

# RECLAMATION

*Managing Water in the West*

## Final Environmental Assessment Moon Lake Yellowstone Feeder Canal Repair

PRO-EA-16-004

Upper Colorado Region  
Provo Area Office  
Provo, Utah



U.S. Department of the Interior  
Bureau of Reclamation  
Provo Area Office  
Provo, Utah

November 2016

## **Mission Statements**

The mission of the Department of the Interior is to protect and manage the Nation's natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

# Final Environmental Assessment Moon Lake Yellowstone Feeder Canal Repair

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Upper Colorado Region  
Provo Area Office  
Provo, Utah

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U.S. Department of the Interior  
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Provo Area Office  
Provo, Utah

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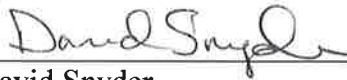
U.S. Department of the Interior  
Bureau of Reclamation  
Provo Area Office  
Provo, Utah

FINDING OF NO SIGNIFICANT IMPACT

Environmental Assessment Moon Lake Yellowstone Feeder Canal Repair  
Duchesne County, Utah


EA-16-004

Recommended by:

  
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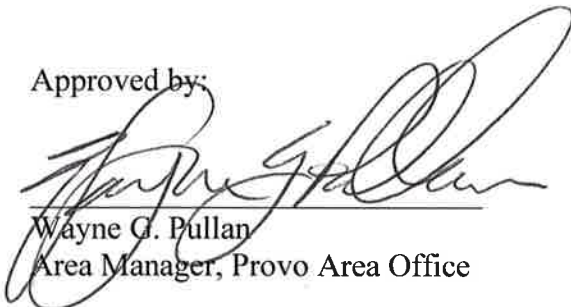
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## **Introduction**

In compliance with the National Environmental Policy Act (NEPA) of 1969, as amended, the Bureau of Reclamation - Provo Area Office has conducted an Environmental Assessment (EA) to determine the impacts of the Proposed Action on the human environment and to decide whether to authorize the Moon Lake Water Users Association (Association) to repair up to 9.6 miles of the Yellowstone Feeder Canal (YFC) beginning one mile downstream of the existing diversion on the Yellowstone River. The Proposed Action consists of lining segments of the YFC from top of bank to top of bank with a geomembrane liner covered with a minimum of 3 inches of shotcrete or concrete.

The purpose of the Proposed Action is to stabilize and repair the most critical water loss areas of the canal while allowing the Ute Tribe to continue to use the canal for stock watering purposes and a wildlife water source. The need for the project is to allow the associated water rights within the canal to be fulfilled.

## **Alternatives**

The EA analyzed the No Action Alternative and the Proposed Action Alternative.

## **Minimization Measures Incorporated into the Proposed Action**

The minimization measures, along with other measures listed under each resource in Chapter 3 and Chapter 4 of the EA, have been incorporated into the Proposed Action to lessen the potential adverse effects.

- The proposed project construction area would be located within the previously disturbed maximum right-of-way width of 75 feet, and would have as small a footprint as possible.
- Staging areas would be located within the existing right-of-way, where new disturbance of area soils and vegetation would be minimized.
- Ground disturbance would be minimized to the extent possible.
- Construction vehicles and equipment would be inspected and cleaned prior to entry into the project area to ensure that they are free of weed seed.
- Stockpiling of materials would be limited to areas within the existing right-of-way; the dewatered canal may also be used to store materials.

Environmental commitments that are integral to the Proposed Action are as follows:

1. **Standard Reclamation Best Management Practices** - Standard Reclamation Best Management Practices will be applied during construction activities to minimize environmental effects and will be implemented by construction forces, or included in construction specifications. Such practices or specifications include sections in the present EA on public safety, dust abatement, air pollution, noise abatement, water pollution abatement, waste material disposal, erosion control, archaeological and historical resources, vegetation, wildlife, and threatened and endangered species. Excavated material and construction debris may not be wasted in any stream or river

channel in flowing waters. This includes material such as grease, oil, joint coating, or any other possible pollutant. Excess materials must be wasted at a Reclamation approved upland site well away from any channel. Construction materials, bedding material, excavation material, etc. may not be stockpiled in riparian, wetland, or water channel areas. Silt fencing will be appropriately installed and left in place until after vegetation becomes established, at which time the silt fence can then be carefully removed. Machinery must be fueled and properly cleaned of dirt, weeds, organisms, or any other possibly contaminating substances offsite prior to construction.

2. **Additional Analyses** - If the Proposed Action were to change significantly from that described in this EA because of additional or new information, or if other spoil or work areas beyond those outlined in this analysis are required outside the defined project construction area, additional environmental analyses may be necessary.
3. **Cultural Resources** - In the case that any cultural resources, either on the surface or subsurface, are discovered during construction, Reclamation's Provo Area Office archaeologist shall be notified and construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by a professional archaeologist. If any person who knows or has reason to know that they have inadvertently discovered possible human remains on Tribal land, they must provide immediate telephone notification of the discovery to Reclamation's Provo Area Office archaeologist. Work will stop until the proper authorities are able to assess the situation onsite. This action will promptly be followed by written confirmation to the responsible federal agency official, with respect to Federal lands. The Utah State Historic Preservation Office (SHPO) and interested Native American Tribal representatives will be promptly notified. Consultation will begin immediately. This requirement is prescribed under the Native American Graves Protection and Repatriation Act (43 CFR Part 10); and the Archaeological Resources Protection Act of 1979 (16 USC 470).
4. **Paleontological Resources** - Should vertebrate fossils be encountered by the proponent during ground-disturbing activities, construction must be suspended until a qualified paleontologist can be contacted to assess the find.
5. **Wildlife Resources**
  - a. **Migratory Bird Protection**
    - i. Perform any ground-disturbing activities or vegetation treatments before migratory birds begin nesting in the spring or after all young have fledged in the fall.
    - ii. If activities must be scheduled to start during the migratory bird breeding season, take appropriate steps to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering

equipment and structures, and the use of various excluders (e.g., noise). Prior to nesting, birds can be harassed to prevent them from nesting on the site.

- iii. If activities must be scheduled during the migratory bird breeding season, a site-specific survey for nesting birds should be performed by a qualified biologist starting at least 2 weeks prior to ground-breaking activities or vegetation treatments. Established nests with eggs or young cannot be moved, and the birds cannot be harassed until all young have fledged and are capable of leaving the nest site.
- iv. If nesting birds are found during the survey, appropriate spatial buffers should be established around nests. Vegetation treatments or ground-disturbing activities within the buffer areas should be postponed until the birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.

- b. **Raptor Protection** - Raptor protection measures will be implemented to provide full compliance with environmental laws. Raptor surveys will be conducted using the Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (Romin and Muck 2002), to ensure that the proposed project will avoid adverse impacts to raptors, including bald and golden eagles. Locations of existing raptor nests and eagle roosting areas will be identified prior to the initiation of project activities. Appropriate spatial buffer zones of inactivity will be established during breeding, nesting, and roosting periods. Arrival at nesting sites can occur as early as December for certain raptor species. Nesting and fledging can continue through August. Wintering bald eagles may roost from November through March.
6. **Previously Disturbed Areas** - Construction activities will be confined to previously disturbed areas where possible for such activities as work, staging, storage, waste areas, and vehicle and equipment parking areas. Vegetation disturbance will be minimized as much as possible.
  7. **Public Access** - Construction sites will be closed to public access because public land access is prohibited on Tribal lands. Only project personnel will be allowed to access the project site.
  8. **Disturbed Areas** - The majority of areas of project disturbance will be within the canal channel, but some of the access road may be maintained for safe access. These areas will be smoothed, shaped, contoured, and rehabilitated to as near the pre-project construction condition as practicable. Weed seed control on all machines and any disturbed areas will be required.

## **Related NEPA Documents**

An Environmental Impact Statement (EIS) was prepared in 1987 for the Uinta Basin Unit, Colorado River Water Quality Improvement Program; however, the area analyzed is downstream from the YFC, and the EIS has little applicability to this project. An EIS for the Uinta Basin Unit Expansion – Colorado River Salinity Control Program was prepared in 1991. This document also has little applicability to the current project. No other related projects or documents have been identified at this time.

## **Decision and Finding of No Significant Impact**

Based upon a review of the EA and supporting documents, I have determined that implementing the Proposed Action will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an EIS is not required for this Proposed Action. This finding is based on consideration of the context and intensity as summarized here from the EA.

### **Context**

The affected locality is the area served by the YFC in Duchesne County, Utah. Affected interests include the Association, Ute Indian Tribe, and irrigation companies served by the YFC.

### **Intensity**

The following discussion is organized around the 10 significance criteria described in 40 CFR 1508.27. These criteria were incorporated into the resource analysis and issues considered in the EA.

**1. Impacts may be both beneficial and adverse.** The Proposed Action will impact resources as described in the EA. Minimization measures and environmental commitments to reduce impacts to cultural and biological resources were incorporated into the design of the Proposed Action. The following short-term effects of the Proposed Action are predicted: noise, ground disturbance along the canal alignment, and potential temporary wildlife displacement during construction. Long-term predicted effects are adverse effects to cultural resources (mitigated for in the Memorandum of Agreement) and the elimination of irrigation-induced wetlands along the canal alignment. Additionally, erosion of the canal bank and water lost through seepage will be eliminated due to the Proposed Action. In the long-term, all affected water users supplied by the YFC will benefit from water efficiency.

None of the environmental effects discussed in detail in the EA are considered significant.

**2. The degree to which the selected alternative will affect public health or safety or a minority or low-income population.** The Proposed Action will have no significant impacts on public health or safety. No minority or low income community will be disproportionately affected by the Proposed Action.

3. **Unique characteristics of the geographic area.** There are no unique characteristics associated with the project area. No critical wildlife habitat will be adversely affected by the Proposed Action. There are no park lands, prime farmlands, wild and scenic rivers, or other ecologically critical areas that will be affected by the proposal.
4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** Reclamation contacted representatives of other Federal agencies, state and local governments, Indian tribes, public and private organizations regarding the Proposed Action and its effects on resources. Based on the responses received, the effects from the Proposed Action on the quality of the human environment are not highly controversial.
5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** When uncertainty about impacts to the human environment was identified in the EA, mitigation and monitoring measures were identified and included in the formulation of the alternatives. There are no predicted effects on the human environment that are considered highly uncertain or that involve unique or unknown risks.
6. **The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.** The Proposed Action will not establish a precedent for future actions with significant effects.
7. **Whether the action is related to other actions which are individually insignificant but cumulatively significant.** Cumulative impacts are possible when the effects of the Proposed Action are added to other past, present, and reasonably foreseeable future actions as described under Related NEPA Documents above; however, significant cumulative effects are not predicted, as described in the EA.
8. **The degree to which the action may adversely affect sites, districts, buildings, structures, and objects listed in or eligible for listing in the National Register of Historic Places.** The State Historic Preservation Officer has concurred with our determination of effect and a Memorandum of Agreement is in place to mitigate any negative effect.
9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.** No threatened or endangered species are found within project area; therefore, Reclamation's finding was No Effect.
10. **Whether the action threatens a violation of Federal, state, local, or tribal law, regulation or policy imposed for the protection of the environment.** The project does not violate any federal, state, local, or tribal law, regulation, or policy imposed for the protection of the environment. In addition, this project is consistent with applicable land management plans, policies, and programs.

