tribal lands. These could include public service announcements on radio, in the Ute Tribal Bulletin or elsewhere.

Personal protection can occur at multiple levels such as, but not limited to:

- Use of mosquito repellent and protective clothing,
- Avoidance of peak activity times for the WNV vectors or use of repellent during those times, and
- Household protection by identifying repairing or installing screens.

The educational component of the LDWP control program would include addressing how personal protective measures can be used to complement the formal LDWP mosquito control program.

G.5. Emergency Management/Phased Approach

G.5.1 Vector management in Public Health Emergencies.

Detection of increased levels of WNV transmission between mosquitoes and birds during a given year typically precedes detection of human cases by several days to two weeks. When there is evidence of intensified virus transmission within any given season, emergency responses would be instituted within the LDWP project area, which would likely include both increased larval control and adulticiding.

The general presence of WNV in an area would not necessarily constitute a public health emergency. Rather, the presence of viral infection and amplification within the LDWP vicinity would be used to identify a health emergency. This component is tied very strongly to the surveillance component of the IPM (see section G.2) and the phased approach to mosquito management (see section G.5.2).

G.5.2 Develop a Phased Response to WNV Surveillance Data

Under the phased approach, measures of the intensity of WNV amplification and transmission (such as mosquito infection rates, avian infection rates) would be used to determine the appropriate level of chemical or other mosquito control response during any given season. The CDC has developed

a template for a phased response to ongoing WNV surveillance data which they recommend be modified for local and regional characteristics (see figure G-2). The LDWP would modify this template in conjunction with the local MADs to identify the local risk levels at which specific action would be taken within the wildlife management area.

G.6. Operating Agreements

Specific details of each mosquito control plan component will be developed in the more detailed Management Plan and associated Operating Agreements. Operating Agreements would identify areas of responsibility and authority, specify costs of management and commit funding to support ongoing development, operation and maintenance, and management of the project, including the Mosquito Control Plan.

It is anticipated that the increased ecologic surveillance, habitat monitoring, water quality improvement and the potentially increased use of larvicides within the project area would contribute to a greater level of mosquito management and control than currently exists.

The Management Plan portions specific to mosquito control will be reviewed and revised each five years. Annual review of each year's surveillance data would occur during the winter to refine specific activity levels identified in the Phased Response Plan, anticipated treatment areas, and identification if new treatment approaches are warranted during the upcoming year.

Figure G-2. Recommended Phased Response Plan Template, CDC (2003) p. 41-42.

