RECLAMATION

Managing Water in the West

Draft Environmental Assessment Fremont Irrigation Company Canal Piping Water Conservation Project Wayne County, Utah

PRO-EA-15-001

Upper Colorado Region
Provo Area Office
Provo, Utah

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

June 2017

Mission Statements

The mission of the Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors 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.

Draft Environmental Assessment Fremont Irrigation Company Canal Piping Water Conservation Project Wayne County, Utah

PRO-EA-15-001

Upper Colorado Region
Provo Area Office
Provo, Utah

prepared by

Interdisciplinary Team Leader
David Snyder
302 East 1860 South
Provo, Utah
801-379-1185
dsnyder@usbr.gov

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

June 2017

Contents

Page

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 Fremont Irrigation Company's (FIC) proposed Canal Piping Water Conservation Project (Project), in Wayne County, Utah. If approved, the Bureau of Reclamation would authorize, provide funding for, and enter into an agreement allowing FIC to convey water via new underground water piping to a new hydroelectric plant eliminating portions of existing open and unlined earthen canals, namely the High Line, Fremont Loa, and Loa Town canals thereby improving conveyance along and adjacent to the natural Fremont River course. The Project would also involve the issuance of a right-of-way (ROW) grant from the Bureau of Land Management (BLM) across Federal lands for the underground water conveyance piping system.

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 Project, then a Finding of No Significant Impact (FONSI) will be issued by Reclamation. Otherwise, an Environmental Impact Statement will be necessary prior to implementation of the Proposed Action.

1.2 Background

In February 2010, U.S. Secretary of the Interior, Ken Salazar, established the WaterSMART program to meet the goals established in the Omnibus Public Land Management Act of 2009. Subtitle F of the Act, also known as the SECURE Water Act, established that Congress finds that "adequate and safe supplies of water are fundamental to the health, economy, and ecology of the United States" (SECURE iii). Furthermore, the law authorizes Federal agencies to work with local entities to address issues jeopardizing the security and supply of water in the United States (http://www.usbr.gov/WaterSMART/water.html). As the primary water agency, Reclamation's WaterSMART program has issued a grant for this Project. Procurement of a ROW grant from the BLM is being sought as modifications to the alignment of the existing piping system is required to minimize impact to the existing environment. The existing piping system also requires upsizing to accommodate conveyance of the entire irrigation company

water right. Existing BLM ROW grants are evidenced by U-1595 and UTU-23470.

The FIC, based in Loa, Wayne County, Utah, was incorporated on December 16, 1904, and is registered in good standing with the State of Utah Department of Commerce. The FIC services 525 users and has approximately 25 miles of existing open-ditch and earthen canals and 1 mile of piped irrigation. It currently supplies irrigation water to approximately 10,000 acres within Wayne County including secondary irrigation water to the towns of Fremont, Loa, Lyman, and Bicknell. Water is diverted from the Mill Meadow Reservoir into the irrigation system through the natural Fremont River course, with a portion of the water currently being diverted into a piping system at the base of the Mill Meadow Reservoir.

Water is diverted from the natural Fremont River course into earthen canals and distributed to adjacent farm ground for irrigation. Significant water losses occur in natural and earthen channels. In addition, there are significant amounts of debris that enter the system which requires continual trash removal from screened inlets to the various piped water distribution inlets along the canal system.

As the capacity of upstream reservoirs are met, or as irrigation demands have required the water, flows are currently released downstream through the natural Fremont River course. The FIC has had continual problems with the natural river course from Mill Meadow Reservoir to the existing canal system due to the consistent buildup of debris. The unlined canals are also releasing large amounts of seepage into a fish hatchery and the basements of residences that are in close proximity.

1.3 Purpose of and Need for Proposed Action

The purpose of the Project is five-fold:

1. Improve water conservation and management.
2. Allow an improved energy-water nexus.
3. Eliminate seepage from ditches into basements of nearby homes.
4. Eliminate seepage from ditches into springs feeding the fish hatchery.
5. Provide green power generation.

The purpose of the Proposed Action would be achieved by installing a pipeline from Mill Meadow Reservoir to a hydroelectric facility. The hydroelectric facility is a key component in making the Project feasible.

The need for the Proposed Action, consistent with the purpose of Reclamation's WaterSMART program, is to improve the efficiency of the existing system and reduce the amount of water lost through the system to seepage and evaporation.

Water conservation would be improved as piping eliminates several inherent problems with open-ditch and earthen canals, including seepage, distribution failure, operational waste, and evaporation. The conserved water would allow farmers to increase crop production. The piping would allow for an improved energy-water nexus with the installation of a hydroelectric plant. The hydroelectric plant would provide immediate economic assistance, but also, as a renewable energy source, it would generate a range of benefits at local, regional, and global levels. The Project would decrease the FIC's annual operation and maintenance costs and reduce potential liability issues. The Project would increase the efficiency of the conveyance system, saving approximately 8,200 acre-feet (AF) annually. After the Project is paid for, the FIC would use excess revenue from the sale of power to install new pipe within the remaining open ditches in order to improve and promote further water conservation.

The Proposed Action addresses the need to improve water conservation and management and follows a series of discussions held between FIC board members, farmers, the community, and engineers.

1.4 Public Scoping and Involvement

During the scoping period of the Proposed Action several meetings were held with stockholders of the FIC. Meetings were held on January 13, 2014, January 12, 2015, and April 29, 2015, in Loa, Utah where over 51 percent of the shares of stock were represented. The updated project information was presented at each of the meetings held and unanimous support of the Project was given with no dissenting votes.

In addition, the Plan of Development (POD) was sent to Mr. Michael Utley, Realty Specialist for the BLM, Richfield office on October 29, 2014. Mr. Brent Gardner with Alpha Engineering met in the Richfield office with Mr. Utley shortly thereafter, to discuss the Project and it was determined that Reclamation would take the lead on the Project.

An independent financial report of the Project was prepared by the Utah State Division of Water Resources and presented in the Board of Water Resource meetings on December 4, 2014, in Salt Lake City, Utah and March 18, 2015, in St. George, Utah. Approval of the Project was given in the latter meeting.

Coordination with interested agencies and individuals was performed throughout the EA development process. Members of the Project team including FIC staff met with property owners located along the proposed Project alignment. Chapter 5 of this EA, describes in detail the public involvement and coordination completed during the development of this EA.

1.5 Permits, Licenses, and Authorizations

Implementation of the Proposed Action may require a number of authorizations or permits from state and Federal agencies. The FIC would be responsible for obtaining all permits and authorizations required for the Project. Potential authorizations or permits may include those listed in Table 1-1.

Table 1-1
Permits and Authorizations

Agency/Department	Purpose
Utah Division of Water Quality	Utah Pollution Discharge Elimination System (UPDES) Permit for dewatering.
Utah Division of Water Quality	Section 402 of the Clean Water Act (CWA) if water is to be discharged as a point source into the Fremont River, Spring Creek or other natural waterways.
State of Utah Department of Natural Resources, Division of Water Rights (DWRi)	Stream Alteration Permit under Section 404 of the CWA and Utah statutory criteria of stream alteration described in the Utah Code. This would apply for impacts to Fremont River, Spring Creek or other natural waterways during Project construction.
Utah State Historic Preservation Office	Consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA), 16 USC 470 USC 470.
United States Fish and Wildlife Service	Consultation pursuant to Section 7 of the Endangered Species Act.
United States Army Corps of Engineers (USACE)	A USACE permit, in compliance with Section 404 of the CWA, would be required prior to the discharge of dredged or fill material into “waters of the United States”.
Bureau of Land Management	ROW for piping facilities on BLM ground.
Wayne County	Construction permit for construction activities.
Land Owners	ROWs would be obtained through Grants of Easement by respective land owners to meet Project objectives.

1.6 Related Projects and Documents

There are no known projects or planned projects within Wayne County that are related to the Project.

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 allowing FIC to convey water via new underground water piping to a new hydroelectric plant eliminating portions of existing open and unlined earthen canals, namely the High Line, Fremont Loa, and Loa Town canals thereby, improving conveyance along and adjacent to the natural Fremont River course. The Project would also involve the issuance of a ROW grant from the BLM across Federal lands for the underground water conveyance piping system. That determination includes consideration of whether there would be significant impacts to the human environment. In order to enclose the canals and install a hydroelectric facility, this EA must be completed and a FONSI must be issued. This EA examines temporary impacts from construction activities as well as permanent impacts from canal enclosure and hydroelectric facility installation.

1.8 Conformance with BLM Plans

The Proposed Action and No Action Alternative described below are in conformance with the Richfield Resource Management Plan (RMP) approved in October 2008. Although the Proposed Action and No Action Alternative are not specifically mentioned in the RMP, they are consistent with the Desired Outcomes and Management Actions. The proposed mitigation measures are in conformance with the Utah Greater Sage-Grouse Approved RMP Amendment.

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, Reclamation would not authorize the use of Federal funds for lining the canal and installing a hydroelectric facility. The BLM would not issue a ROW for the pipeline.

2.3 Proposed Action

The Proposed Action would tie pressure-rated pipe into the Mill Meadow Reservoir outlet structure and convey flows through a 48-inch diameter pipe alongside the existing natural Fremont River course and High Line Canal to a new hydroelectric plant. An additional 20,000 feet of pipe ranging in size from 12 to 24 inches would be installed to provide water to existing ponds and irrigation lines that were previously served by the Fremont Loa Canal. The Proposed Action would install a total of approximately 30,000 feet of 48-inch pipe, while improving conveyance of 14,350 feet alongside the natural Fremont River course and eliminating 47,000 feet of the existing open canal between the canals known as High Line, Fremont Loa, and Loa Town Canal (see Figure 1). The reservoir would release flows into the natural Fremont River course when the reservoir is at capacity due to large storm events. There are also 11,566 acres (18 square miles) that would continue to drain to the natural Fremont River course below the Mill Meadow dam as illustrated in a Hydrology Report performed on the tributary watershed based on available hydrologic data (see Appendix A).

The Proposed Action would also include the construction of a hydroelectric plant to take advantage of the available head provided by the proposed piping. Historical flow data, from releases from the Mill Meadow dam for downstream irrigation uses, were used to size the pipeline. Flows released during the irrigation season vary between 40 and 140 cubic feet per second (cfs), with no flow being released during the remainder of the year with the exception of certain base flows and flood surge releases as agreed to with the BLM and discussed in Chapter 3. Based on these flows, a pressurized 48-inch diameter pipe was

selected to optimize the delivery of the needed irrigation water while maintaining acceptable head losses in the pipeline for power generation. An analysis of the system indicates that the system would produce approximately 2 megawatts (mW) of power at peak output with an average of 6000 mW-hours of annual energy during the 6 month irrigation season.

The proposed facility components would be located on lands administered by the BLM and private land owners generally located in Fremont, Loa, and the Mill Meadow Reservoir areas (see Figure 1). The pipeline and hydroelectric plant would be located in T. 27 S., R. 3 W., secs. 3, 9, 10, 16, 17, 18, 19, 20, 29, 31, and 32. The proposed pipeline would require a 50-foot-wide permanent ROW. During construction, a temporary 100-foot ROW would typically be required for grading, vehicle passage and pipe assemblage. The 2-mW hydroelectric plant would require approximately 1 acre of land. Table 2-1 provides length and ROW acreages for the various Project components.

Table 2-1
ROW Summary

Land Ownership	Linear Feet of ROW	Temporary ROW (Acres)	Permanent ROW (Acres)
Fremont Irrigation Pipeline (From Mill Meadow Reservoir to Hydro Plant Connection); Temporary ROW [100 feet], Permanent ROW [50 feet]			
BLM	9,000	21	11[1]
Private	22,400	51	25
TOTAL	31,400	72	36
Hydroelectric Plant			
BLM	-	0	0
Private	-	0	1
TOTAL	-	0	1
Total by Land Administrator			
BLM	9,000	21	11[1]
Private	22,400	51	26
GRAND TOTAL	31,400	72	37

[1] The permanent ROW is, for the most part, in already disturbed areas within existing roadways and canal ROW.

2.3.1 Construction Schedule

Construction would commence as soon as necessary ROW and permits are obtained and all plans are finalized. It is estimated that construction of the Project would take up to 18 months to complete. Construction of the pipeline and hydro plant would occur simultaneously.

2.3.2 Construction Procedures

2.3.2.1 Pipeline Construction

The proposed pipeline would measure approximately 48-inch inside diameter and be either steel with a cement mortar lining and coal tar enamel or polyurethane coating, or high density polyethylene (HDPE) or a combination of both. Steel pipe would have gasketed joints and HDPE pipe would be fused. Both jointing systems provide for a water tight pipe. Appropriate air valves (above ground and below ground) would be installed along the pipeline approximately every 0.5 miles and at major grade changes. In-line valves would be required at all pipeline intersections. Drain line or blow-off valves would be located at low points along the pipeline, not to exceed 1.0 mile intervals, and would drain to existing channels. The pipeline would also be provided with tracer wire for locating the underground piping. Above ground fiberglass markers would be placed at strategic locations to provide public notice of the underground piping to avoid conflicts with future construction. Cathodic protection would be provided on any steel pipe installed.

Pipeline installation activities would include survey staking for alignment and grade, clearing and grubbing, access road construction, trenching, hauling equipment and materials, pipeline assembly and installation, and backfill, in this order. The approximate number of workers and typical types of equipment used for this type of construction are provided in Table 2-2. Prior to construction, the exact centerline of the pipeline ROW would be staked. The ROW boundaries would also be flagged in some areas (e.g., thick vegetation). Following staking, vegetation within the ROW would be cleared and grubbed to the extent necessary to provide for equipment clearance, construction, and maintenance operations.

It is anticipated that the alignment and trench for the pipeline would be excavated using CAT D10 (or smaller) bulldozers and/or CAT 345 (or smaller) track hoes. Blasting may be required in areas that are solid rock. As cuts and fills are anticipated, particularly in the hilly portions of the pipeline alignment, grading would be designed and performed to balance the cut and fill quantities, thus eliminating the need to import or export material. The pipeline would be bedded and buried to a minimum depth of 4 feet to the top of pipe and deeper under streambed crossings. The trench width and depth would vary depending upon the size of the pipe being installed. The trench would generally be 2 feet wider than the pipe.

A typical installation for a 48-inch inside diameter pipe would require a 6-foot-wide by 8-foot-deep trench. Where the pipeline parallels existing utilities, care

would be taken to protect existing infrastructure and communication would take place among affected entities. Where the pipeline would be installed under existing asphalt or where it would cross paved roads, asphalt would be replaced according to the governing agency's recommended specifications and requirements.