# Contents

	Page
<b>Chapter 1 Purpose of and Need for Proposed Action .....</b>	<b>1</b>
1.1 Introduction.....	1
1.2 Background.....	1
1.3 Purpose of and Need for Proposed Action.....	2
1.4 Public Scoping and Involvement .....	2
1.5 Permits, Licenses, and Authorizations.....	2
1.6 Related Projects and Documents .....	2
1.6.1 Uinta Basin Units EISs .....	2
1.7 Scope of Analysis .....	3
<b>Chapter 2 Alternatives .....</b>	<b>4</b>
2.1 Introduction.....	4
2.2 No Action.....	4
2.3 Proposed Action.....	4
2.3.1 Construction Schedule .....	5
2.3.2 Construction Procedures .....	5
2.3.2.1 Channel Preparation.....	5
2.3.2.2 Geomembrane Liner Installation .....	5
2.3.2.3 Shotcrete or Concrete Application.....	5
2.4 Alternatives Considered and Eliminated from Further Study.....	6
2.4.1 Piping the Canal.....	6
2.5 Comparison of Alternatives .....	6
2.6 Minimization Measures Incorporated into the Proposed Action .....	7
<b>Chapter 3 Affected Environment and Environmental Consequences .....</b>	<b>8</b>
3.1 Introduction.....	8
3.2 Resources Considered and Eliminated from Further Analysis .....	8
3.3 Affected Environment and Environmental Consequences .....	11
3.3.1. Cultural Resources .....	11
3.3.1.1 No Action.....	11
3.3.1.2 Proposed Action.....	11
3.3.2 Hydrology .....	11
3.3.2.1 No Action.....	12
3.3.2.2 Proposed Action.....	12
3.3.3. Wetlands, Riparian, Noxious Weeds, and Existing Vegetation.....	12
3.3.3.1 No Action.....	12
3.3.3.2 Proposed Action.....	12
3.3.4 Wildlife Resources.....	13
3.3.4.1 Upland Game Birds.....	13
3.3.4.1.1 No Action.....	13

3.3.4.1.2 Proposed Action.....	13
3.3.4.2 Other Birds (Raptors and Migratory Birds).....	13
3.3.4.2.1 No Action.....	13
3.3.4.2.2. Proposed Action.....	13
3.3.4.3. Big Game .....	14
3.3.4.3.1 No Action.....	14
3.3.4.3.2 Proposed Action.....	14
3.3.5 Socioeconomics .....	14
3.3.5.1 No Action.....	14
3.3.5.2. Proposed Action.....	15
3.3.6 Water Rights .....	15
3.3.6.1 No Action.....	15
3.3.6.2. Proposed Action.....	15
3.4. Indian Trust Assets .....	16
3.5. Environmental Justice.....	16
3.6. Cumulative Effects.....	16
3.7 Summary of Environmental Effects.....	17
<b>Chapter 4 Environmental Commitments .....</b>	<b>18</b>
4.1 Environmental Commitments .....	18
<b>Chapter 5 Consultation and Coordination .....</b>	<b>21</b>
5.1 Introduction.....	21
5.2 Public Involvement .....	21
5.3 Native American Consultation.....	21
5.4. Utah Geological Survey .....	22
5.5. Utah State Historic Preservation Office (SHPO).....	22
5.6. Bureau of Indian Affairs .....	22
5.7. U.S. Fish and Wildlife Service .....	22
<b>Chapter 6 Preparers .....</b>	<b>23</b>
<b>Chapter 7 Acronyms and Abbreviations .....</b>	<b>25</b>
<b>Chapter 8 References.....</b>	<b>26</b>
<b>Chapter 9 Appendices.....</b>	<b>27</b>

Appendices

Appendix A. Maps
Appendix B. Comments
Appendix C. Engineering Plans
Appendix D. Listed Species Correspondence
Appendix E. Paleontological File Search Correspondence

# **Chapter 1 Purpose of and Need for Proposed Action**

## **1.1 Introduction**

This Environmental Assessment (EA) was prepared to examine the potential environmental impacts of the Yellowstone Feeder Canal Repair project, proposed by the Moon Lake Water Users Association (MLWUA) in Duchesne County, Utah. If approved, portions of the Yellowstone Feeder Canal would be lined to reduce water loss.

This EA evaluates the potential effects of the Proposed Action in order to determine whether it would cause significant impacts to the human or natural environment, as defined by the National Environmental Policy Act (NEPA) of 1969. If the EA shows no significant impacts associated with implementation of the proposed project, then a Finding of No Significant Impact (FONSI) will be issued by the Bureau of Reclamation. Otherwise, an Environmental Impact Statement will be necessary prior to implementation of the Proposed Action.

## **1.2 Background**

The MLWUA operates and maintains the Yellowstone Feeder Canal in Duchesne County, Utah. The canal was constructed between 1938 and 1940, and is a transmission canal, which delivers critical irrigation water for agricultural production from the Yellowstone River to the west branch of Cottonwood Creek. The water is delivered to reservoirs and distribution canals and serves water users in eastern Duchesne and western Uintah counties.

The western section of the canal is about 10.6 miles long. Sections of the canal are becoming increasingly difficult to maintain, resulting in high water loss from seepage; losses are estimated to be 30 to 40 percent (over 6,000 acre-feet per year). A segment of the canal has an old concrete-lined channel that has cracked and leaks a substantial amount of water; other areas of earthen embankment have higher-than-normal water loss. These areas are at high risk for failure. In the event of a failure, a lengthy shut-down time would be required to repair the canal, during which time water users would be unable to convey water for irrigation. The MLWUA proposes to line the sections of canal within the areas with the highest amount of leakage. The areas currently proposed for lining are shown in Map 1 of Appendix A; Phase I are areas of highest risk and water loss.



### **1.3 Purpose of and Need for Proposed Action**

The purpose of the project is to stabilize and repair the most critical water loss areas of the canal while allowing the Ute Tribe to continue to use the canal for stock watering purposes and a wildlife water source.

The need for the project is to allow the associated water rights within the canal to be fulfilled.

### **1.4 Public Scoping and Involvement**

Notices will be sent to relevant irrigation companies, shareholders, the Tribal Business Committee, and the Water Commission.

Comments received will be considered and relevant comments will be included in the environmental analysis and final EA. A summary of comments will be included as Appendix B.

### **1.5 Permits, Licenses, and Authorizations**

Implementation of the Proposed Action may require authorizations or permits from state and federal agencies. The MLWUA would be responsible for obtaining all permits, licenses, and authorizations required for the project. Potential authorizations or permits may include those listed in Table 1-1.

**Table 1-1  
Permits and Authorizations**

<b>Agency/Department</b>	<b>Purpose</b>
Utah State Historic Preservation Office	Consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA), 16 USC 470.

### **1.6 Related Projects and Documents**

#### **1.6.1 Uinta Basin Units EISs**

An Environmental Impact Statement (EIS) was prepared in 1987 for the Uinta Basin Unit, Colorado River Water Quality Improvement Program; however, the area analyzed is downstream from the Yellowstone Feeder Canal, and the EIS has little applicability to this project. An EIS for the Uinta Basin Unit Expansion – Colorado River Salinity Control Program was prepared in 1991. This document also has little applicability to the current project.

No other related projects or documents have been identified at this time.

## **1.7 Scope of Analysis**

The purpose of this EA is to determine whether or not Reclamation should authorize, provide funding for, and enter into an agreement with the MLWUA for the lining of the canal to prevent water loss from seepage and stabilize high-risk areas of the canal. That determination includes consideration of whether there would be significant impacts to the human environment. In order to line the canal, this EA must be completed and a FONSI issued. Analysis in the EA includes temporary impacts from construction activities and permanent impacts as a result of lining the canal.

# Chapter 2 Alternatives

## 2.1 Introduction

This chapter describes the features of the No Action and Proposed Action Alternatives, and presents a comparative analysis. It includes a description of each alternative considered. This section also presents the alternatives in comparative form, defining the differences between each alternative.

## 2.2 No Action

Under the No Action alternative, the canal would not be lined. Water would continue to leak from the deteriorating sections of the canal, reducing downstream flows to water users. The MLWUA would be forced to perform some sort of patching to slow the seepage and continue to attempt stabilizing the canal without a permanent solution. The Ute Tribe would continue to use the canal for stock watering purposes.

## 2.3 Proposed Action

The Proposed Action is the preferred alternative. The Proposed Action consists of lining segments of the Yellowstone Feeder Canal from top of bank to top of bank with a geomembrane liner. The membrane would then be covered with a minimum of 3 inches of shotcrete or concrete. Shotcrete or concrete-lined canals with a geomembrane liner are considered a 50-year-life treatment, and water loss savings would approach the effectiveness of a piped system.

Phase I includes lining of approximately 3,000 feet of existing concrete-lined canal and 2,100 feet of unlined, earthen channel downstream of the existing concrete-lined segment (see Map 1 in Appendix A). Estimated water savings would be 5,200 acre-feet per year for Phase I. Additional seepage areas from a point 1.0 mile downstream of the diversion on the Yellowstone River to the location where the canal drops into Cottonwood Wash (9.6 miles total; identified as “Potential Repair Extent” on Map 1 in Appendix A) would be identified, prioritized, and repaired in subsequent phases pending budget and funding availability.

A wildlife crossing is proposed in the downstream repair area; the crossing would have a maximum slope of 4:1. The flatter slope would allow stock and wildlife to access and cross the canal. In future phases, if repairs were to be made in flat

areas with suitable forage, project design would include similar safe access to the canal for livestock and wildlife.

This alternative would reduce water loss from seepage, stabilize the canal and reduce the risk of canal failure, and allow the Ute Tribe to continue to use the canal for stock watering purposes.

### **2.3.1 Construction Schedule**

If approved, Phase I construction could begin as soon as the irrigation season was over and Browns Draw Reservoir was filled to a level acceptable to the MLWUA, which is expected to be late September or October of 2016. However, in consideration of Ute Tribe hunting seasons, project work would be delayed until November 2016, with Phase I anticipated to be completed by April 2017 at the latest. Project activities are anticipated to take 2 months to complete. The project would generally proceed as follows:

1. Finish water deliveries and dewater canal.
2. Mobilization of contractor, supplies, and access road work as needed.
3. Preparation of earthen channel (shaping and removal of rocks within the canal).
4. Lay geomembrane liner.
5. Apply shotcrete or concrete and allow to cure.
6. Clean up.

These items are detailed below.

### **2.3.2 Construction Procedures**

#### ***2.3.2.1 Channel Preparation***

When irrigation deliveries are completed and the MLWUA has an acceptable amount of water stored in Browns Draw Reservoir, the diversion gate would be closed to dewater the canal. Similar to regular maintenance, the canal would be shaped to remove rocks and fill holes. Shaping activities would prepare the surface of the canal for the treatments. The concrete-lined section would also be prepared to provide a consistent base for the liner to be installed.

#### ***2.3.2.2 Geomembrane Liner Installation***

The sections of canal to be repaired would be lined with a geomembrane liner. The liner would be placed on the surface, and tied in at the top of both banks by wrapping the liner into a trench to key-in the ends, as shown in the detail sheets of the construction plans (see Appendix C). This method would be applied to existing concrete-lined sections and unlined earthen sections.

#### ***2.3.2.3 Shotcrete or Concrete Application***

Shotcrete or concrete would be trucked in on the existing maintenance road that parallels the canal. A minimum of 3 inches of shotcrete or concrete would be applied over the geomembrane liner.

## 2.4 Alternatives Considered and Eliminated from Further Study

The following alternative was evaluated but eliminated because it did not meet the purpose of or need for the Project.

### 2.4.1 Piping the Canal

The alternative considered was to pipe the canal to prevent water loss. However, this alternative was not considered acceptable to the Ute Tribe because stock and wildlife watering would not be possible with a closed pipe unless additional stock watering facilities were included in the project design. Such design would reduce the budget available for canal repairs. There were also concerns with piping multiple sections of canal and the required maintenance for inlets and trash racks in a remote area. Piping the entire canal was not financially feasible for the MLWUA at this time.

## 2.5 Comparison of Alternatives

The suitability of the No Action and Proposed Action Alternatives were compared based on three objectives identified for the project. The objectives are:

- Prevent seepage;
- Reduce maintenance; and
- Allow the Ute Tribe to continue stock watering from the canal.

As shown in Table 2-1, the No Action Alternative did not meet two of the project's objectives, while the Proposed Action met all three objectives.