Table 1. Suggested Guidelines for Phased Response to WNV Surveillance Data

| Risk category | Probability of human outbreak | Definition | Recommended response ^a |
|---------------|-------------------------------|--|---|
| 0 | None | Off-season; adult vectors inactive; climate unsuitable. | Develop WNV response plan. Secure surveillance and control resources necessary to enable emergency response. Initiate community outreach and public education programs. Conduct audience research to develop/ target education & community involvement. Contact community partners. |
| 1 | Remote | Spring, summer, or fall; areas anticipating WNV epizootic based on previous WNV activity in the region; no current surveillance findings indicating WNV epizootic activity in the area. | Response as in category 0, plus: conduct entomologic survey (inventory and map mosquito populations, monitor larval and adult mosquito density). Initiate source reduction; use larvicides at specific sources identified by entomologic survey and targeted at likely amplifying and bridge vector species; Maintain avian mortality, vector and virus surveillance; Expand community outreach and public education programs focused on risk potential and personal protection, and emphasizing residential source reduction; Maintain surveillance (avian mortality, mosquito density /IR, human encephalitis/meningitis and equine illness). |
| 2 | Low | Summer, or fall; areas with limited or sporadic WNV epizootic activity in birds and/or mosquitoes. No positives prior to August. | Response as in category 1, plus: increase larval control, source reduction, and public education emphasizing personal protection measures, particularly among the elderly. Enhance human surveillance and activities to further quantify epizootic activity (e.g., mosquito trapping and testing). Implement adulticide applications if vector populations exceed locally established threshold levels, emphasizing areas where surveillance indicates potential for human risk to increase. |
| 3 | Moderate | Spring, summer, or fall; areas with initial confirmation of epizootic WNV in birds before August; a horse and/or a human case, or sustained WNV activity in birds and/or mosquitoes. | Response as in category 2, plus: intensify adult mosquito control in areas where surveillance indicates human risk. Initiate adult mosquito control if not already in progress. Initiate visible activities in community to increase attention to WNV transmission risk (speaker, social marketing efforts, community mobilization for source reduction, etc.). Work with collaborators to reduce risks to elderly (e.g., screen repair). |
| 4 | High | Spring, summer, or fall; quantitative measures indicating WNV epizootic activity at a level suggesting high risk of human infection (e.g., high dead bird densities in early summer, sustained high mosquito infection rates, multiple positive mosquito species, horse or mammal cases indicating escalating epizootic transmission, or a human case and high levels of epizootic activity). Areas with early season positive | Response as in category 3, plus: Expand public information program to include TV, radio, and newspapers (use of repellents, personal protection, continued source reduction, risk communication about adult mosquito control). Increase visibility of public messages, engage key local partners (e.g., government officials, religious leaders) to speak about WNV ; intensify and expand active surveillance for human cases; intensify adult mosquito control program, repeating applications in areas of high risk or human cases. |

| | | | |
|---|----------------------|---|---|
| | | surveillance indicators where WN epidemic activity has occurred in the past. | |
| 5 | Outbreak in progress | Multiple confirmed cases in humans; Conditions favoring continued transmission to humans (e.g., persistent high infection rate in mosquitoes, continued avian mortality due to WNV) | Response as in category 4, plus: Intensify emergency adult mosquito control program repeating applications as necessary to achieve adequate control. Enhance risk communication about adult mosquito control. Monitor efficacy of spraying on target mosquito populations. If outbreak is widespread and covers multiple jurisdictions, consider a coordinated widespread aerial adulticide application; emphasize urgency of personal protection through community leaders and media, and emphasize use of repellent at visible public events. |

-
- Local and regional characteristics may alter the risk level at which specific actions must be taken.

References

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Chipps, S.R., D.E. Hubbard, K.B. Werlin, N.J. Haugerud, K.A. Powell. 2002. Development and application of biomonitoring indicators for floodplain wetlands of the Upper Missouri River Basin, North Dakota. Final report, U.S. EPA, National Health and Environmental Effects Research Laboratory.

Clements, A.N. 2000. The Biology of Mosquitoes. Volume I: Development, Nutrition and Reproduction. CABI Publishing, New York, New York.

Knight, R. L., W. E. Walton, G. F. O'Meara, W. K. Reisen, and R. Wass. 2003. Strategies for effective mosquito control in constructed treatment wetlands. *Ecological Engineering* 21: 211-232.

Marra, P.P, and S. Griffing, C Caffrey, A.M. Kilpatrick, R. McLean, C.Brand, E. Saito, A.P. Dupois, L. Kramer and R. Novak. 2004. West Nile Virus and Wildlife. *Bioscience* 54: 393-402.

Meredith and Walton. 2005. Position Paper on West Nile Virus (WNV) and the role of wetlands in the disease cycle. Section II: Source Reduction.

APPENDIX H

AGRICULTURAL PRODUCTION EVALUATION

The attached report is presented in its entirety. The totals from this report were adjusted slightly for the FEIS to reflect minor boundary changes for the Proposed Action that were made following report finalization.

INVENTORY REPORT

LOWER DUCHESNE RIVER WETLANDS PROJECT FOR THE UTE INDIAN TRIBEAL FISH AND WILDLIFE DEPARTMENT PREPARED BY: DALE S. HANBERG FEBRUARY 2007

Introduction:

This vegetative study was performed to determine the production of crops, pastures, and rangelands, and to provide the estimated agricultural value of the agricultural resources within the boundaries of the proposed Lower Duchesne River Wetlands Project. (Project) The purpose of the study was to establish the present economic value of the agriculture resources to form a baseline comparison to the economic benefits of the proposed wetland project.