Typically, the permanent ROW for the pipeline would have a minimum road section of approximately 24 feet and be crowned with 2 percent slopes and then catch to the existing grade at a maximum of 2:1 horizontal to vertical (H:V) fill and 1:1 (H:V) cut. In areas where the pipeline would parallel or be within existing roads, the surface would be restored or replaced according to the governing agency's recommended specifications and requirements. Where there would be air valves or other pipeline appurtenances that require access, there would be manhole accesses placed at grade or extended to areas outside the road section.

Upon construction of the Project, reclamation and revegetation of disturbed areas would be performed. This would mainly include farm ground areas that would need to be re-planted. Other areas of the Project are in existing access roads for canal maintenance or along existing graveled roads. The existing canals would be left in place to provide for flood control and the pipeline would be installed in the adjacent maintenance road. Reclamation and revegetation plans would include slope stabilization, re-contouring to the extent possible, reseeding, and storm water best management practices (BMPs) (Appendix B). A sufficient ROW is being requested to allow maintenance of the pipeline as needed during routine repair or possible emergencies. All construction and reclamation activities would be reviewed through the appropriate agencies.

2.3.2.2 Hydroelectric Plant Construction

As part of the Proposed Action, a 2-mW hydroelectric plant would be constructed on private lands. This would also include the installation of tailrace, electrical equipment and connection to the adjacent overhead power line that is approximately 600 feet west of the powerhouse site. The building dimensions are estimated as 18-feet-high by 50-feet long by 75-feet wide. There is an existing roadway to the site that would provide access to the facility.

The hydroelectric plant construction activities would include survey staking, ROW, clearing and grubbing, excavation, hauling equipment and materials, trenching, backfill, compaction, pipeline installation, concrete work (forming, pouring, and curing), and site cleanup.

2.3.2.3 Project Personnel and Equipment

The number of workers and type of equipment expected to be used to install the pipeline and construct the plant are provided in Table 2-2.

Table 2-2
Estimated Personnel and Equipment Required for Project

Task	Number of People	Equipment
Survey and Staking	2	1 - Pickup Truck
Trenching	1	1 - Track Hoe (CAT 345)
Materials Hauling	2	1 - Semi-Truck w/ Flatbed Trailer 1 - Forklift/Loader
Pipeline Installation and Burial	4	1 - Bulldozer (CAT D10) 3 - Track Hoe (CAT 345) 1 - Dump Truck 1 - Loader 2 - Pickup Trucks 1 – Steel Welder Compaction Equipment 1 - Water truck Blasting Equipment
Road Construction	1	1 - Bulldozer (CAT D10) 1 - Blade 1 - Water truck
Hydro Electric Plant Construction	10	1 - Loader 1 - Dump Truck 1 - Compactor 3 - Concrete Trucks 1 - Track Hoe (CAT 345) Concrete Pump Truck Blasting Equipment
Clean-up	2	1 - Pickup Truck

2.3.2.4 Operation and Maintenance

It is anticipated that routine maintenance would include the following (see Table 2-3):

- The pipeline air valves would need to be inspected at least annually to ensure that they are functioning properly.
- The pipeline system is estimated to have a 50-year life before major pipeline repair would be required.
- A grader would be used to grade the pipeline roadway as necessary to ensure that access is maintained.
- The hydroelectric plant would require daily monitoring during the 6 month irrigation season.

Table 2-3
Estimated Personnel and Equipment Required for Operation and Maintenance

Task	Number of People	Equipment
Flushing Pipeline	2	1 - Pickup Truck
Pipeline Maintenance	2	1 - Pickup Truck 1 - HDPE Fusing Machine 1 - Track Hoe (CAT 345) Compactors
Road Maintenance	1	1 - Grader 1 - Pickup Truck
Hydroelectric Plant Maintenance	1	1 - Pickup Truck

2.3.2.5 Crossings

Existing drainage crossings would be maintained during construction. It is anticipated that there would be a total of four stream crossings along the proposed alignment of the pipeline. The average crossing would be 30 linear feet and the width of disturbance would be limited to a 100 foot construction easement. The total land area of disturbance for the four crossings would be less than 1 acre. The construction of the stream crossing would take place during the period of the year when flows within the stream are minimal. The low flows would be diverted through temporary grading and berms that would vary depending on the specific area of construction.

2.3.2.6 Quality Control Procedures

After completion of construction and restoration activities as defined by the Revegetation Plan and Richfield BLM Field Office Personnel, the contractor would provide additional quality control of construction through visual inspection.

2.3.2.7 Transportation Requirements

It is anticipated that transportation to the Project would follow existing ditches, the canal, and access roads to minimize disturbance to the existing vegetation. If additional access routes are necessary, the contractor would coordinate the disturbance with the respective agencies as needed. All currently anticipated transportation routes would be within the proposed construction easement. Following completion of construction, all areas of temporary disturbance would be contoured and re-vegetated with native plants and/or agricultural material, as appropriate. The existing access road, located at the Proposed Action site, would be used for ongoing operation and maintenance.

2.3.2.8 Standard Operating Procedures

Standard operating procedures (SOPs) herein defined would be followed (except in unforeseen conditions) during construction, operation and maintenance of the

Proposed Action. The SOPs and features of the Proposed Action have been designed to avoid or minimize adverse impacts on people and natural resources. A preconstruction meeting with Reclamation, the contractor, and FIC's representative would be held prior to commencing construction on the Project to review and assess standard SOPs and other commitments. During construction, weekly project team meetings would be held to assess the progress of the work.

Specifics of restoration to disturbed areas would be further outlined in the ROW easements. Restoration procedures would include the determination of native vegetation, reseeding rates, landscaping, re-vegetation, and noxious weed removal/control that would be appropriate for the construction zones. Monitoring and treatment would continue until the success criteria are met for two successive years without human intervention. These actions would provide that disturbed areas are returned to a natural state as appropriate.

2.4 Alternatives Considered and Eliminated from Further Study

Other options were discussed on an economic feasibility level versus effectiveness. It was determined that installing a hydroelectric facility and piping to the facility is the most cost-effective and beneficial solution for the community. The following alternatives were evaluated but eliminated because they did not meet the purpose of or need for the Project.

2.4.1 Membrane Lining

This alternative included lining the ditches with a membrane that would prohibit seepage. However, this alternative does not meet the purpose of and need for the Project because it would keep the water in an open environment, thus allowing evaporation and equipment and livestock to continue to enter the canal.

2.4.2 Additional Storage Facilities

This alternative would allow for better water management, but the canals would continue to lose water through seepage and evaporation and would continue to cause maintenance issues.

2.5 Comparison of Alternatives

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

- Improve water conservation and management.
- Allow an improved energy-water nexus.
- Eliminate seepage from ditches into basements of nearby homes.
- Eliminate seepage from ditches into springs feeding the fish hatchery.
- Provide green power generation.

As shown in Table 2-4, the No Action Alternative did not meet any of the Project's objectives while the Proposed Action met all five objectives.

Table 2-4
Comparison of Alternatives

Project Objective	Does the No Action Meet the Objective	Does the Proposed Action Meet the Objective
Improve water conservation and management.	No	Yes
Allow an improved energy-water nexus.	No	Yes
Eliminate seepage from ditches into basements of nearby homes.	No	Yes
Eliminate seepage from ditches into springs feeding the fish hatchery.	No	Yes
Provide green power generation.	No	Yes

2.6 Minimization Measures Incorporated into the Proposed Action

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

- The proposed Project construction area would be located in previously disturbed sites and would have as small a footprint as possible.

- Staging areas would be located where they would minimize new disturbance of area soils and vegetation. They are located on private property and at least 300 feet from the Fremont River course and BMPs would be implemented to ensure sediment is contained on-site.

- Ground disturbance would be minimized to the extent possible.

- Only certified weed-free hay, straw or mulch if needed, would be used to minimize the potential spread of nonnative invasive plants.
- Construction vehicles and equipment would be inspected and cleaned prior to being used on the Project to ensure that they are free of weed seed.

- Newly disturbed sites would be monitored for impacts to native vegetation.

- Stockpiling of materials would be limited to those areas approved and cleared in advance.

- The FIC would release 743 AF of water annually from Mill Meadow Reservoir to the Fremont River directly below the Dam to maintain the integrity of the riparian area and the natural river channel as described in Section 3.3.4.2.

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; wild and scenic rivers; hydrology; water quality; system operations; health, safety, air quality, and noise; prime and unique farmlands; wetlands, flood plains, riparian, noxious weeds and existing vegetation; wildlife resources; threatened, endangered, and sensitive species; recreation; socioeconomics; public safety, 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.

Analysis of potential Project impacts to the environment is based on field surveys conducted by the biological consultant on November 4 and 5, 2014; April 6 and 7, 2015; and August 5, 2015. Archaeological surveys were conducted by Intersearch on May 20 through 22, 2015. A paleontological records search was conducted by the State of Utah on June 1, 2015, (letter, Appendix C). Additionally, the Utah Division of Wildlife Resources (DWR) indicated that there were no recent records of occurrence for any endangered, threatened or sensitive species within 2 miles of the Project (letter dated June 20, 2015, Appendix D).

The proposed Project impact area consists of a permanent ROW, 25 feet on either side of the center line of the existing canal and a temporary ROW of 50 feet on either side of the center line of the existing canal.

Construction would take place outside of the irrigation season to avoid impacts to existing conveyance facilities and agricultural fields during the growing season, but the remainder of the work could be completed year round.

3.2 Resources Considered and Eliminated from Further Analysis

The following resources were considered but eliminated from further analysis because they did not occur in the Project area or because their effect is so minor (negligible) that it was discounted.

Table 3-1
Resources Eliminated from Further Analysis

Resource	Rationale for Elimination from Further Analysis
Noise	There would be no long-term increase in noise levels from the Proposed Action. Short-term temporary increases in noise are anticipated in the Project area due to construction activities. These noise impacts would be mitigated through the implementation of BMPs. No new noise would be generated from the Proposed Action. The operation of the hydroelectric plant would not result in significant additional noise.
Visual	There would be no impacts from the Proposed Action on the visual resources within the Project area. The pipeline would be buried and the low profile hydroelectric plant would blend into the surrounding environment.
Wild and Scenic Rivers	There are no Wild and Scenic Rivers within the Project impact area.
System Operations	Flow releases from the Mill Meadow Reservoir outlet structure would remain within historical release patterns.

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 and natural environment that could be impacted by construction and operation of the Proposed Action, as described in Chapter 2. The human and natural environment is defined in this study as all of the environmental resources, including social and economic conditions occurring with the Project area.

3.3.1 Geology and Soils Resources

Geology

The geology of the Project area (Fremont River drainage) is the foundation of all its other features. The structural position and erosional products of the rock

formations determine the topography that in turn affects the climate, precipitation, water supply, and types of soils for agricultural development. The combined geologic features also determine the types of vegetation, wildlife, and raw materials such as coal and petroleum that are available for industrial development (UDNR-DWR, 1975).

This unique area displays a wide variety of geologic features. The Fremont River flows eastward from an elevation of 11,000 feet, where land surfaces have been formerly glaciated, through a transition zone of intermediate elevations and erosional features, to a desolate desert area of elevations below 5,000 feet (UDNR-DWR, 1975).

The watershed lies entirely within the Colorado Plateau physiographic region. The western part of the basin is commonly included in the High Plateau district of Utah. The northern geologic boundary is the San Rafael Swell, a dome trending northeast from the basin approximately 70 miles. The Henry Mountains, a classic laccolithic structure, form a part of the southern boundary. The eastern part of the basin is defined by a low plateau deeply dissected by erosion (UDNR-DWR, 1975).

The headwaters of the watershed are located in the High Plateaus Section of the Colorado Plateaus Physiographic Province. There is considerable evidence of volcanic activity in this part of the basin, predominantly of Tertiary and Quaternary age. Most of the Awapa Plateau, Aquarius Plateau, and Thousand Lake Mountain are covered with volcanic rock derived from lava flows. In addition, Basin and Range type block faulting, present along the edges of several of the mountains, is responsible for much of the local topography. Plateau glaciation and land sliding around Fish Lake have also helped to form the present landscape (USFS, 1986a). Nonetheless, much of the geology here is hidden by soil and sagebrush. Thousand Lake Mountain is located in the southeastern portion of Fishlake National Forest. It is composed of Miocene volcanic rock capped by Pliocene lava flows; although its slopes are almost entirely formed by landslides that conceal most of the geology. To the south, in Dixie National Forest, Boulder Mountain is a Miocene shield volcano. Rabbit Valley lies on broad gravel-covered slopes below these mountains. Most of the gravel was deposited during the Pleistocene epoch when the mountain's streams were heavily loaded with coarse glacial debris (Chronic, 1990).

Groundwater reservoirs of both artesian and high water table conditions have been proven and developed to a limited extent in the alluvium of Rabbit Valley. This alluvium of sands, gravels, silts, and clays is known to be as much as 500-feet-thick, and is recharged with abundant precipitation on the adjacent lava-capped plateaus, through fractured lava flows which project beneath the valley fill (UDNR-DWR, 1975).

In and below the Project area the geology begins to change from volcanic rocks to sedimentary rocks. Between Bicknell and Teasdale a north-south fault brings Mesozoic sedimentary strata, the rocks that characterize the Plateau country of southeastern Utah, to the surface.

Wingate cliffs and massive cross-bedded Navajo sandstone rocks east of Bicknell are a Jurassic dune deposit, tilted steeply along the fault. Triassic rocks, comprised of the Moenkopi formation and Shinarump conglomerate, appear in the canyon along the Fremont River. Torrey lies on a pediment cut in rocks of Moenkopi formation (Chronic, 1990).

Soils

The arable lands of the Fremont River watershed are generally scattered in flat areas along the Fremont River. In addition, large arable areas exist on higher benches several miles from the river. Most of the arable lands in the Project area (upper Fremont River valley) are already under cultivation. This valley is no more than 3-miles-wide and 12-miles-long, and contains about 10,200 acres of cropland (Fremont Irrigation Company, 2001).

The State of Utah has categorized the soils in the Project as 100 percent Lithic Cryoborolls-Mollic Cryoboralfs-Rock Outcrop Association (soil type 3). This soil type contains mildly to strongly acidic, loams to cobbly loams that have low to moderately high erodibility (K = 0.17 - 0.28) and well to excessive drainage. Permeability above the bedrock is slow to moderate. Runoff is medium and sediment production is low. The hydrologic groups are mainly C and D (Judd, 1997).

Additional soil types in the Project area are categorized as 98 percent Argic Cryoboborolls-Pachic Cryoborolls-Cryic Paleborolls Association (soil type 1) and 2 percent Aridic Argiustolls-Typid Agriustolls Association (soil type 5). Argic Cryoboborolls-Pachic Cryoborolls-Cryic Paleborolls Association contains mildly alkaline to strongly acidic, silt loams to clay loams that have low to moderately erodibility (K = 0.17 - 0.28) and moderate to somewhat excessive drainage. Permeability is slow to rapid. Runoff is medium to slow and sediment production is moderately low – the hydrologic groups are mainly B and C (Judd, 1997).