**Table 2-1  
Comparison of Alternatives**

<b>Project Objective</b>	<b>Does the No Action Meet the Objective</b>	<b>Does the Proposed Action Meet the Objective</b>
Prevent Seepage	No	Yes
Reduce Maintenance	No	Yes
Allow Stock Watering	Yes	Yes

## **2.6 Minimization Measures Incorporated into the Proposed Action**

The minimization measures, along with other measures listed under each resource in Chapters 3 and 4, have been incorporated into the Proposed Action to lessen the potential adverse effects.

- The proposed project construction area would be located within the previously disturbed right-of-way, and would have as small a footprint as possible.
- Staging areas would be located within the existing right-of-way, where new disturbance of area soils and vegetation would be minimized.
- Ground disturbance would be minimized to the extent possible.
- Construction vehicles and equipment would be inspected and cleaned prior to entry into the project area to ensure that they are free of weed seed.
- Stockpiling of materials would be limited to areas within the existing right-of-way; the dewatered canal may also be used to store materials.

# **Chapter 3 Affected Environment and Environmental Consequences**

## **3.1 Introduction**

This chapter describes the environment that could be affected by the Proposed Action. These impacts are discussed under the following resource issues: geology and soils resources; visual resources; cultural resources; paleontological resources; wilderness and wild and scenic rivers; hydrology; water quality; system operations; health, safety, air quality, and noise; prime and unique farmlands; flood plains; wetlands, riparian, noxious weeds, and existing vegetation; fish and wildlife resources; threatened, endangered, and sensitive species; recreation; socioeconomics; access and transportation; water rights; Indian Trust Assets (ITAs); environmental justice; and cumulative effects. The present condition or characteristics of each resource are discussed first, followed by a discussion of the predicted impacts caused by the Proposed Action. The environmental effects are summarized in Section 3.7.

## **3.2 Resources Considered and Eliminated from Further Analysis**

The following resources were considered but eliminated from further analysis because they do not occur in the project area or impacts would be so minor (negligible) that they were discounted.

**Table 3-1  
Resources Eliminated from Further Analysis**

<b>Resource</b>	<b>Rationale for Elimination from Further Analysis</b>
Geology and Soils Resources	Project activities would occur within the disturbance footprint of the existing canal and right-of-way; therefore, geologic and soil resources would not be impacted.
Visual Resources	The portion of the canal to be repaired cannot be seen by the local residents or the casual observer unless they are within the right-of-way; therefore, visual resources would not be adversely impacted.
Paleontological Resources	Project activities would occur within the disturbance footprint of the existing canal; paleontological resources would not be impacted.
Wilderness and Wild and Scenic Rivers	There are no Wilderness Areas or Wild and Scenic Rivers or segments listed on the Nationwide Rivers Inventory within the Project area; therefore, there would be no impact to these resources from the Proposed Action.
Water Quality	The canal would be dewatered during construction by closing the diversion; therefore, there would be no impacts to water quality.
System Operations	The canal would be temporarily dewatered during project construction activities, but flows would resume upon completion and prior to the next irrigating season. There would be no changes to long-term operations of the Yellowstone Feeder Canal; however, the project would result in conserved water.
Health, Safety, Air Quality, and Noise	The project area is within the canal right-of-way, which is privately owned with no public access. There would be no impact to health or public safety as a result of the project. Air quality and noise impacts would be temporary (during construction) and negligible due to the short construction schedule and remote nature of the project area.
Flood plains	The canal routes through uplands between river flood plains; the proposed project work does not occur within a flood plain. The proposed project will not impact flood plains.
Prime and Unique Farmlands	There are no prime or unique farmlands within 5 miles of the project area.



Resource	Rationale for Elimination from Further Analysis
Fish and Wildlife Resources	<p>Fish, water birds, reptiles and amphibians, and small mammals have been eliminated from further consideration for the following reasons:</p> <ul style="list-style-type: none"> <li>• The canal and surrounding area do not provide suitable habitat for water birds, as the canal is regularly dewatered.</li> <li>• Fish do not occur in the canal as the canal is regularly dewatered.</li> <li>• Most project disturbance would be within the canal itself; small mammals, reptiles, and amphibians are unlikely to inhabit the area because of the intermittent nature of flow in the canal.</li> </ul>
Threatened, Endangered, and Sensitive Species	<p>Listed species that may occur in the area include:</p> <ul style="list-style-type: none"> <li>• Mexican spotted owl (<i>Strix occidentalis lucida</i>) – suitable canyon nesting habitat does not occur within 8 miles of the project area. Critical habitat is over 45 miles away. Owls that may fly through the area would avoid areas with project disturbance.</li> <li>• Yellow-billed cuckoo (<i>Coccyzus americanus</i>) – suitable nesting habitat of mature riparian overstory with dense understory does not occur within or near the project area.</li> <li>• Ute ladies'-tresses (<i>Spiranthes diluvialis</i>) – Mr. Rick Baxter surveyed the canal in 2015, and did not locate any individuals. Mr. Jim Spencer determined the project area was not suitable habitat in 2016 (see email in Appendix D).</li> <li>• Canada lynx (<i>Lynx canadensis</i>) – the project area does not include suitable habitat of high elevation coniferous forests.</li> </ul> <p>There are no T&amp;E species or their critical habitats within or near the project area.</p> <p>No sensitive species are known to occur in the project area.</p>
Recreation	<p>There are no designated recreation resources in the project area; therefore, there would be no direct effects on recreation from the Proposed Action.</p>
Access and Transportation	<p>The proposed project would not impact access or transportation due to the remote location of the project area and the restricted right-of-way.</p>

## **3.3 Affected Environment and Environmental Consequences**

This chapter describes the affected environment (baseline conditions) and environmental consequences (impacts as a result of the Proposed Action) on the quality of the human environment that could be impacted by construction and operation of the Proposed Action, as described in Chapter 2. The human environment is defined in this study as all of the environmental resources, including social and economic conditions, occurring in the impact area of influence.

### **3.3.1. Cultural Resources**

A Class III cultural resource inventory was conducted by Bighorn Archaeological Consultants from April 20 to 22, 2016, which covered the entire western 10.6 miles of canal. The only site identified was the canal itself; the canal was listed on the National Register on November 23, 1984. The canal and support structures have been routinely updated since the canal was constructed in 1938.

#### **3.3.1.1 No Action**

The No Action Alternative would have no effect on the canal.

#### **3.3.1.2 Proposed Action**

The Proposed Action Alternative would update the construction materials along the identified segments of the canal. Previous updates and maintenance of the canal have been considered to cause no adverse effects to the canal's purpose, setting, and association with significant events in history; however, the proposed lining would significantly alter the character of the canal. Therefore, the Proposed Action would adversely affect the historic canal. A mitigation plan will be detailed in a memorandum of agreement (MOA), and will include additional documentation of the canal and its history.

### **3.3.2 Hydrology**

The proposed project is within two 6th field Hydrologic Unit Code (HUC) watersheds (see Map 2 in Appendix A): Water Hollow (140600030906) and Big Sand Wash (140600030907). These watersheds contain numerous ephemeral and intermittent stream channels, which are mostly intercepted by other canals. The areas of highest water loss from the Yellowstone Feeder Canal are located within existing natural channels, which drain the water away from the canal.

With the current seepage, water delivered through the Yellowstone Feeder Canal from the Yellowstone River to meet storage limits at Browns Draw Reservoir is inefficient, and the water users are not able to effectively utilize their water rights. The water that seeps from the canal also increases in salinity as the water picks up salts on its downstream path through the intermittent and ephemeral drainages.

### **3.3.2.1 No Action**

The No Action Alternative would allow for continued seepage along the canal. Stream channels at the seepage points would continue to receive more water than would naturally flow through them, resulting in an increase in salinity downslope. A canal failure due to seepage would result in major erosion downstream from the failure.

### **3.3.2.2 Proposed Action**

The Proposed Action Alternative would eliminate canal seepage in the treated areas, and allow for more efficient filling of the reservoir and irrigation flow deliveries. The ephemeral and intermittent channels that currently receive canal seepage would continue to provide drainage for natural stream flows, but would experience reduced flows in locations where canal seepage is eliminated. The reduction in seepage would result in more of the water diverted from the Yellowstone River reaching the reservoir; this increased efficiency would result in a more reliable source to fulfill MLWUA water demands.

The Proposed Action would reduce water available to transport salts from the natural drainages; this reduction in flow would reduce salinity downslope from the canal.

### **3.3.3. Wetlands, Riparian, Noxious Weeds, and Existing Vegetation**

Wetlands occur within the vicinity of the seepage points, and are likely induced by the seepage of water from the canal. These wetlands are isolated in the drainage channels, directly downslope from the canal. Riparian vegetation is limited to the wetland areas and is comprised primarily of cottonwoods (*Populus* spp.) and willows (*Salix* spp.). Noxious weeds and existing vegetation are limited within the project area due to canal maintenance activities. Existing vegetation adjacent to the canal consists primarily of mixed grasses, rabbitbrush (*Chrysothamnus* spp.), sagebrush (*Artemisia* spp.), and pinyon-juniper.

#### **3.3.3.1 No Action**

The No Action Alternative would have no effect on wetlands in the area. Water loss from the canal would continue to support the wetlands. Existing vegetation would continue to be disturbed during routine canal maintenance.

#### **3.3.3.2 Proposed Action**

The Proposed Action Alternative would eliminate canal seepage, and would eliminate wetlands that were induced by canal seepage. No wetlands would be filled or dredged as part of the proposed project. The majority of the project disturbance would occur within the existing canal channel; however, portions of the access road may be maintained for safe access. These areas would be smoothed, shaped, contoured, and rehabilitated to as near the pre-project construction condition as practicable. Weed seed control would occur on all construction equipment to help prevent the spread of noxious weeds.

### **3.3.4 Wildlife Resources**

#### **3.3.4.1 Upland Game Birds**

The project area is within Utah Division of Wildlife Resources (UDWR)-mapped brood and winter habitat for greater sage-grouse (*Centrocercus urophasianus*). There are two leks within 2 miles of the canal, upslope of the proposed project (see Map 3 in Appendix A). The proposed activities would occur outside of brood-rearing season (mid-July to mid-September), but may overlap with winter use (November to February).

##### **3.3.4.1.1 No Action**

The No Action Alternative would have no effect on greater sage-grouse that may inhabit the surrounding area.

##### **3.3.4.1.2 Proposed Action**

The Proposed Action Alternative would have little impact on sage-grouse that may be in the area, as work is anticipated to occur during the fall when the birds are typically moving in response to weather conditions and food availability. The unvegetated canal does not provide foraging opportunities or hiding cover. Disturbance to sage-grouse could occur as a result of the proposed activities, but is unlikely as the birds would avoid areas where project activities were occurring. Minor noise disturbance associated with construction activities could be experienced by sage-grouse that may be in the area, and this may result in temporary displacement to adjacent suitable habitat areas.

#### **3.3.4.2 Other Birds (*Raptors and Migratory Birds*)**

Suitable migratory bird and raptor habitat does not occur within the unvegetated canal, but may be present along the right-of-way. Pinyon-juniper is the predominant forest type along the canal; shrubs are mainly sagebrush (*Artemisia* spp.) and rabbitbrush (*Chrysothamnus* spp.), with mixed grasses.

##### **3.3.4.2.1 No Action**

The No Action Alternative would have no effect on raptors or other migratory birds.

##### **3.3.4.2.2. Proposed Action**

The Proposed Action Alternative would have little impact on raptors or other migratory birds that may be in the area, as work is anticipated to occur after breeding season ends in August. The unvegetated canal does not provide foraging opportunities. Disturbance to birds could occur as a result of the proposed activities, but is unlikely as the birds would avoid areas where project activities were occurring.

The Proposed Action would not directly impact habitat, as most disturbance would occur within the canal itself. Noise disturbance associated with

construction activities could be experienced by birds that may be in the area, and may result in temporary displacement to adjacent suitable habitat areas.