Vegetative field surveys were performed on December 11, and December 19, 2006.

Table #1 is an update and modification of Table 4-47 of page 4-111 of the Lower Duchesne River wetlands Mitigation Project dated November 2003. On Table #1 the post-project production section was not completed because data and changes the Tribe may plan to impose after the project is implemented are not known by the author of this report at this time.

Table #2 shows the production summary of each tract of land inventoried based on the land identified by the map that was provided to the author by the Tribe titled "Lower Duchesne River Wetlands Project" dated June 9, 2006.

Basic Data:

A. Soils:

Except for a few small areas, the soils throughout the project area are deep heavy textured soils affected by alkali with a water table at or near the soil surface. The alkali and water table seriously limit plant growth to plants that are salt tolerant. Salt tolerant plants are valuable for erosion control, but are not generally highly palatable to livestock and wildlife. Crops such as alfalfa, high quality pasture grasses, grain, and corn cannot be grown on these soils without constructing extensive drainage projects. Over a sizeable area irrigation is practiced even though the water table is present. Under irrigation the salt tolerant plant production is significantly increased to yields of 2-4 animal unit months (AUM)/ acre, whereas in areas where irrigation is not practiced the production is only from 0.05 to 0.01 AUM/acre.

TABLE #1 Estimated Production and Economic Value of Agriculture Crops Produced on Lands Within the Proposed Ute Tribal Wetlands Project

| Land Use | Acres | Pre-project Production | | | | Post-Project Production | | |
|----------------------|-------|---------------------------|------------------|------------|-------------|---------------------------|------------------|-------------|
| | | Estimated Production/Acre | Total Production | Unit Value | Total Value | Estimated Production/Acre | Total Production | Total Value |
| Tribal Cropland | 0 | 0 | 0 | 0 | 0 | | | |
| Allotted Cropland | 28 | 4 Ton | 112 Tons | \$105/ Ton | \$11,760 | | | |
| Fee Cropland | 30 | 4 Ton | 120 Tons | \$105/ Ton | \$12,600 | | | |
| Cropland Total | 58 | xx | 232 Tons | \$105/Ton | \$24,360 | | | |
| Pastureland Tribal | 833 | 2.5-3.0 AUMs | 2056 AUMs | \$15/ AUM | \$30,840 | | | |
| Pastureland Allotted | 481 | 2.0-3.0 AUMs | 1220 AUMs | \$15/ AUM | \$18,300 | | | |
| Pastureland Fee | 585 | 2.0-3.0 AUMs | 1242 AUMs | \$15/AUM | \$18,630 | | | |
| Total Pastureland | 1899 | xx | 4518 AUMs | \$15/AUM | \$67,770 | | | |
| Other Land Tribal | 1411 | 0.0! 5 AUMs | 122 AUMs | \$15/AUM | \$1,830 | | | |
| Other Land Allotted | 480 | 0.0! 5 AUMs | 24 AUMs | \$15/AUM | \$360 | | | |
| Other Land Fee | 946 | 0.05 AUMs | 93 AUMs | \$15/AUM | \$1,395 | | | |
| Total Other Land | 2837 | xx | 239 AUMs | \$15/AUM | \$3,585 | | | |
| Total All Lands | 4794 | xx | xx | xx | \$95,715 | | | |

1. Yield and production estimates were provided by Dale S. Hanberg, range conservationist.

2. Crop values were obtained from Mr. Keith Hall of the Utah Department of Agriculture Statistics, and Mr. Dale Thomas from the U.S. Department of Indian Affairs. Dale S. Hanberg gathered the data and prepared the information.

TABLE #2- Page 2

Production Estimates by Township, Range, and Section for the Proposed Ute Tribal Wetlands Project.