Aridic Argiustolls-Typid Agriustolls Association contains neutral to moderately alkaline soils. The surface areas are dark reddish-brown very fine sandy loams. The subsoils are reddish-brown fine silt. The soils in this association are well drained and permeability is moderate. Runoff is medium to rapid and sediment production is moderate. The hydrologic groups are mainly B and C. Wind erosion is a problem on these soils when vegetation is removed (K value = 0.43) (Judd, 1997).

The soils of the Project area are comprised of Soil types 1, 5, and 3, relative percent, 65 percent, 25 percent, and 10 percent, respectively. The Project would

be located in a highly disturbed area primarily planted in agricultural fields. The topography of the area is relatively flat (1-3 percent slopes).

3.3.1.1 No Action

Under the No Action Alternative, there would be no adverse effects to soil, erosion, sedimentation and waste material. Soil erosion from water, wind and agriculture activities would continue in the area at the current rate.

3.3.1.2 Proposed Action

Under the Proposed Action, soil would be excavated, compacted, and graded during construction. During and immediately following construction erosion and sedimentation may increase. The BMPs would be employed to minimize the potential impacts from erosion and sedimentation. Areas where the proposed pipeline alignment travels outside of the existing roadway would be reseeded. Once vegetation is re-established over a long-term period, the soil would return to pre- Project condition.

Construction sites, staging areas, and access roads would be kept in an orderly condition during construction. Refuse, trash, including stakes and flags, would be removed and disposed. Covered dumpsters placed throughout the Project area would be used to contain all refuse. Refuse would be removed on a regular basis to an approved disposal facility. No open burning of construction trash would occur. Portable toilets would be used on site, and maintained on a regular basis.

No construction equipment oil or fuel would be drained on the ground. Oils or chemicals would be hauled to an approved site for disposal. The only significant source of potential petroleum or other hazardous material spills would be from mobile equipment. If a fuel/oil or other hazardous material spill were to occur, the appropriate regulatory agencies would be contacted as soon as possible and actions would be taken to minimize the amount and spread of the spill material. Such measures include straw bale plugs, earthen berms, or use of other absorbent materials. If necessary, soil remediation would be conducted and would include the removal of contaminated soils to an approved facility and a soil sample(s) would be taken to verify the success of the site remediation. In addition, the FIC would follow any other local, state or federal regulations related to the use, handling, storing, transporting, and disposing of hazardous material.

3.3.2 Cultural Resources

Cultural resources are defined as physical or other expressions of human activity or occupation that are generally over 50 years old. Such resources include culturally significant landscapes, prehistoric and historic archaeological sites, isolated artifacts or features, traditional cultural properties, Native American and other sacred places, and artifacts and documents of cultural and historic significance.

Section 106 of the NHPA mandates that, Reclamation take into account the potential effects of a proposed Federal undertaking on historic properties.

Historic properties are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for, inclusion in the National Register of Historic Places (NRHP). Potential effects of the described alternatives on historic properties are the primary focus of this analysis.

The affected environment for cultural resources is identified as the Area of Potential Effects (APE), in compliance with the regulations to Section 106 of the NHPA (36 CFR 800.16). The APE is defined as the geographic area within which Federal actions may directly or indirectly cause alterations in the character or use of historic properties. The APE for the Proposed Action consists of a 100-foot-wide linear corridor approximately 30,000 feet in length as well as a 1 acre area for the 1765-kw hydroelectric plant. The APE encompasses the areas of potential ground disturbance associated with the proposed pipelines, staging area and hydroelectric plant.

Intersearch, Inc. conducted an archaeological survey of the APE from May 20 through May 22, 2015. The survey was conducted under the authorization of Public Lands Policy Coordination Office Permit No. 166 and Utah State Antiquities Project No. U-15-IG-0384bp. Four previously recorded archaeological sites are located along the Project corridors. One is a small prehistoric lithic scatter, while the remaining three sites are all historic canals constructed prior to 1896 and used in the surrounding farming towns of Fremont, Loa, and Lyman. One site is in the High Line Canal, the other is the Loa Fremont Ditch, and the third site is the Loa Town Ditch. The canals have been recommended as eligible for the National Register, while the lithic scatter has not.

The proposed Project would leave the existing canals open for storm water disposal and install the pipeline within the canal bank or in road ROW. Accordingly, there would be no adverse effect to historic properties if the Project were implemented. The BLM and Utah State Historic Preservation Office (SHPO) concurred with this recommendation in letters dated respectively May 6, 2016, and October 31, 2016.

3.3.2.1 No Action Alternative

Under the No Action Alternative, there would be no foreseeable impacts to cultural resources. There would be no need for ground disturbance for pipe installation or staging areas. The existing conditions would remain intact and would not be effective.

3.3.2.2 Proposed Action

Under the Proposed Action four cultural resources along the Project corridor may be impacted but would have no adverse effect. One site, a small prehistoric lithic scatter is located along the road leading up Fremont Canyon to Mill Meadow Reservoir and is recommended as a non-eligible resource. It has been heavily disturbed by the road and has been largely destroyed during the past 30 plus years since it was originally recorded as an ineligible site, the Project would have no impact, by definition.

The three remaining sites are all historic ditches associated with agricultural activities surrounding the towns of Fremont, Loa, and Lyman. All three were constructed prior to 1896, using water from both the Fremont River and Spring Creek, and they are all administered by the Fremont Irrigation Company. The Fremont Loa Ditch and the Loa Town/Fremont Ditch sites would not be adversely impacted by the Proposed Action. Approximately 1,600 feet of the proposed pipeline would be placed in the bank of the Fremont Loa Ditch, whereas the Loa Town/Fremont Ditch would only require connection of the pipeline to the existing ditch. The placement of the pipeline in the bank of the ditch would not impact those characteristics of the ditch that contribute to its significance and integrity.

The High Line Canal would not be adversely impacted as the pipeline would be installed in the adjacent maintenance roadway/dike. This would not alter the primary historic function, setting, or context of the ditch. Thus, overall, the Proposed Action would have "No Adverse Effect" to cultural resources.

3.3.3 Paleontological Resources

Paleontological resources are defined as any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. Any materials associated with an archaeological resource as defined in Section 3 (1) of the Archaeological Resource Protection Act of 1979 (16 U.S.C. 470 bb (1)) and any cultural item as defined in Section 2 of the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001) are not considered paleontological resources.

Section 6302 of the Paleontological Resources Preservation Act (PRPA) of 2009 (Sections 6301-6312 of the Omnibus Land Management Act of 2009; Public Law 111-11 123 Stat. 991-1456) requires the Secretary of the Interior to manage and protect paleontological resources on Federal land using scientific principles and expertise.

The APE for the paleontological resources is consistent with the APE for cultural resources, as described in the previous section.

Paleontological Resources Status

A paleontological records search conducted at the Utah Geological Survey in Salt Lake City (letter June 1, 2015, Appendix C) indicated that no known significant localities had been recorded in the APE. In addition, the exposed Quaternary, Recent, and Tertiary alluvial and volcanic deposits that are exposed in the Project areas have low potential for yielding significant fossil localities.

3.3.3.1 No Action Alternative

Under the No Action Alternative there would be no foreseeable impacts to paleontological resources. There would be no need for ground disturbance for

pipe installation, hydroelectric plant or staging areas. The existing conditions would remain intact and would not be affected.

3.3.3.2 Proposed Action

In a search conducted by the Utah Geological Survey in Salt Lake City during May 2015, there were no paleontological localities recorded in their files for the Project area. Any Quaternary, Recent and Tertiary alluvial and volcanic deposits that are exposed in the area have a low potential for yielding significant fossil localities. Unless fossils are discovered as a result of construction activities, the Project should have no impact on paleontological resources. Therefore, under the Proposed Action, there would be no foreseeable impacts to paleontological resources.

3.3.4 Hydrology

The Project area is located within two watersheds of the Fremont River Sub-Basin known as "Headwaters Fremont River" and Pine Creek – Fremont River. These two watersheds are referred to in this and other documents as the "Upper Fremont Watershed" which ends below the confluence of the Fremont River and Pine Creek. The Fremont River is 95 miles in length and flows from Johnson Valley Reservoir to Muddy Creek passing through Capitol Reef National Park and the towns of Caineville and Hanksville, Utah. Near Hanksville, the Fremont River joins with Muddy Creek and the Dirty Devil River until it reaches Lake Powell and the Colorado River.

Inflow to Johnson Valley Reservoir occurs through Sevenmile Creek which drains the northern portion of the watershed, and Lake Creek which drains Fish Lake. Inflow ranges from 70 cfs in the spring and early summer to 12 cfs in the late summer and fall. Flows coming out of Johnson Valley Reservoir are altered to sustain irrigation use. When Johnson Valley Reservoir is releasing water, flows are usually between 60-70 cfs. This usually occurs between June and August. During other parts of the year, flows are usually around 10 cfs, although occasional releases have been observed during other times of the year.

At Mill Meadow Reservoir the Fremont River is joined by U M Creek which also has an altered flow regime due to storage of water in Forsyth Reservoir. Upstream of Forsyth Reservoir U M Creek flows range from 5 to 15 cfs with potentially much higher yearly peaks. U M Creek flows between 0 and 10 cfs downstream of Forsyth Reservoir depending on irrigation needs.

Flows in the Fremont River downstream of Mill Meadow Reservoir are regulated to provide for irrigation needs in the valleys below. Below Mill Meadow Reservoir flow continues in its natural channel for about 3 miles until two irrigation diversions divert the entire flow into a canal system. Mill Meadow Reservoir releases around 90 cfs during irrigation season (April 1-15 to November 1. No water is released when irrigation is not occurring; however, some water leaks past the dam and persists past the dam for at least 1.5 miles in the channel. The river channel and flow rates are substantially altered between

the diversion near Fremont, Utah, and its confluence with Spring Creek – a distance of about nine miles. This reach is dry due to diversion and portions of the channel that have been straightened and diverted around irrigated fields. As the river makes its way through Rabbit Valley it is occasionally replenished by surface and groundwater flow but does not exhibit dependable flow.

As it flows intermittently through Rabbit Valley the Fremont River is joined by other streams. These are also depleted by irrigation uses. The most notable is Spring Creek which originates from a spring source on the valley margin between the towns of Fremont and Loa. Spring Creek flows a constant 13 cfs and is mostly diverted during the irrigation season.

The Fremont River is mostly perennial between its confluence of Spring Creek and its confluence with Pine Creek at the lower end of the watershed. There are several diversions within this reach and portions of the channel are straightened. Flow rates in the Fremont Narrows are usually near zero during dry periods and increase to around 20 cfs. Flows increase due to recharge from springs and tributaries and at the Upper Fremont watershed boundary flows range from 60 to 110 cfs.

Upper Fremont River water is diverted into canals and pipe and used by the FIC. The largest of these diversions is the High Line Canal which diverts the entire flow of the Fremont River during irrigation season (about 90 cfs). The FIC has approximately 25 miles of existing open ditch and earthen canals and 1 mile of piped irrigation. The system has approximately 25,512 AF of storage including 6,300 AF in Fish Lake, 10,350 AF in Johnson Valley Reservoir, 3,639 AF in Forsyth Reservoir, and 5,232 AF in Mill Meadow Reservoir. The source of water for the proposed Project comes from Mill Meadow Reservoir, 4 miles northeast of Fremont, Utah, which is fed by the Fremont River and the storage reservoirs upstream of the reservoir.

The existence of diversions, reservoirs, and canals in the watershed has resulted in altered flow-paths and depletion. Canals located on the valley margins lose a substantial portion of their flow to leakage and evaporation. It has been estimated that leakage from ditches and canals is about 5,321 AF annually. An additional 31 AF annually are lost to evaporation. The total amount lost is estimated to be 50 percent of all water that is conveyed through the ditch/canal system. A very small portion of water lost from leakage waters riparian vegetation adjacent to canals, but most of the water either resurfaces in the immediate watershed or lost to deeper groundwater.

3.3.4.1 No Action Alternative

Under the No Action Alternative, the existing open lined ditches and laterals would continue to deliver irrigation water with no proposed improvements for reducing or eliminating seepage or evaporation. Under the No Action Alternative, a larger than necessary water appropriation would continue to be

required to meet water user needs due to the inefficiency of the existing unlined canal system.

3.3.4.2 Proposed Action

The Proposed Action would result in substantial alterations to hydrology within the Upper Fremont Watershed below Mill Meadow Reservoir. The Proposed Action would increase efficiency of the irrigation system by reducing loss of water to evaporation, transpiration, and seepage. Flows in the natural channel of the Fremont River between Mill Meadow Reservoir and the High Line Canal would be substantially reduced. Surface and groundwater hydrology of the Fremont Valley and Rabbit Valley would be altered due to reduced canal seepage, alterations of return flow locations, and changes in irrigation depletion.

Under the Proposed Action, Reclamation would authorize the use of Federal funds to install approximately 30,000 feet of pipe in the existing FIC water delivery system. The installation of pipe would modify 14,590 feet of the natural Fremont River course and eliminate 47,000 feet of existing open canal between the High Line Canal and the Loa Town Canal. The majority of outflow from the upstream reservoir, which historically has conveyed irrigation water through the water course, would now convey irrigation water through the pipeline. To address environmental concerns regarding this reduction the FIC has proposed the following design feature:

> The FIC would release 743 AF of water annually from Mill Meadow Reservoir to the natural river channel of the Fremont River directly below the Dam. This release would provide water for maintenance of existing natural resources present within the stream channel and along its banks between Mill Meadow Reservoir and the High-Line Canal. Release of water would be timed to provide for: 1) adequate base flow to support riparian resources and aquatic life currently supported by the Fremont River; and, 2) a surge of water simulating a flood to maintain river channel, floodplains, and habitat. The FIC and government agencies would work together to ensure that water releases do not result in unintended adverse impacts to the local economy and natural resources and therefore exemptions to this release would apply. The following is proposed:
>
> <u>Base flow Maintenance</u>
> The FIC would release 238 AF of water annually between July 1 and December 31 to maintain base flow in the natural channel of the Fremont River. This represents an average flow of 2 to 3 cfs over a 6 month (184 day) period. The FIC would release no less than 0.5 cfs at a time during this period.

Flood Surge Release

FIC would release a surge of water totaling 505 AF annually to the natural channel directly below Mill Meadow Reservoir with certain exceptions. This surge would be released during a 2 week or shorter period at a time between July 1 and August 31 at a time and duration convenient for FIC provided that no less than 505 AF annually are released and no instantaneous release of more than 30 cfs occurs.

Exemptions

FIC may be exempted from releasing water from Mill Meadow Reservoir on a year-by-year basis if it is determined that a release would cause adverse effects to natural resources or socioeconomics. The BLM would coordinate with the DWR and exempt FIC from releasing water if it is determined that aquatic life in the reservoir would be unduly impacted. The release requirement may also be waived in drought years if agreed upon by all parties. If during some year natural runoff and/or seepage occurs in sufficient amounts to maintain river channel and floodplain function the release requirements could be exempted or modified.