#### **3.3.4.3. Big Game**

The proposed project is within UDWR-mapped crucial winter habitat for mule deer (*Odocoileus hemionus*; see Map 4 in Appendix A) and elk (*Cervus canadensis*; see Map 5 in Appendix A). The habitat is characterized by abundant suitable forage (mainly sagebrush) and cover (mainly pinyon-juniper type) below 7,500 feet in elevation.

##### **3.3.4.3.1 No Action**

The No Action Alternative would have no effect on big game.

##### **3.3.4.3.2 Proposed Action**

The Proposed Action Alternative would occur in the fall and early winter, when big game are moving onto the winter range and starting to rut, or early spring, prior to fawning/calving season. The unvegetated canal does not provide foraging opportunities or cover, which are crucial winter habitat values; however, the area around the canal does provide suitable woodland habitat. The Proposed Action would not directly impact big game habitat, as most disturbance would occur within the canal itself and ample and suitable adjacent woodland habitat is available. The proposed crossing would allow big game to access and cross the canal.

Disturbance to big game could occur as a result of the construction-related noise and intrusion, possibly resulting in temporary displacement to adjacent suitable habitats; however, big game would avoid the limited areas where project activities were occurring, diminishing the impacts of the disturbance on these species.

#### **3.3.5 Socioeconomics**

Water from the Yellowstone River supports agricultural uses within the Uinta Basin, primarily for the towns of Neola, Monarch, Cedar View, and unincorporated areas in western Uintah County. The MLWUA is comprised of representatives with irrigation districts served by the Moon Lake Project and multiple rivers and reservoirs, with approximately 75,000 acres of irrigated lands in the Uinta Basin. Primary production includes alfalfa, grass hay, cattle and sheep livestock production, and various grains. Agricultural development in the area is limited by the amount of available water to irrigate crops.

##### **3.3.5.1 No Action**

The No Action Alternative would not benefit the water users who receive water from the Yellowstone River. Water would continue to seep from the canal and be lost for irrigation purposes. Economic benefits of increased water availability would not be realized. The canal would continue to provide water for livestock that graze in the area adjacent to the canal.

### **3.3.5.2. Proposed Action**

The Proposed Action would allow for more efficient delivery of water through the canal, which would allow for greater water availability throughout the area. Additional available water would be used to increase crop production and support the local agricultural economy. The canal would continue to provide water for livestock that graze in the area adjacent to the canal.

### **3.3.6 Water Rights**

Surface waters are considered to be fully appropriated in the area.

The baseline conditions would remain the same with both alternatives in regards to water rights. The Proposed Action would allow the MLWUA and associated irrigation companies to more efficiently divert water through the canal from the Yellowstone River. Some of the relevant water rights are listed in Table 3-2 below:

**Table 3-2  
Relevant Water Rights for the Yellowstone Feeder Canal**

<b>Water Right No.</b>	<b>Priority Date</b>	<b>Quantity</b>
43-3027 (A416b1)	8/29/1905	13.5 cfs
43-3028 (A416C)	8/29/1905	1.57 cfs
43-3031 (A416a)	8/29/1905	7.5 cfs
43-3117 (A4203)	8/26/1911	12.0 cfs

The above water rights are all in the name of Lake Fork Irrigation Company and were modified in 2013 by Change Application No. a39182. With this approved change, these water rights can divert 34.57 cubic feet per second (cfs) from the Lake Fork, Uinta, and Yellowstone Rivers; can store water in Moon Lake, Big Sand Wash, Browns Draw, and Twin Potts Reservoirs; and use the water for the irrigation of 2801.14 acres. In addition to the listed water rights, there are other water rights that are associated with the Uinta Basin Replacement Project, the Equalization Agreement, and MLWUA exchanges that could be benefited by this Proposed Action.

#### **3.3.6.1 No Action**

The No Action Alternative would have no effect on water rights; however, seepage losses would directly affect the water users' ability to utilize the water being diverted.

#### **3.3.6.2. Proposed Action**

The Proposed Action Alternative would increase the efficient beneficial use of diversion flows, with the possibility of more water available for lower priority users in the system.

### **3.4. Indian Trust Assets**

Indian Trust Assets are legal interests in property held in trust by the United States for federally recognized Indian Tribes or Indian individuals. Assets can be real property, physical assets, or intangible property rights, such as lands, minerals, hunting and fishing rights, and water rights. The United States has an Indian trust responsibility to protect and maintain rights reserved by or granted to such tribes or individuals by treaties, statutes, and executive orders. These rights are sometimes further interpreted through court decisions and regulations. This trust responsibility requires that all Federal agencies take all actions reasonably necessary to protect trust assets. Reclamation carries out its activities in a manner which protects these assets and avoids adverse impacts when possible. When impacts cannot be avoided, Reclamation would provide appropriate mitigation or compensation. Implementation of the Proposed Action would have no foreseeable negative impacts on Indian Trust Assets, and the Ute Tribe of the Uintah and Ouray Reservation is a party to this action. The MLWUA has the ability to deliver water to Clay Basin Pond through the Yellowstone Feeder Canal, which is considered a benefit along with the stock and wildlife watering benefits of the canal.

### **3.5. Environmental Justice**

Executive Order 12898, established Environmental Justice as a Federal agency priority to ensure that minority and low-income groups are not disproportionately affected by Federal actions. Implementation of the Proposed Action would not disproportionately (unequally) affect any low-income or minority communities within the Project area. The reason for this is that the proposed project would not involve major facility construction, population relocation, health hazards, hazardous waste, property takings, or substantial economic impacts. This action would therefore have no adverse human health or environmental effects on minority and low-income populations.

### **3.6. Cumulative Effects**

In addition to project-specific impacts, Reclamation analyzed the potential for significant cumulative impacts to resources affected by the project and by other past, present, and reasonably foreseeable activities within the watershed. According to the Council on Environmental Quality's regulations for implementing NEPA (50 CFR §1508.7), a “cumulative impact” is an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. It focuses on whether the Proposed Action, considered

together with any known or reasonably foreseeable actions by Reclamation, other Federal or state agencies, or some other entity combined to cause an effect.

Based on Reclamation resource specialists’ review of the Proposed Action, Reclamation has determined that this action would not have a significant adverse cumulative effect on any resources.

### 3.7 Summary of Environmental Effects

Table 3-3 summarizes environmental effects under the No Action and the Proposed Action Alternatives.

**Table 3-3  
Summary of Environmental Effects**

<b>Project Resource</b>	<b>No Action</b>	<b>Proposed Action</b>
Cultural Resources	No Effect	Adverse Effect – MOA to mitigate effects
Hydrology	No Effect	Increased efficiency in diversions from Yellowstone River; reduction in salinity downslope of the canal
Wetlands, Riparian, Noxious Weeds, and Existing Vegetation	No Effect	May eliminate irrigation-induced wetlands
Wildlife Resources	No Effect	No Adverse Effect
Socioeconomics	No Beneficial Effect	Additional available water for agricultural development
Water Rights	No Beneficial Effect	More consistent flows for efficient use of water rights in canal system
Indian Trust Assets	No Effect	Consultation is ongoing
Environmental Justice	No Effect	No Effect
Cumulative Effects	No Effect	No Effect



# Chapter 4 Environmental Commitments

Environmental Commitments, along with Minimization Measures in Section 2.6, have been developed to lessen the potential adverse effects of the Proposed Action.

## 4.1 Environmental Commitments

The following environmental commitments would be implemented as an integral part of the Proposed Action.

1. Standard Reclamation Best Management Practices - Standard Reclamation Best Management Practices will be applied during construction activities to minimize environmental effects and will be implemented by construction forces, or included in construction specifications. Such practices or specifications include sections in the present EA on public safety, dust abatement, air pollution, noise abatement, water pollution abatement, waste material disposal, erosion control, archaeological and historical resources, vegetation, wildlife, and threatened and endangered species. Excavated material and construction debris may not be wasted in any stream or river channel in flowing waters. This includes material such as grease, oil, joint coating, or any other possible pollutant. Excess materials must be wasted at a Reclamation approved upland site well away from any channel. Construction materials, bedding material, excavation material, etc. may not be stockpiled in riparian or water channel areas. Silt fencing will be appropriately installed and left in place until after vegetation becomes established, at which time the silt fence can then be carefully removed. Machinery must be fueled and properly cleaned of dirt, weeds, organisms, or any other possibly contaminating substances offsite prior to construction.
2. Additional Analyses - If the Proposed Action were to change significantly from that described in this EA because of additional or new information, or if other spoil or work areas beyond those outlined in this analysis are required outside the defined project construction area, additional environmental analyses may be necessary.
3. Cultural Resources - In the case that any cultural resources, either on the surface or subsurface, are discovered during construction, Reclamation's Provo Area Office archaeologist shall be notified and

construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by a professional archaeologist. If any person who knows or has reason to know that they have inadvertently discovered possible human remains on Tribal land, they must provide immediate telephone notification of the discovery to Reclamation's Provo Area Office archaeologist. Work will stop until the proper authorities are able to assess the situation onsite. This action will promptly be followed by written confirmation to the responsible federal agency official, with respect to Federal lands. The Utah State Historic Preservation Office (SHPO) and interested Native American Tribal representatives will be promptly notified. Consultation will begin immediately. This requirement is prescribed under the Native American Graves Protection and Repatriation Act (43 CFR Part 10); and the Archaeological Resources Protection Act of 1979 (16 USC 470).

4. Paleontological Resources - Should vertebrate fossils be encountered by the proponent during ground-disturbing activities, construction must be suspended until a qualified paleontologist can be contacted to assess the find.
5. Wildlife Resources
  - a. Migratory Bird Protection
    - i. Perform any ground-disturbing activities or vegetation treatments before migratory birds begin nesting in the spring or after all young have fledged in the fall.
    - ii. If activities must be scheduled to start during the migratory bird breeding season, take appropriate steps to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures, and the use of various excluders (e.g., noise). Prior to nesting, birds can be harassed to prevent them from nesting on the site.
    - iii. If activities must be scheduled during the migratory bird breeding season, a site-specific survey for nesting birds should be performed starting at least 2 weeks prior to ground-breaking activities or vegetation treatments. Established nests with eggs or young cannot be moved, and the birds cannot be harassed until all young have fledged and are capable of leaving the nest site.

- iv. If nesting birds are found during the survey, appropriate spatial buffers should be established around nests. Vegetation treatments or ground-disturbing activities within the buffer areas should be postponed until the birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.
  - b. Raptor protection measures will be implemented to provide full compliance with environmental laws. Raptor surveys will be conducted using the Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (Romin and Muck 2002), to ensure that the proposed project will avoid adverse impacts to raptors, including bald and golden eagles. Locations of existing raptor nests and eagle roosting areas will be identified prior to the initiation of project activities. Appropriate spatial buffer zones of inactivity will be established during breeding, nesting, and roosting periods. Arrival at nesting sites can occur as early as December for certain raptor species. Nesting and fledging can continue through August. Wintering bald eagles may roost from November through March.
- 6. Previously Disturbed Areas - Construction activities will be confined to previously disturbed areas where possible for such activities as work, staging, storage, waste areas, and vehicle and equipment parking areas. Vegetation disturbance will be minimized as much as possible.
- 7. Public Access - Construction sites will be closed to public access because public land access is prohibited on Tribal lands. Only project personnel will be allowed to access the project site.
- 8. Disturbed Areas – The majority of areas of project disturbance will be within the canal channel, but some of the access road may be maintained for safe access. These areas will be smoothed, shaped, contoured, and rehabilitated to as near the pre-project construction condition as practicable. Weed seed control on all machines and any disturbed areas will be required.

# **Chapter 5 Consultation and Coordination**

## **5.1 Introduction**

This chapter details other consultation and coordination between Reclamation and other Federal, state, and local government agencies, Native American Tribes, and the public during the preparation of this EA. Compliance with NEPA is a Federal responsibility that involves the participation of all of these entities in the planning process. The NEPA requires full disclosure about major actions taken by Federal agencies and accompanying alternatives, impacts, and potential mitigation of impacts.