Notes

File: Table 2-C.xls

| Township & Range | Sections | Ownership | Acres Cropland | Tons/ Acre | Tons Total Production | Acres Pasture | AUMs/ Acre | AUM Total Production | Acres Other | AUMs/ Acre | AUM Total Production |
|------------------|------------|-----------|----------------|------------|-----------------------|---------------|------------|----------------------|-------------|------------|----------------------|
| T3S,R1W | Sec. 31 | Tribal | | | | 307 | 2.5 | 768 | | | |
| | | Allotted | | | | | | | | | |
| | | Fee | | | | 40 | 2.5 | 100 | | | |
| | Sec. 32 | Tribal | | | | 40 | 2.5 | 100 | 195 | 0.05 | 10 |
| | | Allotted | | | | 150 | 2.5 | 375 | 113 | 0.05 | 6 |
| | | Fee | 30 | 4 | 120 | | | | 59 | 0.05 | 3 |
| | Sec 33 | Tribal | | | | | | | 120 | 0.05 | 6 |
| | | Allotted | | | | | | | 40 | 0.05 | 2 |
| | | Fee | | | | | | | | | |
| | Sec. 34 | Tribal | | | | | | | 80 | 0.05 | 4 |
| | | Allotted | | | | | | | | | |
| | | Fee | | | | | | | 80 | 0.05 | 4 |
| | Sec. 35 | Tribal | | | | | | | | | |
| | | Allotted | | | | | | | 122 | 0.05 | 6 |
| | | Fee | | | | 40 | 2.5 | 100 | | | |
| | Sec. 36 | Tribal | | | | | | | 41 | 0.1 | 4 |
| | | Allotted | | | | | | | | | |
| | | Fee | | | | 47 | 1 | 47 | | | |
| T3S, R1E | Sec. 15 | Tribal | | | | | | | 80 | 0.05 | 4 |
| | | Allotted | | | | | | | | | |
| | | Fee | | | | | | | | | |
| | Sec. 22 | Tribal | | | | 70 | 3 | 210 | 251 | 0.2 | 62 |
| | | Allotted | | | | | | | 81 | 0.05 | 4 |
| | | Fee | | | | 50 | 2.5 | 75 | 44 | 0.1 | 4 |
| | Sec. 21 | Tribal | | | | | | | burn 215 | 0.05 | 11 |
| | | Allotted | | | | | | | | | |
| | | Fee | | | | 80 | 1.25 | 100 | 237 | 0.25 | 59 |
| | | | | | | | | | | | |
| | Page total | | 30 | xx | 120 | 824 | xx | 1875 | 1758 | xx | 189 |

TABLE #4

| <u>Land Class</u> | <u>Percent of Land Area</u> | <u>Percent of Gross Agriculture Value</u> |
|-------------------|---------------------------------|---|
| Cropland | 1.2% | 25.5% |
| Pastureland | 39.6% | 70.8% |
| Other Land | 59.2% | 3.7% |
| Total | 100% | 100% |

Summary:

After making the inventory and report the author believes the proposed wetlands project may be a better and more viable option for the Tribe than the existing agriculture use of the land, and it should provide reasonable analyses of the agriculture value of the resources the proposed project. However, before the Tribe makes a final decision they should determine if the proposed wetlands project is a better option than the present agriculture uses. Therefore, it is recommended that:

1. A comprehensive plan should be developed for the proposed wetland project with details about the specific features included in the project along with the costs and benefits the Tribe may be expected incur.
2. An economic comparison and analysis should be made showing the economic benefit to the Tribe compared to the economic benefits of the existing agriculture uses. When this is completed it should be added to the Post-Project Production section of Table #1.

pastures are presently not being grazed. The 2,837 acres of "other land" identified within the project only produces gross earnings of approximately \$3,585. (See Table #1) Because of these reasons the "other land" has very little economic value for agriculture. These lands only produce approximately 0.05 AUMs per acre (or 1.0 AUM/ 20 acres). The potential income on forty acres of "other land" at \$15.00/AUM is only \$30.00 annually. These tracts of land are usually small and they will not produce enough income to build and maintain fences to contain the livestock, let alone pay the other operational costs of raising them. (Table #1 & Table #2)

As an example of the perspective value of the various land classes identified in the proposed project area Table #3 and Table #4 have been prepared.