The BLM's ROW grant would include a stipulation that ties this design to continued authorization for operation and maintenance of the ROW and its facilities. The stipulation would formalize the design feature as an agreement between FIC and BLM. There would be no changes to the design feature as described above unless agreed to by all parties. It would also provide for alteration of the agreement throughout the operation and maintenance period with mutual consent.

Adherence to this design feature would enable the river channel and associated floodplains and riparian area to function properly even with the substantially less flow that would occur under the Proposed Action. Further details regarding impacts to these resources are presented in sections 3.3.8, 3.3.9, and 3.3.10. Under the Proposed Action, flows would be substantially reduced in the Fremont River between Mill Meadow Reservoir and the High Line Canal diversion during irrigation season. Flow directly below Mill Meadow Reservoir from May to October would be reduced from around 90 cfs to about 2 cfs. Water leaking past the dam and seeping into the channel would sustain flow in the 3 mile subject reach in the spring time, but may not persist into summer and fall for the entire reach. The proposed water release design feature for base flow would ensure continued flow during the driest part of the year. The proposed water surge would also occur during this dry period and would provide some bank storage and release to sustain flow.

Impacts to Fremont River hydrology may occur downstream of the High Line Canal but conditions would not be expected to vary beyond those which result from yearly decisions made by irrigators and the FIC. As described, the proposed Project would reduce seepage in canals resulting in greater amounts of water

being consumed in agricultural production. Under the No Action alternative water lost to seepage recharges groundwater and may resurface elsewhere to supply other uses and users. Alternatively, increased availability of water for pressurized irrigation would also improve irrigation efficiency and decrease water depletion possibly making more water available for downstream uses and users. If the project makes more water available for irrigation there may be new points of return flow. It is probable that these points would be farther downstream than current return flow (such as those due to seepage). If so, channels and meadows in the upper portions of the watershed would become dryer than under the No Action alternative. The Proposed Action does not describe changes in agricultural water usage in sufficient detail to determine to what extent this would occur. The Proposed Action could result in alterations to storm water routing and associated aspects of the water budget. If canals are not maintained they could become bypassed resulting in changes in flood locations and intensities. The resulting extent and level of potential impacts is not well understood because seepage flow paths in the area are not well understood.

3.3.5 Water Quality

Water quality information has been collected and condition has been assessed for the reach of the Fremont River within and near the project area. The Utah Department of Environmental Quality - Division of Water Quality (DWQ) has classified the Fremont River between Mill Meadow Reservoir and Bicknell according to its beneficial uses. It has been determined that water quality in the stream should be sufficient to support the following:

> Class 1C -- Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water.
>
> Class 2A -- Protected for frequent primary contact recreation where there is a high likelihood of ingestion of water or a high degree of bodily contact with the water. Examples include, but are not limited to, swimming, rafting, kayaking, diving, and water skiing.
>
> Class 3A -- Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.
>
> Class 4 -- Protected for agricultural uses including irrigation of crops and stock watering.

The same standards (1C, 2A, 3A and 4) apply for the Fremont River upstream of Mill Meadow Reservoir, but in the reservoir itself the standards are lower. Class 1C is not included for the reservoir and it is class 2B instead of class 2a which only provides for infrequent contact recreation.

In 2016 the DWQ made determinations whether water quality in the Fremont River below Mill Meadow Reservoir is supporting its classified beneficial uses. It

was determined that water quality does not support Class 1C, 2A, and 4 due to pH, and does not support 3A due to elevated temperature, pH, and total phosphorus. Data used to make water quality determinations was collected near Bicknell, and may not reflect surface water conditions directly below Mill Meadow Reservoir. For example, elevated temperature is likely not an issue in this upper reach since it receives cool water from the reservoir outlet. There is only one sample of record from the Fremont River in the reach between Mill Meadow Reservoir and the High Line Canal (AWQMS; UDWQ 2002; UDWQ 2016).

The existing irrigation water distribution system may contribute to impairment of surface waters within the Upper Fremont Watershed. Open canals filled with agricultural return flow could act as conduits carrying nutrient laden waters back into the Fremont River and other streams. Water quality condition and duration of flow is not known for these water courses thus it is difficult to estimate associated impact levels.

Efforts to improve water quality are underway in the Upper Fremont Watershed. A watershed planning group has identified upland vegetation treatment and storm water management projects in the watershed that would reduce nutrient loading into the system.

3.3.5.1 No Action Alternative

Under the No Action Alternative current uses and management within the watershed would continue along with water quality condition and trends. Canals and ditches would continue to convey storm water runoff from agricultural fields into the Fremont River. On-going efforts to reduce nutrient loading in the watershed would probably result in some positive effects.

3.3.5.2 Proposed Action

The Proposed Action could have a variety of both positive and negative impacts to the Fremont River both in the immediate vicinity of Mill Meadow Reservoir (down to the High Line Canal) and downstream to the watershed outlet. Hydrologic characteristics along with project design features would moderate impacts and it is not anticipated that any major shifts in water quality condition would occur.

Direct effects of the Proposed Action would result in some temporary impacts on water quality. Earthwork associated with pipeline connection and burying would increase sediment load in the stream until rehabilitation is complete. The BMPs would be implemented as necessary to control storm water discharges. These practices would include material handling and temporary storage procedures that would minimize the exposure of potential pollutants to storm water, spill prevention and response, sediment and erosion controls, and physical storm water controls. Site runoff would be controlled and managed in accordance with regulation. A Storm Water Pollution Prevention Plan would be prepared prior to construction and followed during construction. The extent of disturbance is very

small and therefore water quality would not change any more than it does under natural conditions.

Water quality in the Fremont River between Mill Meadow Reservoir and the High Line Canal would be altered due to a change in flow regime and other considerations. As discussed above, flow rates during summer months would decrease from about 90 cfs to about 2 cfs directly below Mill Meadow Reservoir and between near 0 to 0.5 cfs at the High Line Canal diversion. Nutrient levels including total phosphorus would come out of the reservoir at the same concentration but could improve downstream depending on the effect of longer residence time and increased hyporheic proportion of flow. Alternatively, water temperature could become less desirable downstream as shallow slow moving water is impacted through its increased interface with the river's external environment.

Water quality below the High Line Canal could also be impacted both positively and/or negatively depending on future management of diverted water and storm water. Future management of ditches and canals was not addressed in the proposal, but they would not be used for irrigation and the conduit they provide for pollutants to return to natural surface waters would therefore be reduced. Future management of ditches and canals as storm water control could provide additional benefit. Return flow from the proposed diversion system could also provide both positive and negative effects to water quality. Details regarding routing of excess water are not a part of the proposal but it is plausible that excess water would return to natural waterbodies either through direct discharge or as a result of seepage and re-surfacing.

The wide variety of potential outcomes described above makes condition of future water quality in the watershed difficult to predict. It is not expected that any new impairments would occur or that existing impairment would become substantially worse. If issues arise with these or other water quality conditions they can be addressed through existing framework provided by the Clean Water Act through the DWQ.

3.3.6 Health, Safety, Air Quality, and Noise

Air Quality in the Project area is regulated by the U.S. Environmental Protection Agency (EPA) and the Utah Division of Air Quality. The National Ambient Air Quality Standards (NAAQS) established by the EPA under the Clean Air Act (CAA) specify limits of air pollutants for carbon monoxide, particulate matter (PM 10 & PM 2.5), ozone, sulfur dioxide, lead and nitrogen. If the levels of a criteria pollutant in an area are higher than the NAAQS, then the air is designated as a nonattainment area. Areas that meet the NAAQS for criteria pollutants are designated as attainment areas.

The Project area is in attainment for all criteria pollutants. This designation is not anticipated to change prior to or during construction of the Proposed Action.

3.3.6.1 No Action Alternative

There would be no adverse effects to health, safety, air quality and noise from the No Action Alternative.

3.3.6.2 Proposed Action

The Proposed Action would not result in any long-term impacts to air quality. Construction activities would likely have a short-term temporary effect on air quality. Fugitive dust would be generated from the excavation and movement of construction equipment along unpaved roads. The BMPs such as watering for dust control would be implemented to minimize impacts to air quality. Air quality impacts would be temporary and would cease once construction activities are completed.

3.3.7 Prime and Unique Farmlands

The Federal Farmland Protection Policy Act (FPPA); Subtitled 1 of the Title XV, Section 1539-1549 of the Agricultural and Food Act of 1981 (Public law 97-98) requires Federal agencies to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of the farmland to nonagricultural uses, and to assure that Federal programs are administered in a manner that, to the extent practicable, would be compatible with state, unit of local government, and private programs and policies to protect farmland.

A review of the Natural Resources Conservation Services' (NRCS) Soil Survey indicates that there are areas that contain farmland of statewide importance and land which would be considered prime farmland if irrigated or irrigated and drained within the proposed Project area.

3.3.7.1 No Action Alternative

There are no areas of prime or unique farmland in the Project area. There are areas of statewide important farmland within the Project area. Approximately 8,200 AF of water annually currently traveling through the open water canals is lost, primarily due to evaporation and seepage along the earthen lined canals and laterals. This loss of water has the potential to adversely affect agricultural land in the Project area if agricultural users are not able to obtain their water shares. Therefore, the No Action Alternative may result in adverse long-term impact to farmland within the Project area.

3.3.7.2 Proposed Action

Implementation of the Proposed Action is anticipated to increase the efficiency of the existing water delivery system to the farmlands within the Project area by approximately 8,200 AF of water annually. Furthermore, the construction and implementation of the Proposed Action would have no long-term adverse impacts on farmlands within the Project area. Therefore, the Proposed Action is likely to have a beneficial impact to farmland within and surrounding the Project area.

3.3.8 Flood Plains

Executive Order 11988: Floodplain Management (E.O. 11988) (May 24, 1977) established Federal policy for each agency to take action to reduce the risk of floodplain loss. E.O. 11988 defines a floodplain as lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a 1 percent or greater chance of flooding in any given year. Encroachment onto floodplains and other actions which affect floodplain function can reduce the flood-carrying capacity of the floodplain and extend the flooding hazard beyond the encroachment area.

Routing of floodwater has been altered throughout the watershed due to existence of reservoirs and canals. Reservoirs have been in existence for long enough (about 100 years) that floodplains along downstream natural channels have adjusted to the altered flow regime. These rivers and streams still flood occasionally and existing floodplains adequately dissipate the energy of high flow without substantive impacts. Details regarding hydrologic routing including flood flow is found in Section 3.3.4 Hydrology.

The majority of the project area is located in a Federal Emergency Management Agency Unmapped Area. A hydrologic analysis has been performed on the natural Fremont River course to determine storm water flow amounts and routing. The purpose of the study was to quantify storm runoff to the river and canals from adjacent tributary areas. Three storm events have been analyzed which include, the 1-year 6-hour storm, the 1-year 12-hour storm, and the 1-year 24-hour storm. The hydrologic analysis can be found in Appendix A. There are 18 square miles of drainage area that contribute flows to the natural Fremont River course between the Mill Meadow reservoir and the current diversion to the High Line canal.

3.3.8.1 No Action

Under the No Action Alternative, the existing conditions of the project area would be maintained and there would be no impacts to the floodplain or the potential for flooding.

3.3.8.2 Proposed Action

The Proposed Action would directly impact the active floodplain in a few short segments of the Fremont River. The work in and directly adjacent to the Fremont River course would take place in an active floodplain. The work would not create any new or expanded flooding hazards in the Project area as the pipeline would be buried below existing ground.

The indirect impact of water removal from the Fremont River has potential for impacts to floodplains, but design features included in the Proposed Action address this issue. Removal of water could reduce floodplain functionality by altering vegetation composition and river channel characteristics. Vegetation which dissipates the energy of flood flow is sustained by a reliable source of water (i.e. base stream flow) and vegetation is recruited during flood flow. The

current configuration of the river channel is capable of conveying about 90 cfs before spilling onto the floodplain. It is expected therefore that under the Proposed Action that existing vegetation would continue to be maintained with sustained base flow. River flow would be much less under the Proposed Action and therefore the channel would trend toward a narrower channel. Over time the narrowed channel would create a new floodplain and associated stabilizing vegetation would form as a result of planned water releases.

Management of water in the watershed through storage and controlled release results in reduced flood risk. River channels and floodplains do not need to be able to convey the large floods that would occur under natural (no watershed alteration) conditions. According to USGS Streamstats (http://streamstats.cr.usgs.gov/streamstates/) under natural conditions the Fremont River would flow 323 cfs every 2 years and would flow around 1030 cfs once every 10 years. About 90 percent of the watershed above the High Line Canal is upstream of reservoir storage and therefore peak flows at those high levels never occur in the river below Mill Meadow Reservoir. The period of record shows peak flows up to 150 cfs in 33 percent of the years. Under the Proposed Action, the channel and floodplain would need to handle the occasional release of about 60 cfs over the Mill Meadow spillway plus flood flow from the 10 percent of the watershed below the dam. Appendix A indicates peak flows from that portion of the watershed would be 91 cfs in the 2 year return period, and 1576 cfs every 50 years.

The proposed releases would provide consistent base flow and frequent flood pulses should provide enough water to create and maintain channels and floodplains that are capable of conveying and dissipating energies of expected flood events. The predicted flow regime is similar to natural flow regimes which provide adequate protection. For example, the natural flowing portion of Pine Creek located about 13 miles south of the project area has a similar natural flow regime. It has base flows of about 3.5 cfs, yearly peak flows of 24 cfs, 2 year peak of 75 cfs, and 50 year peak of 1170 cfs (https://streamstatsags.cr.usgs.gov/gagepages/html/09329900.htm). Proposed yearly flood pulses in the Fremont River below Mill Meadow reservoir would have the added benefit of being released later in the summer as opposed to late spring flooding which occurs under natural conditions. These late summer releases would saturate new streambanks during the growing season which would better enable riparian development improving streambank and floodplain function.

3.3.9 Wetlands, Riparian, Noxious Weeds, and Existing Vegetation

The Upper Fremont Watershed contains a substantial compliment of wetlands and riparian areas due to its high elevation and resulting dependability of water supply. The U.S. Fish and Wildlife service National Wetlands Inventory (NWI) indicates there are about 3500 acres of wetlands within the 47000 acre watershed. The percentage of wetlands within the watershed (about 7.5 percent) is substantially higher than other watersheds in the sub-basin. Most (about 75

percent) of the wetlands in the Fremont River Watershed are adjacent to the Fremont River near the Project area and are supported by Fremont River water and groundwater upwelling. For this section, the "Project area" is defined as the area within and adjacent to the Fremont River between Mill Meadow Reservoir and High Line Canal, areas crossed by the proposed pipelines, and affected (dewatered) canals/ditches.