## **5.2 Public Involvement**

The draft EA was provided to the public and government agencies for a 30-day comment period. Reclamation mailed scoping letters to relevant irrigation companies and other potentially interested parties, as well as state and Federal agencies, notifying them of the Project and availability of the draft EA. One comment was received in favor of the Project.

## **5.3 Native American Consultation**

Reclamation conducted Native American consultation throughout the public involvement process. A consultation letter and copy of the Class III Cultural Resource Inventory Report were sent to the Ute Indian Tribe of the Uintah and Ouray Reservation for recommendations prior to consultation with the State Historic Preservation Office. This consultation was conducted in compliance with 36 CFR 800.2(c)(2) on a government-to-government basis. Through this effort, the tribe is given a reasonable opportunity to identify any concerns about historic properties; to advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance; to express their views on the effects of the Proposed Action on such properties; and to participate in the resolution of adverse effects.

## **5.4. Utah Geological Survey**

A paleontological file search from the Utah Geological Service (UGS) was requested to determine the nature and extent of paleontological resources within the project area. File search results and recommendations from the UGS were received in a letter dated May 23, 2016. The UGS identified a low potential for yielding significant fossil localities. The letter is attached as Appendix E.

## **5.5. Utah State Historic Preservation Office (SHPO)**

A copy of the Class III Cultural Resource Inventory Report and a determination of historic properties affected for the Proposed Action were submitted to the SHPO. The SHPO concurred with Reclamation's determination of historic properties affected in a letter dated July 11, 2016. A MOA will be executed and mitigation applied accordingly.

## **5.6. Bureau of Indian Affairs**

In an email dated July 28, 2016, Reclamation's archeologist, Mr. Zachary Nelson, requested an evaluation of Indian Trust Assets (ITAs) within the APE from the Bureau of Indian Affairs (BIA), Uintah and Ouray Agency. Reclamation received no response from the BIA identifying any ITAs impacted by the Proposed Action.

## **5.7. U.S. Fish and Wildlife Service**

The U.S. Fish and Wildlife Service was consulted during project planning to determine whether listed species could be impacted by the proposed project. Determinations were documented in emails attached as Appendix D. Based on agency review, potentially suitable Ute ladies'-tresses habitat could occur within the first one-half mile of canal from the Yellowstone River. The first 1 mile of canal was excluded from the Proposed Action; therefore, the proposed project would have no effect on Ute ladies'-tresses. No other listed species or critical habitat were identified within or near the project area.

## Chapter 6 Preparers

The following is a list of preparers who participated in the development of the EA. They include environmental summary preparers, Reclamation team members, and federal, state and district members.

**Table 6-1  
Environmental Summary Preparers**

<b>Name</b>	<b>Title</b>	<b>Company</b>
Ms. Jenna Jorgensen	Environmental Coordinator	Jones and DeMille Engineering
Mr. Eric Major	Professional Engineer	Jones and DeMille Engineering
Mr. Jon Baxter	Archaeologist	Bighorn Archaeological Consultants

**Table 6-2  
Reclamation Team Members**

<b>Name</b>	<b>Title</b>	<b>Company</b>
Ms. Linda Morrey	Secretary	Bureau of Reclamation
Mr. Rick Baxter	Water, Environmental, and Lands Division Manager, ESA Coordinator	Bureau of Reclamation
Mr. Scott Blake	Recreation and Visual	Bureau of Reclamation
Mr. Peter Crookston	Environmental Group Chief, NEPA Coordinator	Bureau of Reclamation
Mr. Jeff Hearty	Economist	Bureau of Reclamation
Mr. Cal Jennings	Archaeologist	Bureau of Reclamation
Mr. Shane Mower	General Biologist	Bureau of Reclamation
Mr. Zachary Nelson	Archaeologist	Bureau of Reclamation
Mr. Justin Record	Water Rights	Bureau of Reclamation

<b>Name</b>	<b>Title</b>	<b>Company</b>
Mr. David Snyder	Clean Water Act Coordinator	Bureau of Reclamation
Mr. Mike Talbot	Engineer	Bureau of Reclamation

**Table 6-3**  
**Federal, State, or District Members**

<b>Name</b>	<b>Title</b>	<b>Company</b>
Ms. Jena Lewinsohn	Terrestrial Botanist	U.S. Fish and Wildlife Service

## Chapter 7 Acronyms and Abbreviations

<b>Acronym/Abbreviations</b>	<b>Meaning</b>
BIA	Bureau of Indian Affairs
CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
FONSI	Finding of No Significant Impact
HUC	Hydrologic Unit Code
ITA	Indian Trust Assets
MLWUA	Moon Lake Water Users Association
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
Reclamation	U.S. Bureau of Reclamation
SHPO	State Historic Preservation Office
UGS	Utah Geologic Service
USC	United States Code
UDWR	Utah Division of Wildlife Resources



## **Chapter 8 References**

Madsen, S. T., and J. R. Baxter. 2016. A Cultural Resource Inventory for the Proposed Yellowstone Feeder Canal Upgrade Project north of Altonah, Duchesne County, Utah. Bighorn Archaeological Consultants, L.L.C. Orem, Utah.

## **Chapter 9 Appendices**

Appendix A. Maps

Appendix B. Comments

Appendix C. Engineering Plans







Appendix D. Listed Species Correspondence

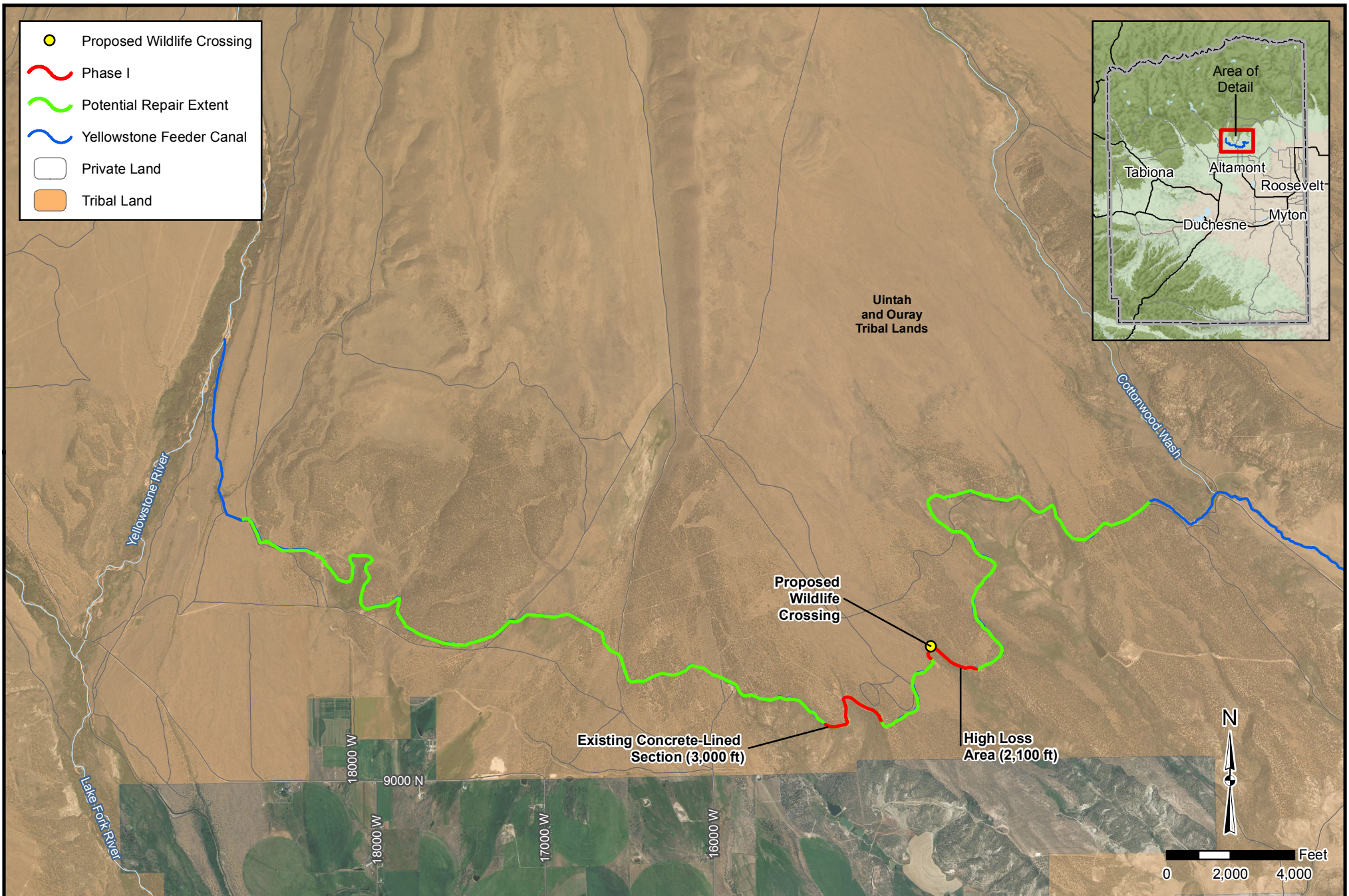
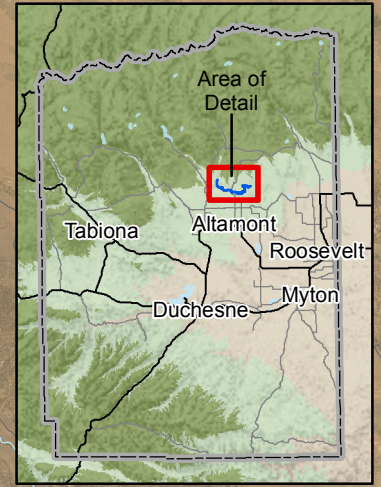
Appendix E. Paleontological File Search Correspondence

## **Appendix A**

### **Maps**



-  Proposed Wildlife Crossing
-  Phase I
-  Potential Repair Extent
-  Yellowstone Feeder Canal
-  Private Land
-  Tribal Land



Uintah and Ouray Tribal Lands

Proposed Wildlife Crossing


Existing Concrete-Lined Section (3,000 ft)

High Loss Area (2,100 ft)