TABLE #3

| <u>Land Class by Ownership</u> | <u>Acreage</u> | <u>Gross Annual \$ Income</u> |
|------------------------------------|----------------|---------------------------------------|
| Tribal: | | |
| Cropland | 0 | 0 |
| Pastureland | 833 | \$30,840 |
| <u>Other Land</u> | <u>1,411</u> | <u>\$1,830</u> |
| Total | 2,244 | \$32,670 |
| Percent | 46.8% | 34.2% |
| Allotted: | | |
| Cropland | 28 | \$11,760 |
| Pastureland | 481 | \$18,300 |
| <u>Other Land</u> | <u>480</u> | <u>\$360</u> |
| Total | 989 | \$30,420 |
| Percent | 20.6% | 31.7% |
| Fee: | | |
| Cropland | 30 | \$12,600 |
| Pastureland | 585 | \$18,630 |
| <u>Other Land</u> | <u>946</u> | <u>\$1395</u> |
| Total | 1561 | \$32,625 |
| Percent | 32.6% | 34.1% |

B. Vegetation:

Thirty three individual plant inventories were made for the study. The following plants were identified during the inventory and do represent a good amount of the plants present on the project area. However, the inventories were made on the dates of September 9 and December 11, 2006. The inventories were made by walking across the area and identifying the plants and estimating the percent of the vegetation each plant occupied in the plant community. Plants that only appear during the early spring and summer months were not present during the inventories. Alfalfa is raised on fifty-eight acres of cropland. On the majority of the remaining land area vegetation consists of the following plants: The plants identified below appear from the inventories in descending order with those plants appearing the greatest number of times at the top of the list and descending down the column to the least number of times. Saltgrass consistently appeared on most inventories and is far the most abundant plant in the project area. The plants appearing most often on the inventories are identified on the following list with asterisks. Those not identified with asterisks are present on 2 or less of the inventories.

Grass like plants

*Salt grass
**Alkali sacaton
**Wire grass
**Fox tail
**Bull rush
***Cat tail
****Broad leaf sedge
Cheat grass
Squirrel tail
Blue grass
Tall fescues
Smooth brome grass
Tall wheat grass
Slender wheat grass
Asparagrass

Forbs

**Ironweed
**Poverty weed
**Giant whitetop
**Rabbit brush
***Russian knapweed
Sour dock
Tansies mustard
Dandelion
Tumble weed
Sun flower
Gum weed
Yellow sweet clover
Lambs quarter
Aster
Straw berry clover
Prickly pear
Halogeton
Lickerish

Trees & shrubs

*Russian olive
**Grease wood
**Broadleaf
cottonwood
Nuttle saltbush
Tamarac
Squaw bush
Willow
Big sage
Bull berry
Snake weed
Chinese elm
Shad scale

*Appeared on 20-26 of the individual plant inventories.

** Appeared on 8-16 of the individual plant inventories.

*** Appeared on 5-8 of the individual plant inventories.

****Appeared on 3-5 of the individual plant inventories.

Saltgrass and Russian olive appeared the greatest number of times on the plant inventories. Based on the inventories Saltgrass represents approximately 25 percent

(range from 3-60 percent) of the plant community and it is present over most of the area. Wiregrass and Alkali sacaton may also represent a high percent of the plant community, but they are not present over as much of the area as Saltgrass. Russian olive, Greasewood, and Broadleaf Cottonwood also appear on 16-20 of the plant inventories, and they are present over most of the project area, but they only make up approximately 10, 7, and 2 percent of the plant community respectively.