The majority of the wetland hydrology within the Project area is derived from irrigation waters that are drawn from the Mill Meadow Reservoir and the Fremont River. The irrigation ditches, canals, and the wetland areas identified in the Project study area are hydrologically linked to the Fremont River and associated springs.

Based on the connectivity to the Mill Meadow Reservoir and the Fremont River, the irrigation ditches, canals, and wetland areas located in the Project area may be deemed jurisdictional waterways. The jurisdictional authority stems to the USACE under Section 404 of the CWA.

To characterize and identify the boundaries of wetlands and other aquatic resources in the Project study area, an aquatic resource delineation report was completed in March 2017. The delineation fieldwork was conducted in February 2017 in accordance with the 1987 Corps of Engineers Wetland Delineation Manual (USACE 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, version 2 (USACE 2008), A Field Guide for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (Lichvar and McColley 2008), Updated Datasheet for the Identification of the OHWM in the Arid West Region of the Western United States (Curtis and Lichvar 2010), and the U.S. Army Corps of Engineers Regulatory Guidance Letters and joint agency regulations, policies, and guidance.

A total of 37 wetlands were delineated within the Project study area. Some of the delineated wetlands correspond with NWI data that identify several palustrine systems in the Project area. Other delineated wetlands occur in areas not identified by NWI data. Based on the Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979), the delineation report classifies 34 of these wetlands as palustrine, emergent (PEM) temporarily to seasonally flooded. The other three wetlands are classified as palustrine, shrub-scrub (PSS) temporarily to seasonally flooded. Wetlands are described below within general areas.

Twenty-three of the delineated wetlands are directly associated with the Fremont River on low floodplain terraces. Dominant vegetation species in these wetlands include common spike-rush (*Eleocharis palustris*), Baltic rush (*Juncus balticus*), Nebraska sedge (*Carex nebrascensis*), clustered field sedge (*Carex praegracilis*), water sedge (*Carex aquatilis*), annual rabbit's-foot grass (*Polypogon*

monspeliensis), and reed canary grass (*Phalaris arundinacea*). Nineteen of these wetlands are classified as PEM. Three wetlands are classified as PSS. In addition to herbaceous wetland vegetation, the PSS wetlands include substantial vegetation cover by coyote willow (*Salix exigua*) along with partial cover by eastern cottonwood (*Populus deltoides*). All of these wetlands are located downstream from the river crossing locations for the proposed pipeline. Nineteen of these wetlands are located above each of the existing diversions for the Fremont Loa Canal and High Line Canal. Three wetlands are located between the canal diversions and one river terrace wetland is located below both canal diversions.

Three wetlands are located east of the town of Fremont along 200 South within a relatively large wetland complex that extends north and south of the Project Study area. These PEM wetlands are functioning as wet meadow pasturelands. Dominant vegetation species in these wetlands include common spike-rush, Baltic rush, clustered field sedge, redtop bentgrass (*Agrostis stolonifera*), and common threesquare (*Schoenoplectus pungens*). The Fremont River also crosses 200 South through this area. While surface flows from the stream contribute to this wetland complex, it is predominately sustained by other sources of hydrology such as springs located outside of the Project study area and shallow groundwater.

Ten wetlands are located along a portion of the Loa Town Canal near Allred Point (1400 South). These wetlands appear to belong to the same large wetland complex that extends north through 200 South. These PEM wetlands abut the Loa Town Canal but they appear hydrologically supported mainly by springs and shallow groundwater rather than irrigation water diverted into the canal from the Fremont River. This portion of the Loa Town canal appears to be located within a drainage that carries regular flows outside of the irrigation season. Dominant vegetation species in these wetlands include Nebraska sedge, common spike-rush, Baltic rush, and saltgrass (*Distichlis spicata*).

One wetland is located adjacent to and downslope from the High Line Canal. This PEM wetland includes and extends beyond a small constructed basin. This wetland appears to be primarily sustained by irrigation water, potentially leaking from a distribution system. Dominant vegetation species in this wetland includes common spike-rush, Baltic rush, and reed canary grass.

Segments of streams, canals, ditches, irrigation ponds and ephemeral drainages within the Project study area were delineated up to the OHWM. Apart from wetland areas, riparian vegetation along the Fremont River and canals generally consists of patches of mixed woody species including willows, cottonwoods, red osier dogwood (*Cornus albus*), Russian olive (*Elaeagnus angustifolia*), and Wood's rose (*Rosa woodsii*), while herbaceous vegetation is dominated by non-wetland vegetation including annual grasses. In the spring, efforts are made to remove vegetation from the canals, via burning or mechanical removal to facilitate the flow of water through the canals. In the upper section of the Project study area, the Fremont River ranges from approximately about 13 to 25 feet in

width up to the OHWM. In the lower section, the river ranges from about 9 to 15 feet in width (See Appendix E). The width of the Fremont Loa Canal up to the OHWM ranges from about 7 to 12 feet, the Loa Town Canal ranges from about 6 to 17-feet-wide, and the High Line Canal ranges from about 12 to 23-feet-wide. The Project study area also includes one proposed location to install a new 12-inch irrigation pipe across Spring Creek. This stream is about 15-feet-wide at this location and does not include any woody riparian vegetation.

3.3.9.1 No Action Alternative

Under the No Action Alternative, operation and maintenance activities associated with the irrigation system would continue to have minor impacts on the riparian resources in the Project area due to fluctuations of water releases from Mill Meadow Reservoir. The existing conditions of the Project area would remain and continue to experience minor fluctuations in the quantity and quality of wetland and riparian resources, as naturally occurring precipitation patterns vary.

3.3.9.2 Proposed Action

Under the Proposed Action, no wetlands would be directly impacted, but piping under the Proposed Action would impact stream channels and existing open canals that may be considered jurisdictional waterways by USACE. Table 3-2 summarizes anticipated direct impacts from the Proposed Action to delineated aquatic resources.

Table 3-2. Estimated Impacts to Aquatic Resources [1]

Aquatic Resource	Area (acres)	Channel Length (feet)
Wetlands	0.00	Not applicable
Fremont River	0.13	290.5
Spring Creek	0.02	71.4
Ephemeral Washes	0.03	159.0
High Line Canal	7.10	16,065.4
Fremont Loa Canal	0.00	0.0
Loa Town Canal	0.00	0.0

1 Direct impacts from Project calculated in GIS by intersecting delineated aquatic resources with a 50-foot buffer of the proposed pipeline alignment (100-feet wide) and a 25-foot buffer of 12 to 18-inch pipes with the exception of 12-inch pipe along 200 South in Fremont. This estimate assumes installation of a 12-inch pipe along 200 South would be limited to the road footprint such that adjacent wetlands would not be impacted. Additionally, this estimate assumes impacts would not occur in places where the buffer for the pipeline slightly encroaches on the Fremont River, but the centerline is located on the opposite side of an existing road.

With the changes in flow within the modified natural Fremont River course due to the piping of flows from the reservoir, only minor impacts are expected along the riparian corridor as there would continue to be spring seeps and leakage from the reservoir in addition to flows released during storm events. FIC would release

flows from the reservoir to maintain the wetlands and riparian areas within the Project area as mentioned in Section 3.3.4.2 above.

To minimize impacts to native vegetation, previously disturbed areas would be used for construction activities. The BMPs would be followed to reduce construction impacts. After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of invasive riparian species. This would include seeding mixtures of desirable native riparian species.

Federal Regulation 33 CFR 323.4 (a) (3) states that the construction or maintenance of farm or stock ponds or irrigation ditches, or maintenance of drainage ditches does not require a Section 404 permit. This Federal regulation goes on to stipulate that discharges associated with siphons, pumps, head-gates, wing-walls, weirs, diversion structures, and such other facilities as are appurtenant and functionally related to irrigation ditches are also included in this exemption. The Proposed Action should meet the intent of the aforementioned exemption.

However, if the exemption is not granted by the USACE, then it is possible that the Project would meet the conditions and intent of an USACE issued Nationwide Permit (NWP), administered under Section 404 of the CWA. The USACE commonly issues NWP No. 12 for piping projects of the scope and nature of the Proposed Action.

Consultation with USACE would be completed prior to construction of the Proposed Action to confirm whether it qualifies for an irrigation exemption as detailed in 33 CFR 323. 4 (a) (3) or would require a Nationwide Permit for construction.

3.3.10 Fish and Wildlife Resources

The Project area contains three dominant types of wildlife habitat: upland, fishery/riparian, and human-altered/agricultural environments. Upland habitat is found in open, undeveloped areas within and adjacent to the Project area. The upland habitat is often located directly adjacent to the human-altered agricultural areas which facilitates use of both areas by wildlife. Species that may use the upland habitat and agricultural lands include Rocky Mountain elk (*Cervus canadensis nelson*), mule deer (*Odocoileus hemionus*), raccoons (*Procyon lotor*), skunks (*Mephitis mephitis*), ring-neck pheasant (*Phasianus colchicus*), California quail (*Callipepla californica*), and small rodents. The fishery/riparian habitat is dominated by the same above described species plus a small population of brown trout (*Salmo trutta*). The small population of brown trout exists within the Fremont River below Mill Meadow Reservoir in a segment of river that crosses lands administered by the BLM. This population is considered low priority by the DWR (DWR Data – Richard Hepworth).

3.3.10.1 No Action Alternative

Wildlife habitat would remain in its current condition experiencing no predictable gains or losses from the No Action Alternative.

3.3.10.2 Proposed Action

Disturbance to upland and agricultural lands from the construction activities related to the Proposed Action could result in short-term impacts to wildlife habitat. It is anticipated that construction would occur year round. However, construction would be performed in accordance with number 6 in Chapter 4, Environmental Commitments. Construction would be restricted to the 50 to100 foot wide Proposed Action corridor. Most animals in the area would easily find alternative locations to forage and to find cover during construction. It is likely that they could return after construction activities are concluded. There would be no impact per the Utah Standards of Rangeland Health.

Impacts to small mammals, especially burrowing animals, could include direct mortality and displacement during construction activities. Most small mammal species would likely experience reduced populations in direct proportion to the amount of disturbed habitat. These species and habitats are relatively common throughout the Project area; therefore, the loss would be minor.

Impacts to big game would include short-term disturbance and displacement of late fall incidental use during the construction period. Few big game are known to winter in the area of the Project. If big game are migrating through or occur in the Project area, the presence of heavy equipment activity and noise may result in minimal impacts to wintering big game populations.

Impacts to raptors and other avian species would include minor short-term disturbance and displacement during construction; however, there would be no long-term impacts after construction.

Those species, including avian and amphibian species, which are dependent on the open water ditches, would experience a long-term loss of habitat as described above. The small population of brown trout would be negatively impacted if flow rates are not maintained in a way that supports habitat. Proposed design features described in Section 3.3.4.2 that maintain flows would address any potential issues.

The BMPs would be implemented throughout construction to minimize impacts to wildlife. Disturbed areas would be contoured, replanted, and reseeded, to assist in the reestablishment of any wildlife habitat impacted during construction. Procedures to prevent the infestation of invasive species would also assist in the reestablishment of habitat.

3.3.11 Threatened, Endangered, and Sensitive Species

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1543) protects federally listed endangered, threatened, proposed, and candidate plant and animal

species and their critical habitats. Candidate species are those for which the U.S. Fish and Wildlife Service (USFWS) has sufficient data to list as threatened or endangered but for which proposed rules have not yet been issued. Threatened species are those that are likely to become endangered in the foreseeable future throughout all or a significant portion of their range.

Federally Listed Species

The USFWS has identified 15 federally listed species in Wayne County including eight endangered, six threatened and one candidate species. Of these species, the humpback chub, Colorado pikeminnow, bonytail chub, razorback sucker, Wright fishhook cactus, last chance townsendia and Winkler cactus have not been located within the Project impact area and the habitat within the Project impact area is not suitable for the existence of these species.

[Endangered Species]

Southwestern willow flycatcher
The southwestern willow flycatcher (*Empidonax traillii extimus*) breeds in dense riparian habitats in southwestern North America, and winters in southern Mexico, Central America, and northern South America. Its breeding range includes far western Texas, New Mexico, Arizona, southern California, southern portions of Nevada and Utah, southwestern Colorado, and possibly extreme northern portions of the Mexican States of Baja California del Norte, Sonora, and Chihuahua. The subspecies was listed as endangered effective March 29, 1995. Approximately 900 to 1,100 pairs exist.

The southwestern willow flycatcher breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands, including lakes (e.g., reservoirs). Most of these habitats are classified as forested wetlands or scrub-shrub wetlands. Habitat requirements for wintering are not well known, but include brushy savanna edges, second growth, shrubby clearings and pastures, and woodlands near water. The southwestern willow flycatcher has experienced extensive loss and modification of breeding habitat, with consequent reductions in population levels. Destruction and modification of riparian habitats have been caused mainly by: reduction or elimination of surface and subsurface water due to diversion and groundwater pumping; changes in flood and fire regimes due to dams and stream channelization; clearing and controlling vegetation; livestock grazing; changes in water and soil chemistry due to disruption of natural hydrologic cycles; and establishment of invasive non-native plants. Concurrent with habitat loss have been increases in brood parasitism by the brown-headed cowbird (*Molothrus ater*), which inhibit reproductive success and further reduce population levels (USFWS 2002).

Suitable riparian habitat required by the southwestern willow flycatcher is not present within the Project impact area as shown on Figure 1. Surveys were

conducted during August 2015, April 2016, June 2016, and August 2016 for threatened, endangered and sensitive species within the Project area and none were observed. To date, no known records exist for the occurrence of Southwestern willow flycatcher within the Project impact area.

San Rafael cactus
The San Rafael cactus (*Pediocactus despainii*) is a small barrel shaped cactus. It was listed as endangered on September 16, 1987. It typically grows as a single plant but can form multiple stems. These cacti are very small, usually only growing up to 2-inches-tall and up to 3.8-inches-wide. Spine clusters are located at the tip of fleshy protrusions and are composed of 9 to 13 radial spines up to ½-inch-long. There is no central spine. The flowers are peach to yellow, tinted bronze, and measure about 1 inch across. Flowering occurs from April through May.

San Rafael cactus is endemic to Emery and Wayne counties in central Utah. It occurs on benches, hilltops, and gentle slopes in open piñon-juniper and salt desert scrub communities between 6,000 to 6,700 feet in elevation. San Rafael cactus is restricted to limestone gravels, shales, clays and silty substrates of the Mancos, Morrison, Moenkopi and Carmel formations (USFWS 2013).
Suitable habitat required by the San Rafael cactus is not present within the Project impact area.

Barneby reed-mustard
The Barneby reed-mustard (*Schoenocrambe barnebyi*) was listed on June 14, 1992. It occurs on fine gravel soils in a desert shrub vegetation type in the Colorado River Drainage of eastern Utah. It has been located in two populations; one in the San Rafael Swell of Emery County and the other in Capitol Reef National Park in Wayne County. The total number of individuals is estimated to be about 2,000 individuals.