0 2,000 4,000 Feet



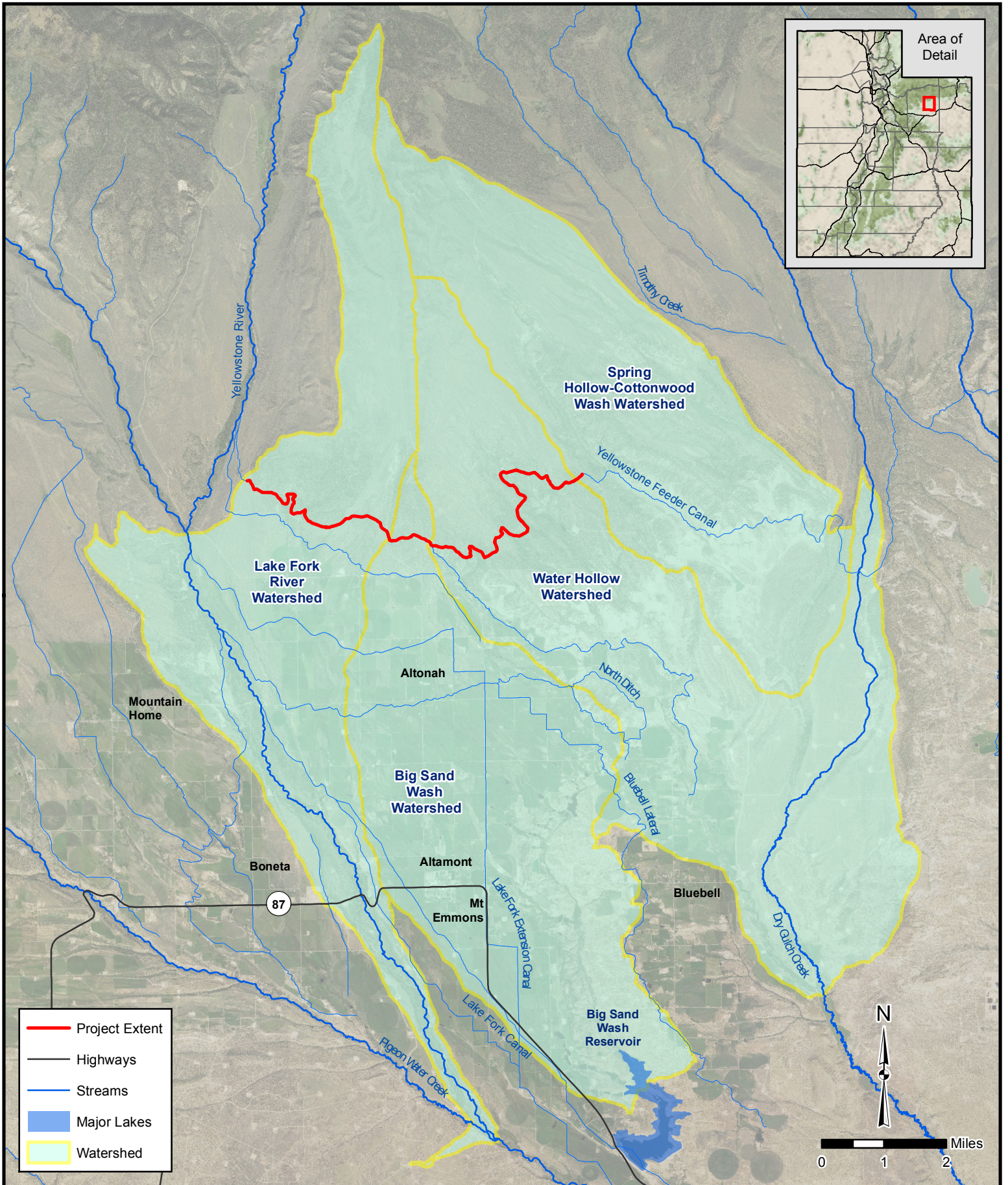
**GIS**  **Jones & DeMille Engineering**

- infrastructure professionals -  
800.748.5275 www.jonesanddemille.com

<b>Moon Lake Water Users Association</b>		
<b>Yellowstone Feeder Canal Repairs</b>		
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Project Number: 1408-228	Drawn by: JWW 08-16	Last Edit: 08/17/2016

DUCHESE COUNTY
SCALE: 1" = 4,000'
<b>1</b>





- Project Extent
- Highways
- Streams
- Major Lakes
- Watershed



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**Moon Lake Water Users Association**

**Yellowstone Feeder Canal  
Environmental Assessment: Hydrology**

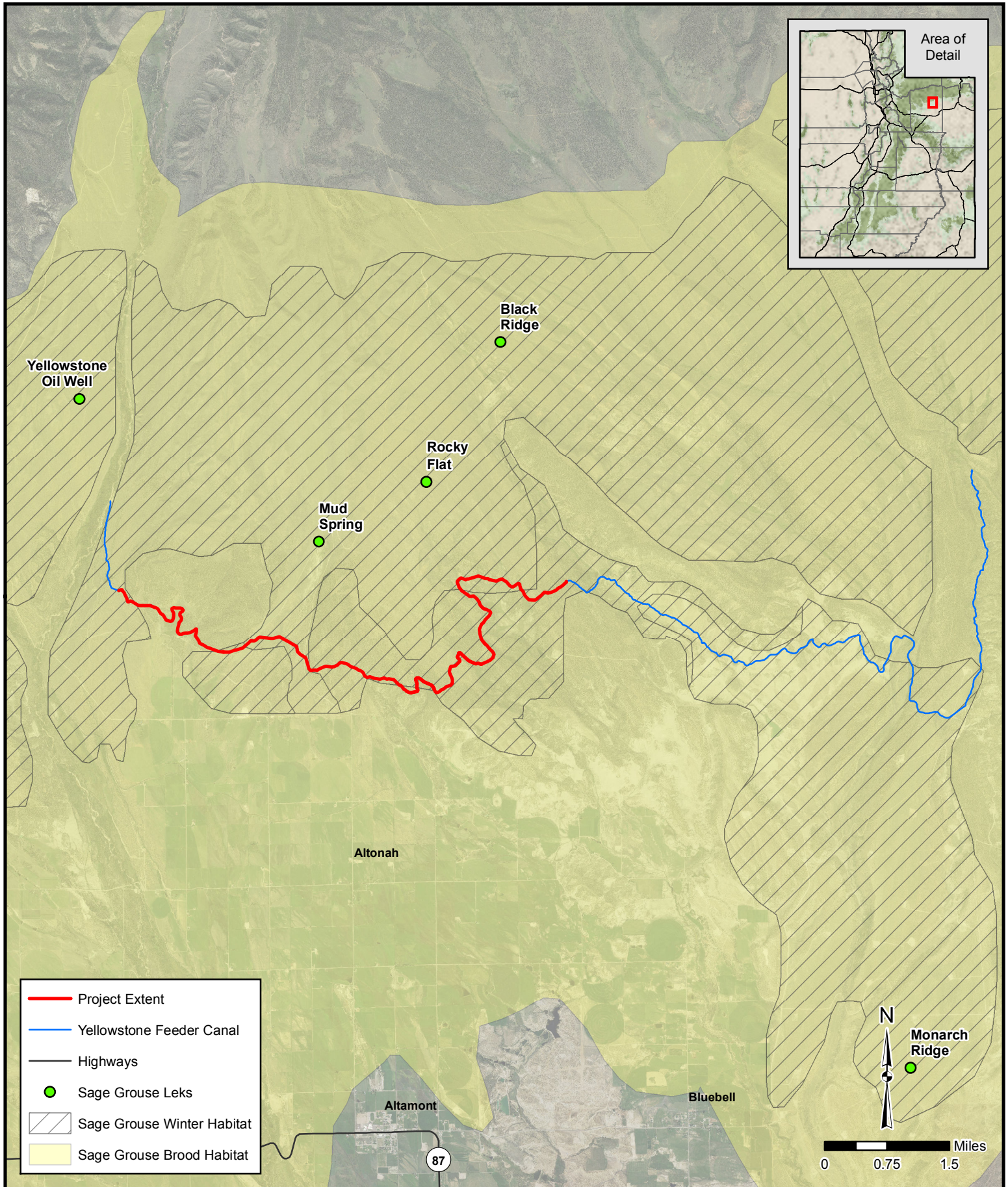
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DUCHESNE COUNTY

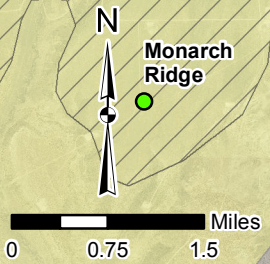
SCALE: 1" = 2 Miles

2





- Project Extent
- Yellowstone Feeder Canal
- Highways
- Sage Grouse Leks
- Sage Grouse Winter Habitat
- Sage Grouse Brood Habitat



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**Moon Lake Water Users Association**

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*Yellowstone Feeder Canal*  
**Environmental Assessment: Sage Grouse Habitat**

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 Project Number: 1408-228      Drawn by: JWW 07-16      Last Edit: 07/18/2016

DUCHESNE COUNTY

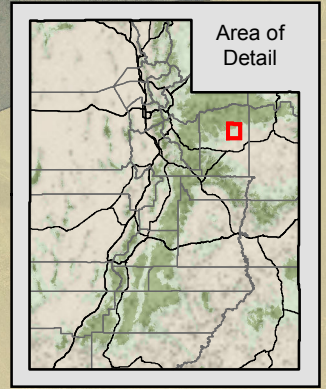
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SCALE: 1" = 1.5 Miles

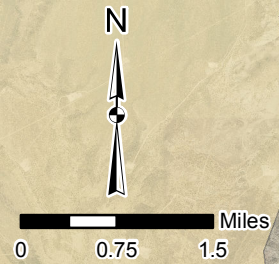
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**3**





- Proposed Wildlife Crossing
- Project Extent
- Yellowstone Feeder Canal
- Highways
- Winter Crucial Habitat



**GIS** **Jones & DeMille Engineering**  
*- infrastructure professionals -*  
 800.748.5275 www.jonesanddemille.com

**Moon Lake Water Users Association**

---

*Yellowstone Feeder Canal*  
**Environmental Assessment: Mule Deer Habitat**

---

Map Name: H:\JD\Proj\1408-228\Design\GIS\Maps\Environmental4\_EA\_Mule\_Deer\_Habitat.mxd  
 Project Number: 1408-228      Drawn by: JWW 08-16      Last Edit: 08/17/2016

DUCHESNE COUNTY

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SCALE: 1" = 1.5 Miles

---

**4**





-  Proposed Wildlife Crossing
-  Project Extent
-  Yellowstone Feeder Canal
-  Highways
-  Winter Crucial Habitat

**GIS**  **Jones & DeMille Engineering**  
*- infrastructure professionals -*  
 800.748.5275 www.jonesanddemille.com

**Moon Lake Water Users Association**

**Yellowstone Feeder Canal**  
**Environmental Assessment: Rocky Mountain Elk Habitat**

Map Name: H:\JDI\Proj\1408-228\Design\GIS\Maps\Environmental5\_EA\_Rocky\_Mountain\_Ek\_Habitat.mxd  
 Project Number: 1408-228      Drawn by: JWW 08-16      Last Edit: 08/17/2016

DUCHESNE COUNTY

SCALE: 1" = 1.5 Miles

**5**



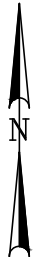
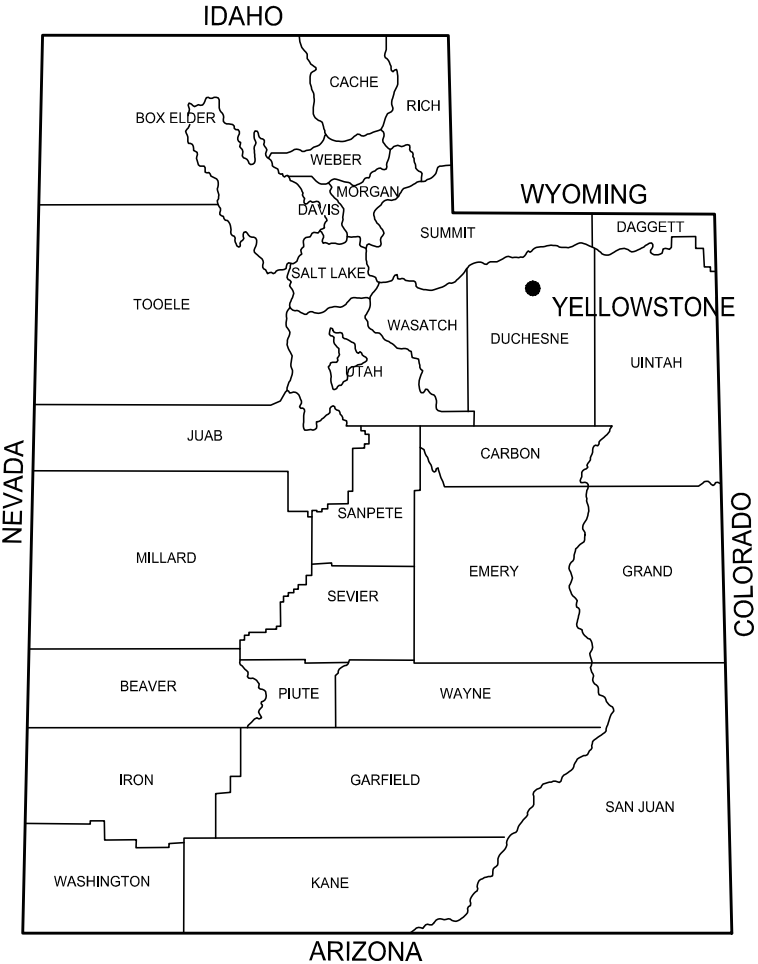
## **Appendix B.**