C. Inventory Procedures and Weaknesses:

Thirty-three individual plant inventories were performed during the preparation of this report. These inventories were based the authors experience and best estimate. They were made by walking over the land to make visual estimates and comparisons. Scientific range plots used to measure the weight of the individual plant species were not made. More sophisticated studies may provide greater accuracy but it is questionable if they would be significantly more accurate than the visual surveys. If the Tribe determined that more detailed surveys are needed it will require much more time and costs to do the inventories.

The author had no access to Fee lands and estimates were made for those lands by observing the vegetation from boundary fence lines. Also access to some Tribal and allotted lands were not always readily available, therefore some small areas of these lands were not inventoried. However, the author believes the inventory and report are within the scope and accuracy needed for the purposes of the proposed wetland project.

D. Crop Values:

Plant value is normally based on the plants nutrition and palatability for livestock and wildlife, and its effectiveness to control erosion. Salt tolerant plants like those identified during the inventories of the project are valuable for erosion control, but most of them are not highly nutritious and palatable for livestock and wildlife. For example in pastures where Smooth Brome grass or Tall Fescue are present with Saltgrass or Alkali Sacaton livestock will eat 90% of the Smooth Brome and Tall Fescue but they will hardly eat any Saltgrass or Sacaton. Livestock will eat Wiregrass when it makes up a small percent of the plants in a pasture, but when it provides 80% or more of the plant community they will hardly eat any of the Wiregrass.

The plants identified that make up the greatest volume of forage on "pasture land" are Saltgrass, Sacaton, and Wiregrass. In the Uintah Basin these pastures are not highly sought as summer pastures, but by feeding protein supplement to the livestock while grazing them during the winter months livestock are able to utilize the forage, and then the pastures become a valuable resource for providing maintenance diets for livestock.

The cropland and pastureland within the project produce a viable economic income. For example the 58 acres of cropland within the project produce gross earnings of approximately \$24,360 annually, and the 1899 acres of pastureland has a potential to produce approximately \$67,770 of gross earnings annually. However, some of the

APPENDIX I

DOI EVALUATION OF
TRUST RESOURCES IMPACTS



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
UINTAH AND OURAY AGENCY
P.O. Box 130
Ft. Duchesne, Utah 84026



IN REPLY REFER TO:

Irrigation MS-462

MITIGATION COMMISSION
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CLASSIFICATION _____
PROJECT _____
FOLDER _____ CONTROL _____

MAR 24 2008

MAR 25 2008

Reed R. Murray
Program Director
Central Utah Project Completion Act Office
302 East 1860 South
Provo, Utah 84606

| CODE | INITIALS |
|------|----------|
| MCOI | RMW |
| | |
| | |

Mike Weland
Executive Director
Utah Reclamation Mitigation and Conservation Commission
230 South 500 East, Suite 230
Salt Lake City, Utah 84102

Subject: Impacts of Lower Duchesne River Wetlands Mitigation Project on Indian Trust Assets

Dear Sirs:

We have reviewed the Final Environmental Impact Statement for the subject project and prepared this finding pursuant to Secretarial Order 3215 (Principles for the Discharge of the Secretary's Trust Responsibility) and the Department of the Interior Manual at 302 DM 2 (Principles for Managing Indian Trust Assets).

Based on a thorough project review by the Bureau of Indian Affairs (BIA), and with careful consideration of the trust principles incorporated in the Secretarial Order and Departmental Manual, I have determined that the Proposed Action for the Lower Duchesne River Wetlands Mitigation Project will not have an adverse impact on the Trust Assets of the Ute Indian Tribe of the Uintah and Ouray Agency (Tribe), nor on assets of individual Ute Indian tribal members within the project's area of influence. Moreover, the project, as planned, fulfills the fish and wildlife mitigation obligations of the Department of the Interior to the Tribe arising from the Central Utah Project (CUP), substantially as proposed in CUP planning documents. The mitigation obligations in question are those recommended in the U.S. Fish and Wildlife Service 1965 Coordination Act Report, Bureau of Reclamation 1964 Definite Plan Report (with 1965 Supplement), the 1965 Deferral Agreement, and both the 1988 and 2004 Definite Plan Reports for the CUP.