The population is vulnerable to activities associated with mining claim assessment work, uranium mining and processing, and to recreational foot traffic in Capital Reef National Park. The species is extremely small and the constricted nature of the extant population makes it vulnerable to any habitat disturbing activities or events (USFWS 1994).

Suitable habitat for this species is not present within the Project impact area.

[Threatened Species]

Utah prairie dog
The Utah prairie dog (*Cynomys parvidens*) was listed as an endangered species on June 4, 1973. The species was downlisted to threatened in 1984. The total length of an adult Utah prairie dog is approximately 12 to14 inches, the weight of an individual ranges from 1 to 3 pounds. Utah prairie dogs range in color from

cinnamon to clay, with dark markings above the eyes and white on the tip of the tail. Utah prairie dogs are diurnal, burrowing animals. Breeding usually takes place in March and young are born in April after a 30 day gestation period. Emergence of the pups usually occurs from mid to late May. The Utah prairie dog's diet is composed of flowers, seeds, grasses, leaves, and even insects.

The Utah prairie dog's range wide population has been stable to increasing over the last 30 years. However, threats remain across the range of the Utah prairie dog including plague, urban expansion, over-grazing, cultivated agriculture, vegetation community changes, invasive plants, off highway vehicles, and recreational uses, climate change, energy resource exploration and development, fire management, poaching, and predation. These issues can be reduced to two overriding concerns: permanent habitat loss and fragmentation (i.e. largely from commercial and residential development), and plague. Utah prairie dogs currently occur in three areas within southwestern Utah including Awapa Plateau, Paunsaugunt, and West Desert. Utah prairie dogs are found in elevations from 5,400 feet on valley floors up to 9,500 feet in mountain habitats (USFWS 2012).

The nearest Utah prairie dog population to the Project impact area is approximately 6 miles away at the Loa Airport. Suitable habitat for Utah prairie dog does not exist within the Project impact area.

Western yellow-billed cuckoo

The western yellow-billed cuckoo (*Coccyzus americanus*) is a federally listed candidate species. It is a neotropical migrant, which winters in South America. Breeding often coincides with the appearance of massive numbers of cicadas, caterpillars, or other large insects (Ehrlich et al. 1992). Its incubation/nesting period is the shortest of any known bird because it is one of the last neotropical migrants to arrive in North America and chicks have very little rearing time before embarking on their transcontinental migration. Yellow-billed cuckoos arrive in Utah in extremely late May or early June and breed in late June through July. Cuckoos typically start their southerly migration by late August or early September. Yellow-billed cuckoos are considered a riparian obligate and are usually found in large tracts of cottonwood/willow habitats with dense sub-canopies.

There are no recent documented occurrences of yellow-billed cuckoo within the vicinity of the defined Project impact area. Human disturbances associated with the surrounding existing land use make the area undesirable for the yellow-billed cuckoo. Suitable riparian habitat required by the yellow-billed cuckoo is not present within the Project impact area.

Mexican spotted owl

In 1993 the USFWS listed the Mexican spotted owl (*Strix occidentalis lucida*) as threatened under the ESA. Critical habitat for the Mexican spotted owl was

designated in 2004, comprising approximately 8.6 million acres on Federal lands in Arizona, Colorado, New Mexico, and Utah.

Habitat is primarily ponderosa pine-Gambel oak, mixed-conifer, and riparian forest that either currently is, or has the potential for becoming, nest/roost habitat or does or could provide foraging, dispersal, or wintering habitats. Nesting/roosting habitat typically occurs either in well-structured forests with high canopy cover, large trees, and other late seral characteristics, or in steep and narrow rocky canyons formed by parallel cliffs with numerous caves and/or ledges within specific geologic formations (USFWS 2012).

Suitable habitat required by the Mexican spotted owl is not present within the Project impact area.

Ute ladies-tresses

When the Ute ladies-tresses (*Spiranthes diluvialis*) was listed in 1992 as a threatened species, it was known primarily from moist meadows associated with perennial stream terraces, floodplains, and oxbows at elevations between 4300-6850 feet. Surveys since 1992 have expanded the number of vegetation and hydrology types occupied by Ute ladies'-tresses to include seasonally flooded river terraces, sub irrigated or spring-fed abandoned stream channels and valleys, and lakeshores. In addition, 26 populations have been discovered along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other human-modified wetlands. New surveys have also expanded the elevational range of the species from 720 to 1830 feet in Washington to 7,000 feet in northern Utah. Over one-third of all known Ute ladies'-tresses populations are found on alluvial banks, point bars, floodplains, or ox-bows associated with perennial streams.

In 1992, the USFWS identified habitat loss and modification (through urbanization, water development, and conversion of wetlands to agriculture), over collection, competition from exotic weeds, and herbicides as the main current and potential threats to the long term survival of Ute ladies'-tresses. Since 1992, other threats have been identified including impacts from recreation; mowing for hay production, (mowing, especially in conjunction with winter grazing, can have positive effects on Ute ladies'-tresses by reducing competing vegetative cover and protective cover for voles); grazing by cattle or horses; hydrology change (modification of wetland habitats through development, flood control, de-watering, and other changes to hydrology); herbivory by native wildlife (particularly voles); reduction in the number and diversity of insect pollinators; drought; absence or rarity of mycorrhizal symbionts; and conflicting management with other rare species.

No known Ute ladies-tresses populations have been identified within the Project impact area. The habitat in the Project impact area is not conducive to their survival since the canals and streams are dry during the non-irrigation season. In

addition, a survey was conducted by the biological consultant on August 5, 2015, during the period when Ute ladies-tresses are known to flower. No Ute ladies-tresses were observed within the Project impact area during this survey or during the previous two biological surveys.

State Sensitive Species

Section 06D of the ESA defines State Sensitive Species as those species that could become endangered or extinct within the state. The DWR does not have recent records of occurrence for any threatened, endangered, or sensitive species within the Project impact area. However, the DWR has recent records of occurrence of State Sensitive Species within a 2 mile radius of the Project impact area (DWR letter dated 20 January 2015). These species are the Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*), Ferruginous Hawk (*Buteo regalis*), bobolink (*Dolichonyx oryzivorus*), long-billed curlew (*Numenius americanus*), pygmy rabbit (*Brachylagus idahoensis*) and Utah prairie-dog (this species was discussed under the federally threatened species section above). DWR has historical records of occurrence within a 2 mile radius of the Project impact area for the bald eagle (*Haliaeetus leucocephalus*), and western toad (*Bufo boreas*). Most of these species do not occur in habitat associated with the Project impact area; a large percentage of the Project impact area is located in existing ditches adjacent to established roadways or along edges of cultivated fields. In addition, the Fremont River, canals and laterals within the Project impact area are usually dry during the non-irrigation season.

Colorado River cutthroat

The Colorado River cutthroat trout (*Oncorhynchus clarki pleuriticus*) is a subspecies of the cutthroat trout that is native to the upper Colorado River drainage of Utah, Wyoming, Colorado, Arizona, and New Mexico. Unfortunately, pure Colorado River cutthroat trout are now very rare throughout their historic range because of habitat loss/alteration, predation by and competition with nonnative fishes, and hybridization with nonnative trout, such as the rainbow trout. Pure Colorado River cutthroat trout now naturally occur only in isolated high-elevation headwater streams. Because of the many threats to the Colorado River cutthroat trout, the subspecies is included on the Utah Sensitive Species List.

The DWR is currently working to restore pure Colorado River cutthroat trout to historic areas in Utah. Since 1999, large numbers of Colorado River cutthroat trout have been raised in hatcheries and then released into lakes in the Uinta Mountains, in the northeastern part of the State.

The Colorado River cutthroat trout primarily eats invertebrates, but adults also eat small fishes. Like other cutthroat trout, the subspecies spawns in streams over gravel substrate during the spring. The cool, clear water of high-elevation streams and lakes is the preferred habitat for Colorado River cutthroat trout (Sigler 1966).

Habitat for this species does not occur within the Project impact area. A large percentage of the Project impact area is located in existing ditches adjacent to established roadways or along edges of cultivated fields. In addition, the Fremont River, canals and laterals within the Project impact area are usually dry during the non-irrigation season.

Ferruginous hawk
The ferruginous hawk (*Buteo regalis*) breeds in western North America, from south-central Canada to Utah and New Mexico. The species winters primarily in grasslands and shrub steppes in the western and central United States, as well as in Mexico.

Nesting starts generally in March or April depending on latitude. Nest substrates vary throughout range and shows great flexibility from trees and shrubs (49 percent of 2,119 nests), cliffs (21 percent), utility structures (12 percent), and ground outcrops (10 percent). Bulky sticks (e.g., sagebrush) are used for nest construction and through time nests become very large. Density varies regionally and also temporally as prey densities vary. Fall migration extends from August to late September-early October.

During breeding, flat and rolling terrain in grassland or shrub steppe is most often used. Ferruginous hawks avoid high elevations, forests, and narrow canyons, occurring in grasslands, agriculture lands, sagebrush/saltbush/greasewood shrub lands, and at the periphery of pinyon-juniper forests. Because of a strong preference for elevated nest sites, cliffs, buttes, and creek banks are usually present. During winter, ferruginous hawks use open farmlands, grasslands, deserts, and other arid regions where lagomorphs, prairie dogs, or other major prey items are present.

Their primary food is small mammals. West of the Continental Divide, rabbits and pocket gophers are their main prey. Although in eastern and western Utah, ferruginous hawks eat large numbers of prairie dogs.

The ferruginous hawk could occur seasonally within the vicinity of the defined Project area.

Bobolink
The bobolink (*Dolichonyx oryzivorus*) is a small blackbird. The breeding range of the bobolink is an east-west band across the northern United States and southern Canada between the 50th and 39th parallels, from British Columbia, Washington, and Oregon, to Newfoundland, Nova Scotia, and Maine. Its distribution is fairly continuous in the east but patchy in the west. Bobolinks spend approximately half of each year in migration. Isolated breeding populations occur in northern Utah and Nevada, central Washington, and eastern Arizona. Bobolinks do not breed in most of Utah. They occur in low abundance and in isolated patches primarily in the northern half of the state. Bobolinks

typically arrive in Utah in early to mid-May and probably begin southerly migration around mid-August, though some birds may still be present through September.

Bobolinks in the west nest and forage in wet meadow (grasses and sedges), wet grassland, and irrigated agricultural (primarily pasture and hay fields) areas. These habitats, particularly wet meadows, tend to be associated with riparian or wetland areas (Parrish 1999).

No bobolinks have been observed within the Project impact area during the three biological surveys conducted in 2014 and 2015.

Long-billed curlew
The long-billed curlew (*Numenius americanus*) is a fairly common summer resident and migrant in Utah, especially through the central and northern valleys. It is less common in the Colorado River drainage areas.

They seem to be most successful nesting in mixed fields with adequate, but not tall, grass cover and fields with elevated points. Uncultivated rangelands and pastures support most of the continental long-billed curlew breeding population. Curlews tend to place their nests near manure piles or other conspicuous objects, camouflaging them from aerial predators. At the Great Salt Lake, the ground is relatively level, and curlews prefer to nest near the edges of barren alkali flats (Parrish 1999).

No long-billed curlews have been observed within the Project impact area during the three biological surveys conducted in 2014 and 2015.

Pygmy rabbit
The pygmy rabbit (*Brachylagus idahoensis*) is the smallest of all North American rabbits – half the mass of a mountain cottontail. Adult females, on average, are larger than adult males. Most easily confused with juvenile cottontails, but distinguished from all rabbit species in Utah by the uniform brown coloration of its tail. The species can be found in northern and western Utah, where it prefers areas with tall dense sagebrush and loose soils. Pygmy rabbits are active throughout the year, and are most often above ground near dawn and dusk. Inactive periods are spent in underground burrows. Pygmy rabbits are the only rabbits in North America to dig their own burrows (DWR 2005).

No pygmy rabbits were observed within the Project impact area during the three biological surveys conducted in 2014 and 2015. In addition, the area does not contain tall dense sagebrush and friable soils requisite for pygmy rabbits.

Bald eagle
Bald eagles (*Haliaeetus leucocephalus*) are a large dark raptorial bird with a white head and a white tail when mature. They eat mostly fish but will eat some small

mammals, such as rabbits (Stokes, 1996). The bald eagle constructs massive nests on cliff edges or in large trees. Eagles congregate in feeding areas in late winter and early spring. Bald eagles generally select habitat located near water. In a survey of 2,732 nests, 99 percent were within 650 feet (200 meters) of the water and averaged only 130 feet (40 meters) from the shoreline (Stalmaster 1987). Eagle perches are generally close to the water, especially those used for foraging. Nearly all birds will perch within 165 feet (50 meters) of a shoreline, because fish, waterfowl, seabirds, and other prey can be acquired there (Stalmaster 1987). Eagles select trees within that habitat for nesting and perching sites. The most important characteristic of the nesting tree is that it's the tallest in the forest stand. Selecting a tall tree ensures a structure that will adequately support a large nest, provide an open flight path to and from the nest, and have a panoramic view of the surrounding terrain (Stalmaster 1987). An eagle's nesting season is between the start of February, when they initiate construction of their nests, and mid-August when the young fledge the nest. The incubation period ranges between 31 and 46 days (Alsop 2001). Hatchlings can remain in the nest for 70 to 98 days (Alsop 2001).

Bald eagles were not observed within the Project impact area during field sampling for the Project or in recent years. The Utah Division of Wildlife Resources indicates that there are historical records of occurrence for Bald eagles within a two mile radius of the Project area (letter January 20, 2015, Appendix C).

Western toad

The western toad (*Anaxyrus boreas*) inhabits western Canada and much of the western (especially northwestern) United States. It occurs throughout most of Utah, and can be found in a variety of habitats, including slow moving streams, wetlands, desert springs, ponds, lakes, meadows, and woodlands. The western toad, which is inactive during cold winter months, may either dig its own burrow in loose soil or use the burrows of other small animals.

Adults feed on numerous types of small invertebrates, such as ants, beetles, and grasshoppers, whereas larvae (tadpoles) filter algae from the water or feed on detritus. Adults are dusky gray or greenish in color with considerable dark blotching on the back and belly, and can usually be identified by a light-colored stripe along the back. The breeding season of the western toad varies, depending on geographic location (DWR 2005).

Habitat for this species does not occur throughout the year within the Project impact area. The Fremont River, canals and laterals within the Project impact area are usually dry during the non-irrigation season.

No western toads have been observed within the Project impact area. The DWR indicates that there are historical records of occurrence of western toads within a two mile radius of the Project area (letter January 20, 2015, Appendix C).