### **Comments**

**Appendix C.**  
**Engineering Plans**

# MOON LAKE WATER USERS YELLOWSTONE FEEDER CANAL DUCHESNE COUNTY 2016

PROJECT NO.	SHEET NO.
1408-228	1



VICINITY MAP

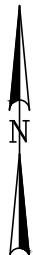
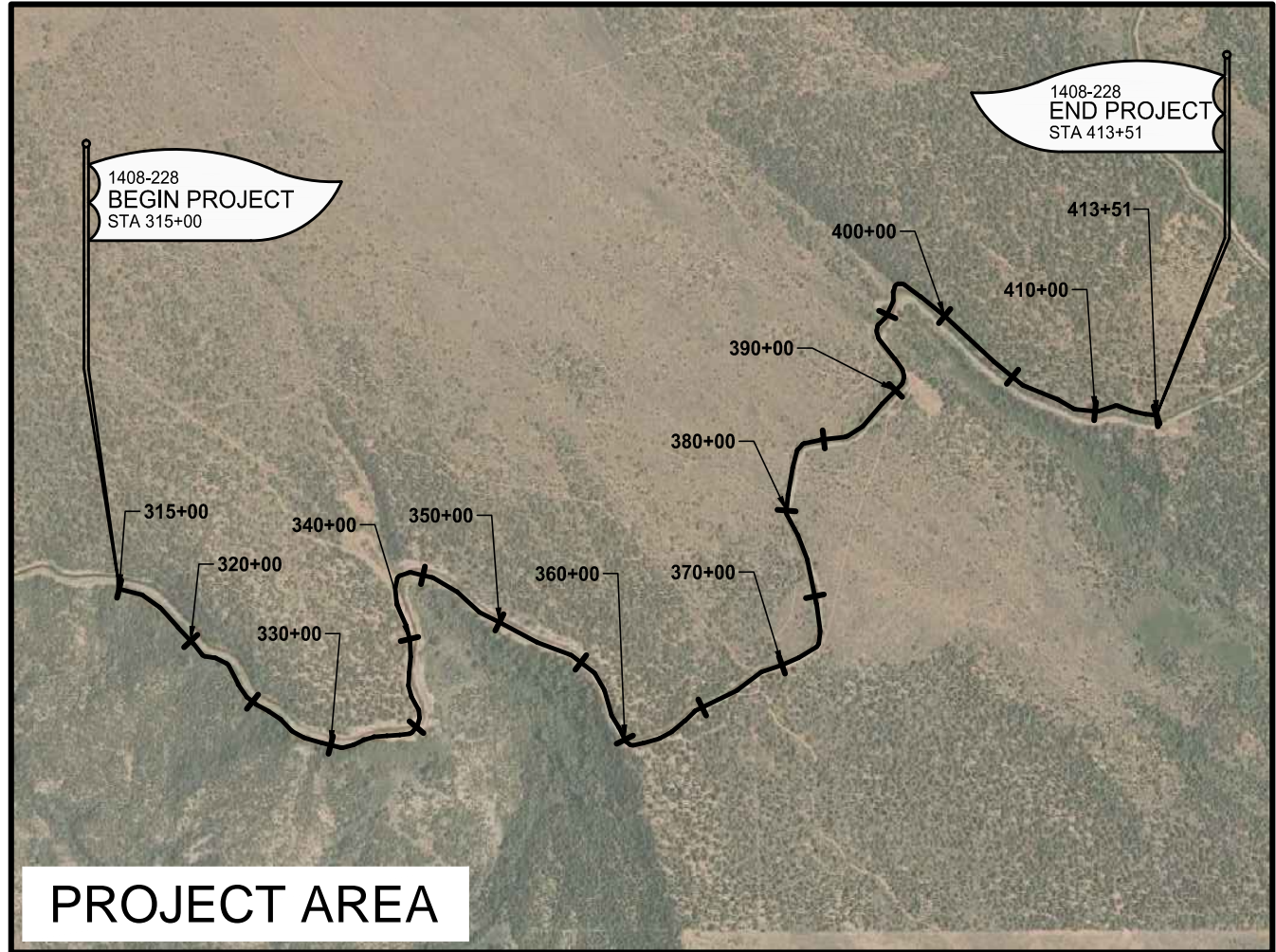
## APPROVAL

RECOMMENDED FOR APPROVAL:	
_____	_____
ENGINEER	DATE
APPROVED:	
_____	_____
MOON LAKE WATER USERS	DATE



**Jones & DeMille Engineering, Inc.**  
 CIVIL ENGINEERING - SURVEYING - TESTING  
 GIS - ENVIRONMENTAL  
 - infrastructure professionals -  
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# INDEX SHEET

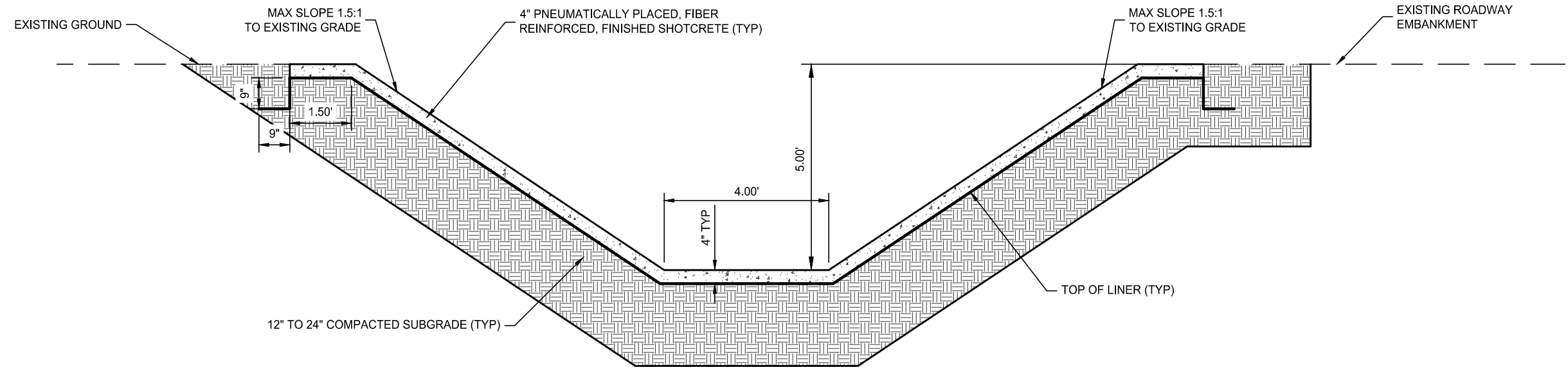


PLAN SHEETS	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
1-A	INDEX TO PLANS
TS-01	TYPICAL SECTION
DT-01	DETAIL SHEET
PL-01 TO PL-02	PLAN SHEET

<b>Jones &amp; DeMille Engineering, Inc.</b> CIVIL ENGINEERING - SURVEYING - TESTING GIS - ENVIRONMENTAL 1.800.748.5275 www.jonesanddemic.com		DESIGN: EM 02/16 DRAWN: DR 02/16 QUANT:	CHECK: . CHECK: . CHECK: .	REVIEW: . DATE: . BY: .
MOON LAKE WATER USERS YELLOWSTONE FEEDER CANAL INDEX SHEET PROJECT NUMBER: 1408-228	DWG NAME: TITLE SHT SET: 1408-228 DWG CREATED: 02/16 PEN TBL: _1408-228.dwg	ORIGINAL SUBMISSION FOR AUTHORIZATION NO. DATE DESIGN REV. BY: PARCELS CORR. BY: REQUEST BY: REMARKS:	REVISIONS NO. DATE DESIGN REV. BY: PARCELS CORR. BY: REQUEST BY: REMARKS:	UPDATED: 3/22/2016 PLOTTED: 3/22/2016
DUCHESNE COUNTY		SCALE: NO SCALE		
SHEET NO. 1A				




# TYPICAL SECTION

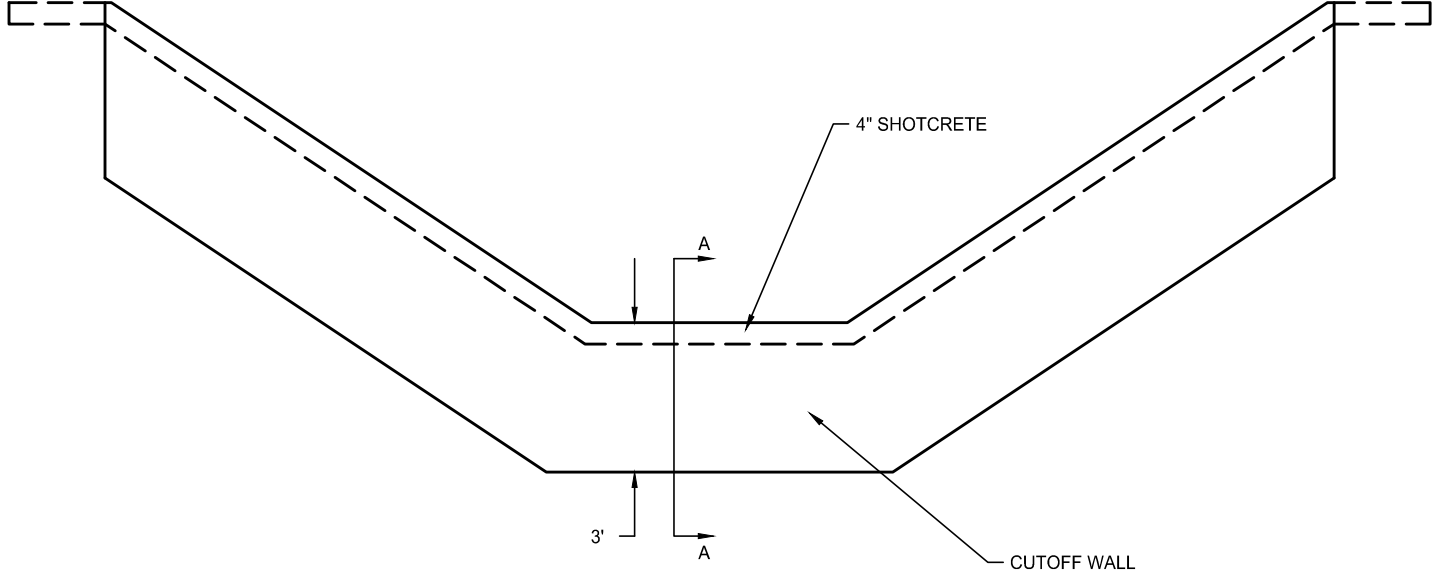


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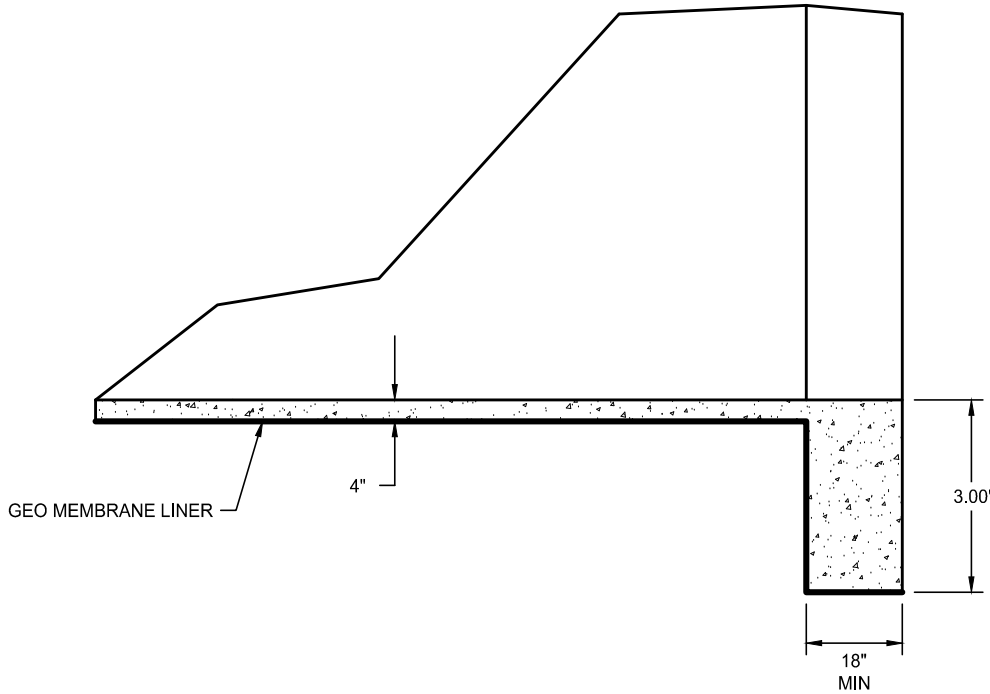
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- 2. CONTRACTION JOINTS PLACED TRANSVERSELY AT 15FEET ON CENTER.
- 3. DRAWING IS NOT TO SCALE.