Consistent with trust principles, there has been a large measure of tribal control and self-determination over tribal trust lands and resources during all phases of planning for the Lower Duchesne River Wetlands Mitigation Project. An interagency planning team, lead by the Ute Indian Tribe Wissiups Wetlands Office, has developed the Proposed Action. The BIA has been a member of this planning effort since its inception. The Wissiups Wetlands staff has been assisted by the BIA, U.S. Fish and Wildlife Service, Utah Reclamation Mitigation and Conservation Commission, and the Department of the Interior Central Utah Project Completion Act Office. Throughout planning, members of the Ute Indian Tribe Business Committee have actively participated. The entire Business Committee has been briefed on several occasions by the Wissiups Wetlands staff.

An Environmental Impact Statement (EIS) evaluating the Proposed Action and several alternatives has been completed pursuant to the National Environmental Policy Act (NEPA). The Tribe and BIA were Cooperating Agencies in this NEPA process. The NEPA process provided an intense public and agency review of all potential impacts that could affect Indian Trust Assets. The EIS was reviewed in both draft and final stages by the BIA, the Ute Tribe Business Committee and resource specialists representing the Tribe. Business Committee support for the Proposed Action has been demonstrated by means of a favorable Resolution and as a signatory agency on the EIS.

I have determined that the Proposed Action will not have adverse effects on tribal trust lands or existing land uses, minerals, hunting and fishing resources or rights in these resources belonging to the Tribe. Water resources and water rights belonging to the Tribe have been particularly examined to ensure that no adverse effects thereupon will result from the Proposed Action. Again, the Business Committee and water resource experts representing the Tribe have reviewed these water issues. It is my conclusion that the Proposed Action will not interfere with the exercise of reserved water rights in their established quantity or priority, nor significantly degrade the quality of water supplies for which the Tribe has rights.

Future uses of tribal trust lands or other trust assets are not foreclosed by this Proposed Action. Under the Proposed Action the Tribe will participate in this project primarily through contractual arrangements with your offices. Such contractual arrangements will be for negotiated terms and may be modified at intervals as the BIA may recommend and the Ute Tribe Business Committee may determine in order that tribal trust assets are continually protected.

Cultural resources of significant importance to the Tribe have been properly considered during project planning. The Tribe Cultural Rights and Protection Office has been consulted and has issued the appropriate letter of concurrence with regard to the Proposed Action.

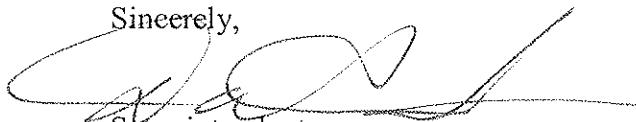
The Proposed Action is formulated in such a way as to protect tribal trust assets from loss, damage, unlawful alienation, waste or depletion. As a wetlands enhancement project, the Proposed Action will supplement existing Tribal lands and waters by selected land and water acquisitions in the project area to create unified wetland-wildlife management units. Lands acquired from willing sellers will be transferred to the Tribe in fee status. All lands will be managed by the Tribe for project purposes in a manner that will increase the quality and quantity of tribal fish and wildlife resources. Lands will be available for the use and enjoyment of tribal

members in accordance with management plans to be developed by the Tribe. Such lands will also offer other potential development opportunities for the Tribe compatible with the project purposes.

In conclusion, there has been, in my opinion, adequate analyses conducted by the BIA, and sufficient consultation with the Tribe, to assure the Department that the Proposed Action will protect tribal trust assets and will generally promote the interests of the beneficial owners therein.

For further discussion of these matters, please call Mr. Lynn Hansen at 435/722-4344.

Sincerely,



Superintendent

cc:

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