Greater sage-grouse
The Greater sage-grouse (*Centrocercus urophasianus*) inhabits the western United States and much of southern Canada. It occurs throughout the fringes of Utah usually inhabiting sagebrush-grassland communities and moving short distances to lower elevations during winter. The sage-grouse is in decline due to habitat loss.
Adults feed on sagebrush and are capable of shifting their eating habits. Adults have a long pointed tail and feathery legs. A yellow patch over the eye distinguishes the male along with a grayish and white breast and a dark brown throat with a black belly. The female is distinguished with a light brown throat and dark belly and is mottled gray-brown.

Habitat for this species does not occur throughout the year within the Project impact rea. It was confirmed through the Project surveys that no sage-grouse were located within the Project impact area.

Migratory Birds
The Migratory Bird Treaty Act of 1981 (MBTA) prohibits the take, capture, or killing of any migratory birds, and any parts, nests, or eggs of such birds (16 U.S.C. 703 (a). Under the MBTA, Federal agencies are liable for both intentional and unintentional takes of migratory birds. Migratory birds known to frequent the general vicinity of the Project Impact Area include the red-tailed hawk (*Buteo jamalcensis*), American kestrel (*Falco sparverius*), ferruginous hawk (*Buteo regalis*), rough-legged hawk (*Buteo lagopus*), black rosy-finch (*Leucosticte atrata*), yellow warbler (*Setophaga petechi*), white crowned sparrow (*Zonotrichia leucophrys*), Brewer's sparrow (*Spizella breweri*), burrowing owl (*Athene cunicularia*), Calliope hummingbird (*Stellula alliope*), Cassin's finch (*Carpodacus cassinii*), fox sparrow (*Passerella iliaca*), golden eagle (*Aquila chrysaetos*), gray vireo (*Vireo vicinior*), juniper titmouse (*Baeloophus ridgwayi*), Lewis's woodpecker (*Melanerpes lewis*), loggerhead shrike (*Lanius ludovicianus*), long-billed curlew (*Numenius americanus*), olive-sided flycatcher (*Contopus cooperi*), pinyon jay (*Gymnorhinus cyancocephalus*), prairie falcon (*Falco mexicanus*), short-eared owl (*Asio flammeus*), Swainson's hawk (*Buteo swainsoni*), Williamson's sapsucker (*Sphyrapicus thyroideus*), black-headed grosbeak (*Pheucticus melanocephalus*), sage thrasher (*Oreoscoptes montanus*), and numerous water fowl that fly over the area in route to the various bodies of water in the vicinity of the Project. No migratory bird nests were observed in the Project impact rea during the biological evaluations. In order to minimize the potential for nesting birds, the ROW's would be cleared prior to nesting season which is projected to occur in April and May. Impacts to nesting birds would be minimized as indicated in number 6 in Chapter 4, Environmental Commitments.

3.3.11.1 No Action Alternative
The No Action Alternative would not impact any threatened, endangered or sensitive species.

3.3.11.2 Proposed Action

Federally Listed Species

[Endangered Species]

Southwestern willow flycatcher

There are no recent documented occurrences of the southwestern willow flycatcher within the Project impact area. Human disturbances associated with the existing land use make the area undesirable for the southwestern willow flycatcher. Suitable riparian habitat required by the southwestern willow flycatcher is not present within the Project impact area. Therefore, the Proposed Action would have no effect on the Western willow flycatcher or its habitat.

San Rafael cactus

There are no recent documented occurrences of the San Rafael cactus within the Project impact area. The Project impact area contains no suitable habitat to support the San Rafael cactus. Therefore, the Proposed Action would have no effect on the San Rafael cactus or its habitat.

Barneby reed-mustard

There are no recent documented occurrences of the Barneby reed-mustard within the Project impact area. The Project impact area contains no suitable habitat to support the Barneby reed-mustard. Therefore, the Proposed Action would have no effect on the Barneby reed-mustard or its habitat.

[Threatened Species]

Utah prairie dog

There are no recent documented occurrences of the Utah prairie dog within the Project impact area. The nearest documented Utah prairie dog population to the Project impact area is approximately 6 miles away at the Loa Airport. Therefore, the Proposed Action would have no effect on the Utah prairie dog or its habitat.

Western yellow-billed cuckoo

There are no recent documented occurrences of the western yellow-billed cuckoo within the Project impact area. Human disturbances associated with the existing land use make the area undesirable for the western yellow-billed cuckoo. Suitable riparian habitat required by the western yellow-billed cuckoo is not present within the Project impact area; multi-stored and multi-aged stands of riparian trees and shrubs do not exist along the proposed ROW. Therefore, the Proposed Action would have no effect on the western yellow-billed cuckoo or its habitat.

Mexican spotted owl

There are no recent documented occurrences of the Mexican spotted owl within the Project impact area. Suitable habitat required by the Mexican spotted owl is

not present within the Project impact area. Therefore, the Proposed Action would have no effect on the Mexican spotted owl or its habitat.

Ute Ladies'-tresses
There are no recent documented occurrences of the Ute ladies-tresses within the Project impact area. During a general survey of the Project impact area on August 5, 2015 (a typical period when Ute ladies-tresses would be flowering), no Ute ladies-tresses were observed. The habitat in the Project impact area is not conducive to their survival since the canals and streams are dry during the non-irrigation season. Therefore, the Proposed Action would have no effect on the Ute ladies-tresses or its habitat.

State Sensitive Species

Colorado River cutthroat trout
No Colorado River cutthroat trout have been observed within the Project impact area. The Project impact area contains no habitat to support this species. The Fremont River, which is in the general vicinity of the Project area, is virtually dry during the non-irrigation season and the existing canals that would contain the proposed pipelines do not contain fish habitat. Therefore, The Proposed Action would have no effect on the Colorado River cutthroat trout or its habitat.

Ferruginous hawk
Based on information obtained from the DWR, there are recent documented occurrences of the Ferruginous hawk within the vicinity of the defined Project area. The Proposed Action would reduce canal-created riparian habitat which could result in minor impacts to the hawk. The Ferruginous hawk prey base and foraging opportunities would also not be affected appreciably by the Proposed Action. Impacts to nesting birds would be minimized as indicated in number 6 in Chapter 4, Environmental Commitments. It is possible that Ferruginous hawks may experience minor short-term disturbance and displacement. It is possible that Ferruginous hawks, that currently use the open canal and laterals, could move to adjacent habitats (riparian, wetlands and open water habitat) during construction. Therefore, the Proposed Action would have no permanent long-term effects on the Ferruginous hawk.

Bobolink
No bobolinks have been observed within the Project impact area. Impacts to nesting birds would be minimized as indicated in number 6 in Chapter 4, Environmental Commitments. Therefore, the Proposed Action would have no effect on the bobolink or its habitat.

Long-billed curlew
No long-billed curlews have been observed within the Project impact area. Impacts to nesting birds would be minimized as indicated in number 6 in Chapter 4,

Environmental Commitments. Therefore, the Proposed Action would have no effect on the long-billed curlew or its habitat.

Pygmy rabbit
No pygmy rabbits have been observed within the Project impact area. Limited amounts of their preferred habitat could possibly be temporarily disturbed by construction activities. If this species were to occur within the Project impact area, they could easily move to adjacent areas that contain more abundant habitat preferred by this species. Impacts, if any, would be short-term. Therefore, the Proposed Action would have no permanent long-term effects on the pygmy rabbit.

Bald eagle
There are no recent documented occurrences of the bald eagle within the vicinity of the Project impact area. The Proposed Action would not impact any riparian areas along natural streams or lakes, including potential nesting or perching locations for the bald eagle. The bald eagle's prey base and foraging opportunities would also not be affected by this Project. Impacts to nesting birds would be minimized as indicated in number 6 in Chapter 4, Environmental Commitments. It is possible that bald eagles could experience minor short-term disturbance and displacement. Bald eagles that might use the open canal and laterals could move to adjacent habitats (riparian, wetlands and open water habitat) during construction. Therefore, the Proposed Action would have no permanent long-term effects on the bald eagle.

Western toad
No western toads have been observed within the Project impact area. Limited amounts of their preferred habitat could possibly be temporarily disturbed by construction activities. If this species were to occur within the Project impact area, they could easily move to adjacent areas that contain habitat preferred by this species. Impacts, if any, would be short-term. Therefore, the Proposed Action would have no permanent long-term effects on the western toad or its habitat.

Greater sage-grouse
No sage-grouse have been observed within the Project impact area. Therefore, the Proposed Action would have no permanent long-term effects on the sage-grouse or its habitat.

Migratory Birds
Under the Proposed Action there would be no permanent long-term effects on migratory birds. Impacts to nesting birds would be minimized as indicated in number 6 in Chapter 4, Environmental Commitments. If migratory birds happen to be in the area during construction, they may experience minor short-term disturbance and displacement. Birds that currently use the open canal and laterals could move to adjacent habitats (riparian, wetlands and open water habitat) during construction.

3.3.12 Socioeconomics

The estimated population of Wayne County in 2015 was 2,692 individuals, which is an increase of 7.29 percent from 2,509 individuals in the 2000 census [1]. Settlers began arriving in the area in the 1870s and often received land under the Homestead Act.

The predominant industries in the Wayne County are: Arts, entertainment, recreation, accommodations and food services which account for 20.9 percent of all industries, with Educational services, social assistance and health care accounting for 16.7 percent, Construction Industries make up 14 percent and Agriculture, forestry, fishing and hunting, mining making up 11.2 percent [2]. As of 2014, individuals below the poverty level in Wayne County was estimated to be 17.6 percent compared to the Utah state average of 12.8 percent [3].

Median household income in 2014 for Wayne County was $43,393.00 compared to the State Median household income of $59,846.00 [4].

[1] http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk
[2] http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF
[3] http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk
[4] http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk

The total Project cost is estimated to be $12 million with much of the Project budget being spent locally during the construction of the Project over a 12 to 18 month period. It is anticipated that much of the labor force could come from local sources, though most of the pipe and other materials would have to be imported from other locations.

The Project also eliminates almost 19 miles of open ditch which would conserve approximately 8,000 AF of water and increase crop production approximately 0.3 tons per acre. It would also reduce operation and maintenance costs by almost $12,000 annually by eliminating the use of moss killer in ditches and annual cleaning of the ditches. An average of 6,000 Megawatt hours of electricity would be produced annually, which could reduce electricity demand in the area.

3.3.12.1 No Action

The No Action Alternative would continue to cost the FIC $12,000 annually for operation and maintenance of earth lined canals, not including the time and work donated by shareholders. In addition full crop production may not be realized during drought years due to water losses in the open canal systems.

3.3.12.2 Proposed Action

During construction, there would be an immediate short-term boost to the socio-economic health of the area as additional construction and support workers could be required to complete the Project. As construction and support workers require food, fuel, lodging, etc. much of this commerce could be engaged locally.
The long-term socio-economic impacts of the Proposed Action would be minor. An additional 8,000 AF to shore up the water supply would be a boon to the

irrigators; however, most of the irrigated ground in the area is at or above 7,000 feet and hence enjoys a freeze free period of only about 83 days. Any effects that might occur would be positive via the contracting of outside sources to implement the Project. The Project would also expand the existing water supply which would contribute to the long-term economic health of the area.

3.3.13 Public Safety, Access, and Transportation

Transportation resources in the area include State Highway 24 and 72. There are no emergency services located within the Project area. The nearest fire department to the Project area is in Teasdale, Utah (approximately 14.5 miles) and the nearest hospital is in Richfield, Utah (approximately 45.5 miles). The Wayne Wonderland Airport is about 3 miles southeast of Loa and approximately 6 miles from the Project area.

3.3.13.1 No Action Alternative

The No Action Alternative would have no impact on transportation resources within the Project area.

3.3.13.2 Proposed Action

The Proposed Action may cause limited delays along nearby roadways due to construction vehicles entering and exiting roadways. Service from the fire stations would not be impacted by the Proposed Action. Although no temporary road closures are planned, any temporary road or access closure would be coordinated with local law enforcement and emergency services. The public would also be notified of any road closures that take place due to implementation of the Proposed Action.

3.3.14 Upland Vegetation Resources

The Project area is located within the Intermountain Semi-desert and Desert Province of the Western United States. Land cover throughout the Project area is dominated by agricultural fields and upland vegetation communities. The majority of the land is comprised of planted agricultural fields. This human-altered vegetation consists primarily of alfalfa, small grains and pasture grasses.

In addition to the human-altered environment, the Project area contains upland vegetation. This upland vegetation includes cottonwood trees, salt cedar, and numerous shrubs such as big sagebrush, rabbit brush, willows, wild rose, and various grasses such as wheatgrass and cheat-grass.

3.3.14.1 No Action Alternative

Under the No Action Alternative, heavy equipment used during routine maintenance of the irrigation system would continue to have minor impacts on the upland vegetation in the Project area. These plant communities would remain in their current condition, and would not be anticipated to experience sizeable gains or losses from maintenance activities.

3.3.14.2 Proposed Action

Under the Proposed Action, most of the area disturbed by construction activities would take place in the previously disturbed upland and agricultural areas. Construction would occur year round in areas where there would not be any disturbance to irrigation activities and between October and April when construction would affect irrigation activities. Impacts would occur within a construction easement up to 100-feet-wide. Upland areas would be impacted in the short-term, but would be revegetated to minimize long-term loss of habitat. For example, sagebrush and other shrubs, forbs, and grasses would be removed from the ROW during construction by the operation of construction equipment, excavation, and staging of materials.

Disturbed areas could be more vulnerable to non-native species and noxious weed infestation. To minimize impact to native vegetation, previously disturbed areas would be used for construction and staging activities when possible. If cultivated lands were disturbed by construction activities they would be reseeded with an appropriate agricultural mix. Upland vegetation communities would be restored to their original state and some previously disturbed areas could see an increase in native species after seeding.

The BMPs and environmental commitments would be followed to reduce impacts, which would include placing staging and material sources outside of sensitive areas. Construction materials and equipment would be washed to remove dirt and weed seeds that could cause infestations by non-native species. After any surface disturbance, proper restoration and rehabilitation procedures would be followed to prevent the infestation of invasive and/or non-native species. Overall, impacts to the upland vegetation from the Proposed Action would be minimal and short-lived.

3.3.15 Energy Requirements and Conservation Potential

The Proposed Action includes the installation of a hydroelectric plant to take advantage of the available hydraulic head that would be created by the piping of the ditches and canal. Based upon the amount of hydraulic head and friction loss, a pressurized 48-inch diameter pipe would tie into the Mill Meadow Reservoir outlet structure and convey flows along an existing open water conveyance channel to a new approximate 2 mW hydroelectric plant. The plant would house an approximate 2 mW turbine that would produce approximately 6,000 mW-hours during the 6 month irrigation season annually.

3.3.15.1 No Action Alternative

The No Action Alternative would have no effect on energy requirements and conservation potential in the Project area.