 <p><b>Jones &amp; DeMille Engineering, Inc.</b>          CIVIL ENGINEERING - SURVEYING - TESTING          GIS - ENVIRONMENTAL          1.800.748.5275 www.jonesanddemille.com</p>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DESIGN: EM</td> <td>02/16</td> <td>CHECK:</td> <td></td> <td>REVIEW:</td> <td></td> </tr> <tr> <td>DRAWN: DR</td> <td>02/16</td> <td>CHECK:</td> <td></td> <td>DATE:</td> <td></td> </tr> <tr> <td>PROJECT DESIGN ENGINEER:</td> <td></td> <td>QUANT:</td> <td></td> <td>BY:</td> <td></td> </tr> </table>	DESIGN: EM	02/16	CHECK:		REVIEW:		DRAWN: DR	02/16	CHECK:		DATE:		PROJECT DESIGN ENGINEER:		QUANT:		BY:																																											
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PLOTTED: 3/2/2016																																																														

# DETAIL SHEET

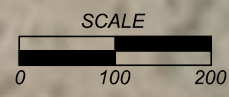


NEW CUTOFF WALL DETAIL



SECTION A-A

 <b>Jones &amp; DeMille Engineering, Inc.</b> CIVIL ENGINEERING - SURVEYING - TESTING GIS - ENVIRONMENTAL 1.800.748.5275 www.jonesanddemille.com		DESIGN: EM 02/16 DRAWN: DR 02/16 QUANT:	CHECK: . . . CHECK: . . . CHECK: . . .	REVIEW DATE: . . . BY: . . .	REVISIONS NO. DATE DESIGN REV. BY: TMS CORR. BY: PARCELS REQUESTED BY: REMARKS ORIGINAL SUBMISSION FOR AUTHORIZATION
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<b>DETAIL SHEET</b>		SCALE: 1" = 3' UPDATED: 2/29/2016 PLOTTED: 3/2/2016			
PROJECT NUMBER: 1408-228		COUNTY: DUCHESNE			
SHEET NO. DT-01					



MOON LAKE WATER USERS		<b>Jones &amp; DeMille Engineering, Inc.</b> CIVIL ENGINEERING - SURVEYING - TESTING GIS - ENVIRONMENTAL 1.800.748.5275 www.jonesanddemic.com	
YELLOWSTONE FEEDER CANAL		DESIGN: EM 03/16	CHECK: . . .
PLAN SHEET		DRAWN: DR 03/16	CHECK: . . .
PROJECT NUMBER:	1408-228	DATE: . . .	DATE: . . .
DUCHESTER COUNTY		APPROVAL RECOMM: . . .	REVIEW: . . .
SHEET NO. PL-01		DATE: . . .	DATE: . . .
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		BY: . . .	PEN TEL: 1408-228
			UPDATED: 3/22/2016
			PLOTTED: 3/22/2016





MOON LAKE WATER USERS		<b>Jones &amp; DeMille Engineering, Inc.</b> CIVIL ENGINEERING - SURVEYING - TESTING GIS - ENVIRONMENTAL 1.800.748.5275 www.jonesanddemic.com		DESIGN: EM 03/16 CHECK: . . . DRAWN: DR 03/16 CHECK: . . . QUANT: . . .		REVIEW DATE: . . . BY: . . .	
YELLOWSTONE FEEDER CANAL		APPROVAL RECOMM: . . . DATE: . . . PROJECT DESIGN ENGINEER: . . . APPROVED: . . . DATE: . . .		ORIGINAL SUBMISSION FOR AUTHORIZATION NO. DATE DESIGN REV. BY DWGS CORR. BY PARCELS REQUEST BY REMARKS		DWG NAME: PL-02 SHT SET: 1408-228 DWG CREATED: 03/16 PEN TBL: _1408-228	
DUCHESTER COUNTY		PROJECT NUMBER: 1408-228 PLAN SHEET		SCALE: 1" = 200' UPDATED: 3/22/2016 PLOTTED: 3/22/2016		SHEET NO. PL-02	



**Appendix D.**

**Listed Species Correspondence**

## Jenna Jorgensen

---

**From:** Spencer, Jim - NRCS, Roosevelt, UT <Jim.Spencer@ut.usda.gov>  
**Sent:** Friday, January 22, 2016 10:39 AM  
**To:** Jenna Jorgensen  
**Cc:** Lewinsohn, Jennifer  
**Subject:** RE: Google Earth Placemark: Yellowstone Feeder Canal.kmz

**Importance:** High

Hello Jenna and Jenna!

I looked at the .kmz file J. Jorgensen sent me and the only place I would be a little suspicious of finding *Spiranthes* is the first 2800' of the canal as it is still in the Yellowstone floodplain/canyon (particularly around the diversion). I have seen *Spiranthes romanzoffiana* upstream at Crystal Ranch, but have never seen *S. diluvialis*. You are very close to the "elevation line" used for the arbitrary division of the species. I believe *S. diluvialis* may be found in the Yellowstone drainage, I just do not know how far up the drainage it might be. That land up there is all Tribal Land and we do not have any surveys or collections to look at from up there. Sorry to be so vague, but we really don't have any information on the species on tribal lands in that area...

If it were me, I would at least survey the first 1/2 mile of the canal to see if you have potential habitat or any plants. After that, the canal runs through sagebrush uplands and the likelihood of finding plants there is slight to none.

Hope this helps.

Jim

James R. Spencer  
Wildlife Biologist  
USDA-NRCS  
240 West Hwy. 40 333-4  
Roosevelt, Utah 84066  
(435) 722-4621 x128 (office)  
(435) 671-7311 (cell)  
Fax: (435) 722-9065  
[jim.spencer@ut.usda.gov](mailto:jim.spencer@ut.usda.gov)

-----Original Message-----

From: Jenna Jorgensen [<mailto:jenna.j@jonesanddemille.com>]  
Sent: Thursday, January 21, 2016 4:19 PM  
To: Spencer, Jim - NRCS, Roosevelt, UT <[Jim.Spencer@ut.usda.gov](mailto:Jim.Spencer@ut.usda.gov)>  
Subject: Google Earth Placemark: Yellowstone Feeder Canal.kmz

Hi Jim,

This is the canal location. Any information you could provide about the connectivity for ULT would be appreciated. Please let me know if you have any questions. And thank you so much for your help!

Google Earth streams the world over wired and wireless networks enabling users to virtually go anywhere on the planet and see places in photographic detail. This is not like any map you have ever seen. This is a 3D model of the real world,

based on real satellite images combined with maps, guides to restaurants, hotels, entertainment, businesses and more. You can zoom from space to street level instantly and then pan or jump from place to place, city to city, even country to country.

Get Google Earth. Put the world in perspective.

<http://earth.google.com>

Jenna Jorgensen  
Environmental Coordinator  
435.896.8266 x 121 office  
435.893.5203 cell

infrastructure professionals

## Jenna Jorgensen

---

**From:** Snyder, David <dsnyder@usbr.gov>  
**Sent:** Tuesday, March 08, 2016 6:33 AM  
**To:** Jenna Jorgensen  
**Subject:** Re: Moon Lake Yellowstone Feeder Canal ULT Consultation

Jenna,

Rick was at the meeting with us when we discussed the YFC with Jena so Rick was able to describe the project in person with her. Jena just asked us to check with you and Jim and whatever determination Jim had made she fully supported. You are certainly welcome to discuss Rick's photos with Jim but it sounds like it may not be necessary from Jim's response of only the first 1/2 mile of the canal being potentially suitable habitat. Since Rick already surveyed the entire canal alignment last year and found no ULT it sounds like we can go with a No Effect determination.

Thank you,

On Mon, Mar 7, 2016 at 3:21 PM, Jenna Jorgensen <[jenna.j@jonesanddemille.com](mailto:jenna.j@jonesanddemille.com)> wrote:

That's great information! Thanks Dave! Last time I talked to Jena, she wanted to talk with Jim and Rick, and review the photos Rick had taken during his surveys. We haven't been able to connect with Rick, but I can send some of the photos and coordinate with Jim. I will follow up with him shortly, and let you know. Thanks!

**From:** Snyder, David [mailto:[dsnyder@usbr.gov](mailto:dsnyder@usbr.gov)]  
**Sent:** Monday, March 07, 2016 2:33 PM  
**To:** Jenna Jorgensen  
**Subject:** Moon Lake Yellowstone Feeder Canal ULT Consultation

Jenna,

Reclamation biologists here in Provo had a meeting with Jenna Lewinsohn (FWS) last Friday to discuss our current projects with potential ESA issues. The Yellowstone Feeder Canal (YFC) project was discussed and Jenna mentioned that she had talked to you about the potential for ULT's along the canal but had referred you to Jim Spencer (NRCS) as he is the expert taxonomist for the Uinta Basin that she relies upon heavily. In talking to her she seems to recall Jim mentioning that he thought the only potentially suitable habitat for ULT's along the YFC was the first 1-2 miles downstream of the diversion on the Yellowstone River. If this information is correct then Jenna is comfortable with a No Effect determination for ULT due to the proposed project being approx. 6 miles downstream from the diversion and steep cut banks/concrete lining of the canal within the project location. If you haven't already been in contact with Jim will you please verify this information with him to see if this is correct? And if possible get something in writing from him (even just in an email) that states his determination so we can document it as compliance with ESA for the ULT.

Thank you,

--

***David Snyder***

Fish & Wildlife Biologist, Environmental Group

Bureau of Reclamation

Provo Area Office

302 East 1860 South

Provo, Utah 84606

(801) 379-1185

--

***David Snyder***

Fish & Wildlife Biologist, Environmental Group

Bureau of Reclamation

Provo Area Office

302 East 1860 South

Provo, Utah 84606

(801) 379-1185

**Appendix E.**

**Paleontological File Search Correspondence**



**GARY R. HERBERT**  
Governor

**SPENCER J. COX**  
Lieutenant Governor

# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

**MICHAEL R. STYLER**  
*Executive Director*

### Utah Geological Survey

**RICHARD G. ALLIS**  
*State Geologist/Division Director*

May 23, 2016

Jenna Jorgensen  
Jones & DeMille Engineering  
1535 South 100 West  
Richfield UT 84701

RE: Paleontological File Search and Recommendations for the Moon Lake Yellowstone Feeder Canal Improvement WaterSMART Project, Duchesne County, Utah  
U.C.A. 79-3-508 compliance; literature search for paleontological specimens or sites

Dear Jenna:

I have conducted a paleontological file search for the Moon Lake Yellowstone Feeder Canal Improvement WaterSMART Project in response to your request of May 23, 2016. There are no paleontological localities recorded in our files within this project area. Quaternary, Tertiary and Recent glacial and other sedimentary deposits that are exposed along this project right-of-way have a low potential for yielding significant fossil localities (PFYC 2). Unless fossils are discovered as a result of construction activities, this project should have no impact on paleontological resources.

If you have any questions, please call me at (801) 537-3311.

Sincerely,

Martha Hayden  
Paleontological Assistant