3.3.15.2 Proposed Action

The Proposed Action would require the installation of power poles to transmit electricity from the power plant. The energy requirements for the new structures would be minimal and well within the capacity of the electrical system in Loa.

The Proposed Action would also allow for an improved energy-water nexus with the installation of a hydroelectric plant. Because the hydroelectric plant is a renewable energy source, it would provide immediate economic assistance to the FIC and it would generate a range of benefits at local, regional, and global levels. It would significantly decrease the FIC's annual operation and maintenance costs and eliminate potential liability problems. The Proposed Action would have no impact on energy conservation or potential for conservation in the area.

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.

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. The information obtained from the U.S. Census Bureau indicates that in 2013 the total population of Wayne County was 2,747 residents. Of these residents, 92 percent were identified as white, 0.1 percent as black, 1.0 percent as American Indian and Alaska Native, 0.8 percent as Asian, 5.4 percent as Hispanic or Latino, and 1.5 percent as multiple races.

The information obtained from the U.S. Census Bureau for the 2000 census data for Loa (largest town in the Project area) indicates that the total population was 534 residents. Of these residents, 521 were identified as white, 0 as black, 2 as American Indian and Alaska Native, 0 as Asian, 9 as Hispanic, and 2 as Native Hawaiian and Pacific Islander.

The demographic information obtained from the U.S. Census Bureau indicates that it is possible that a very small minority population exists within the Project area. Implementation of the Proposed Action would not disproportionately affect low-income or minority communities in the Project area. Additionally, the Proposed Action would not involve relocations, health hazards, hazardous waste,

property takings, or substantial economic impacts. The Proposed Action would, therefore, have no adverse effects to human health or the environment and would not disproportionately affect minority or low-income populations.

Several benefits would be realized by the Project including the hiring of local labor forces, the elimination of almost 19 miles of open ditch which would conserve approximately 8,000 AF of water and increase crop production approximately 0.3 tons per acre. It would also reduce operation and maintenance costs by almost $12,000 annually by eliminating the use of moss killer in ditches and annual cleaning of the ditches. An average of 6,450 mW hours of electricity would be produced annually.

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. There is no defined area for potential cumulative effects.

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

Project Resource	No Action	Proposed Action
Geology & Soils Resources	No Effect	No Effect
Cultural Resources	No Effect	No Adverse Effect to Identified Sites
Paleontological Resources	No Effect	No Effect

Project Resource	No Action	Proposed Action
Hydrology	No Effect	Potential Adverse Impact
Water Quality	No Effect	Positive and Negative Impacts
Health, Safety, Air Quality, and Noise	No Effect	Temporary Impact
Prime & Unique Farmlands	No Effect	No Effect
Flood Plains	No Effect	Potential Adverse Impact
Wetlands, Riparian, Noxious Weeds, and Existing Vegetation	No Effect	Potential Adverse Impact to Riparian Corridor
Fish & Wildlife Resources	No Effect	Temporary Impact
Threatened, Endangered, & Sensitive Species	No Effect	Potential Temporary Impact
Socioeconomics	No Effect	Positive Impact
Public Safety, Access, & Transportation	No Effect	Temporary Impact
Upland Vegetation Resources	No Effect	Temporary Impact
Energy Requirements & Conservation Potential	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 will be implemented as an integral part of the Proposed Action.

1. Standard Reclamation BMPs - Standard Reclamation BMPs (Appendix B) 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 revegetation 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. Fugitive Dust Control Permit - The Division of Air Quality regulates fugitive dust from construction sites, requiring compliance with rules for sites disturbing greater than 1/4 of an acre. Utah Administrative Code R307-205-5, requires steps be taken to minimize fugitive dust from

construction activities (Appendix B). Sensitive receptors include those individuals working at the site or motorists that could be affected by changes in air quality due to emissions from the construction activity.

4. Cultural Resources - In the case that any cultural resources, either on the surface or subsurface, are discovered during construction, Reclamation's Provo Area Office archeologist 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 archeologist.

5. Paleontological Resources - Should vertebrate fossils be encountered by the proponent during ground disturbing actions, construction must be suspended until a qualified paleontologist can be contacted to assess the find.

6. Wildlife Resources –

   a. Migratory Bird Protection

      i. Perform any ground-disturbing activities or vegetation treatments before migratory birds begin nesting or after all young have fledged.

      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 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 prior to groundbreaking activities or vegetation treatments. Established nests with eggs or young cannot be moved, and the birds cannot be harassed (see b., above), 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

developed using the Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (Romin and Muck 2002), to ensure that the 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.

7. Maintenance Flow Design Feature - The FIC will release 743 AF of water annually from Mill Meadow Reservoir to the Fremont River directly below the dam to maintain the integrity of the riparian area and the natural river channel as described in Section 3.3.4.2.

8. Previously Disturbed Areas - Construction activities will be confined to previously disturbed areas where possible for such activities as work, staging, and storage, waste areas and vehicle and equipment parking areas. Vegetation disturbance will be minimized as much as possible.

9. Public Access - Construction sites will be closed to public access. Temporary fencing, along with signs, will be installed to prevent public access. Reclamation will coordinate with landowners or those holding special permits and other authorized parties regarding access to or through the Project area.

10. Disturbed Areas - All disturbed areas resulting from the Project will be smoothed, shaped, contoured, and rehabilitated to as near the pre-Project construction condition as practicable. After completion of the construction and restoration activities, disturbed areas will be seeded at appropriate times with weed-free, native seed mixes having a variety of appropriate species (especially woody species where feasible) to help hold the soil around structures, prevent excessive erosion, and to help maintain other riverine and riparian functions. The composition of seed mixes will be coordinated with wildlife habitat specialists and Reclamation biologists. Weed control on all disturbed areas will be required. Successful revegetation efforts must be monitored and reported to Reclamation, along with photos of the completed Project.

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

Reclamation would mail letters to property owners near the canal ROW, FIC shareholders, as well as state and Federal agencies, notifying them of the Project and inviting them to an open house. The mailed letters would also include an invitation to participate in a 30-day public comment period for the Draft EA.

5.3 Native American Consultation

Reclamation conducts Native American consultation throughout the public involvement process. A consultation letter and copy of the Class III Cultural Resource Inventory Report was sent to the Confederated Tribes of the Goshute Reservation, Kaibab Band of Paiute Indians of the Kaibab Reservation, Paiute Indian Tribe of Utah (Cedar, Kanosh, Koosharem, Indian Peaks, and Shivwits Bands), and the Skull Valley Band of Goshute Indians of Utah on October 25, 2015. This consultation was conducted in compliance with 36 CFR 800.2(c) (2) on a government-to-government basis. Through this effort each 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

Reclamation requested a paleontological file search from the UGS to determine the nature and extent of paleontological resources within the APE. File search results and recommendations from the UGS were received in a letter dated June 1, 2015.

5.5 Utah State Historic Preservation Office

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 findings in a letter dated October 31, 2015.

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

Name	Title, Company	Role
Brent E. Gardner, P.E.	Project Engineer, Alpha Engineering, Inc.	Project Manager
Terry J. Hickman	Biological Consulting	EA Preparation Biological Field Surveys
Barbara Walling-Frank	Archaeologist, Cultural Resource Consulting	Cultural Resources

Table 6-2
Reclamation Team Members

Name	Title, Company	Role
Rick Baxter	Water, Environmental, and Lands Division Manager, Bureau of Reclamation, Provo Area Office	NEPA Oversight
Scott Blake	Recreation Specialist, Bureau of Reclamation, Provo Area Office	Recreation Oversight, Grants Specialist
Peter Crookston	Environmental Group Chief, Bureau of Reclamation, Provo Area Office	NEPA Oversight
Dale Hamilton	Resource Division Manager, Bureau of Reclamation, Provo Area Office	Public Health and Safety Oversight
Jeffrey Hearty	Economist, Bureau of Reclamation, Provo Area Office	Socioeconomics Oversight
Calvin Jennings	Archaeologist, Bureau of Reclamation, Provo Area Office	Cultural Resources, Paleontological Resources
Jessica Kahler	Environmental Protection Specialist,	NEPA Oversight

Name	Title, Company	Role
	Bureau of Reclamation, UC Regional Office	
Shane Mower	Biologist, Bureau of Reclamation, Provo Area Office	Biological Resource Oversight
Zachary Nelson	Archaeologist, Bureau of Reclamation, Provo Area Office	Cultural Resources, Paleontological Resources
Prashant Singh	Economist, Bureau of Reclamation, Provo Area Office	Socioeconomics Oversight
David Snyder	Biologist, Bureau of Reclamation, Provo Area Office	Interdisciplinary Team Lead, Biological Resource Oversight

Table 6-3
Federal, State or District Members

Name	Title, Company	Role
Graydon Bascom	Planning and Environmental Coordinator Richfield Bureau of Land Management	BLM NEPA Review
Mark Dean	Hydrologist, BLM Project Lead Richfield Bureau of Land Management	Coordination and BLM Oversight, Hydrology, Wetland/Riparian Resources, Floodplains, Water Quality
Larry Greenwood	Wildlife Biologist, Richfield Field Office, Bureau of Land Management	Wildlife Resources
Brant Hallows	Natural Resource Specialist Bureau of Land Management	Soils-Upland Vegetation
Brandon Jolley	Rangeland Management Specialist	Rangeland Health Standards and Guidelines
Joelle McCarthy	Richfield Field Office Manager, Archaeologist, Bureau of Land Management	Cultural Resources
Michael Utley	Realty Specialist Richfield Bureau of Land Management	BLM ROW

Name	Title, Company	Role
Daniel White	Geologist Bureau of Land Management	Paleontology

Chapter 7 Acronyms and Abbreviations

Acronym/Abbreviations	Meaning
AF	acre-feet
AIRFA	American Indian Religious Freedom Act
APE	Area of Potential Effect
ARPA	Archaeological Resources Protection Act
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BA	Biological Assessment
BIA	Bureau of Indian Affairs
BMP	Best Management Practice
BO	Biological Opinion
CAA	Clean Air Act
Canal	Steinaker Service Canal
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
cfs	Cubic Feet Per Second
DWR	State of Utah Division of Wildlife Resources
DWRi	State of Utah Division of Water Rights
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FIC	Fremont Irrigation Company
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
H:V	Horizontal:Vertical
HDPE	High Density Polyethylene
ID	Inner Diameter
ITA	Indian Trust Assets
MBTA	Migratory Bird Treaty Act
mW	Mega-Watt
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places

Acronym/Abbreviations	Meaning
NWI	National Wetlands Inventory
NWP	Nationwide Permit
PM	Particulate Matter
POD	Plan of Development
PRPA	Paleontological Resources Preservation Act
RCRA	Resource Conservation and Recovery Act
Reclamation	U.S. Bureau of Reclamation
ROW	Right of Way
RMP	Resource Management Plan
SHPO	Utah State Historic Preservation Office
SOP	Standard Operating Procedures
UDNR	Utah Department of Natural Resources
UGS	Utah Geological Service
UPDES	Utah Pollution Discharge Elimination System
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Chapter 8 References

Ambient Water Quality Monitoring System (AWQMS) http://www.awqms.com

Alsop, Fred J. 2001. Birds of North America**.** DK Publishers, Inc. NY:NY.

Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1992. Birds in Jeopardy: the Imperiled and Extinct Birds of the United States and Canada, including Hawaii and Puerto Rico. Stanford University Press, Stanford, California. 259 pp.

Judd, Harry Lewis. 1997. *Utah's Lakes and Reservoirs – An Inventory and Classification of Utah's Priority Lakes and Reservoirs*. Excerpts for Fish Lake, Johnson Valley Reservoir, Forsyth Reservoir, and Mill Meadow Reservoir. DEQDWQ.

Parker Mountain Adaptive Resource Management Local Working Group (PARM). 2006. Parker Mountain Greater Sage-grouse (*Centrocercus urophasianus*) Local Conservation Plan. Utah State University Extension, Jack H. Berryman Institute, and Utah Division of Wildlife Resources Salt Lake City, Utah. Unpublished Report.

Parrish J.R., F.P. Howe, and R.E. Norvell. 1999. Utah Partners in Flight. Draft Conservation Strategy. UDWR Publication No. 99-40. Salt Lake City, Utah.

Sigler, W.F. and J.W. Sigler. 1996. Fishes of Utah: A Natural History. University of Utah Press. Salt lake City, Utah. 375 pp.

Stalmaster, M.V. 1987. *The Bald Eagle.* Universe Books, New York, New York.

Stokes, D. and L. 1996. *Stokes Field Guide to Birds.* Little, Brown and Company, New York,New York.

Utah Division of Wildlife Resources. 2005. UDWR, Nature Serve, and the Network of natural Heritage Programs and Conservation Data Centers.

Utah Division of Water Quality. 2002 (UDWQ) Fremont River Watershed Water Quality Management Plan. https://deq.utah.gov/ProgramsServices/programs/water/watersheds/docs/2006/09Sep/FREMONT_WQMP.pdf

Utah Division of Water Quality. 2016 (UDWQ) 2016 Final Integrated Report Water Quality Assessment Program Monitoring and Reporting.

https://deq.utah.gov/ProgramsServices/programs/water/wqmanagement/assessment/currentIR2016.htm

U.S. Bureau of Reclamation. SECURE Water Act Section 950 (c)- Reclamation Climate Change and Water 2011. U.S. Department of the Interior, Policy and Administration Bureau of Reclamation, Denver, Colorado, April 2011.

U.S. Bureau of Reclamation. WaterSMART. http://www/usbr.gov/WaterSMART/water.html.

U.S. Environmental Protection Agency. Analysis of Individual Nonattainment Areas, Utah. www.epa.gov/air/urbanair/sipstatus/reports/ut_areabypoll.html.

U.S. Fish and Wildlife Service. 1994. U.S. Fish and Wildlife Service. Barneby reed mustard seed (*Schoenocrambe barnebyi*) Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

U.S. Fish and Wildlife Service. 2002. Bonytail (*Gila elegans*) Recovery Goals: amendment and supplement to the Bonytail Chub Recovery Plan. U.S. Fish and Wildlife Service, Mountain- Prairie Region (6), Denver, Colorado.

U.S. Fish and Wildlife Service. 2002. Colorado pikeminnow (*Ptychocheilus Lucius*) Recovery Goals: Amendment and Supplement to the Colorado Squawfish Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

U.S. Fish and Wildlife Service. 2002. Humpback chub (*Gila cypha*) Recovery Goals: amendment and supplement to the Humpback Chub Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

U.S. Fish and Wildlife Service. 2002. Razorback sucker (*Xyrauchen texanus*) Recovery Goals: amendment and supplement to the Razorback Sucker Recovery Plan. U.S. Fish and Wildlife Service, Mountain-Prairie Region (6), Denver, Colorado.

U.S. Fish and W ildlife Service. 2002. Southwestern Willow Flycatcher Recovery Plan. Albuquerque, New Mexico. i-ix + 210 pp., Appendices A-O.

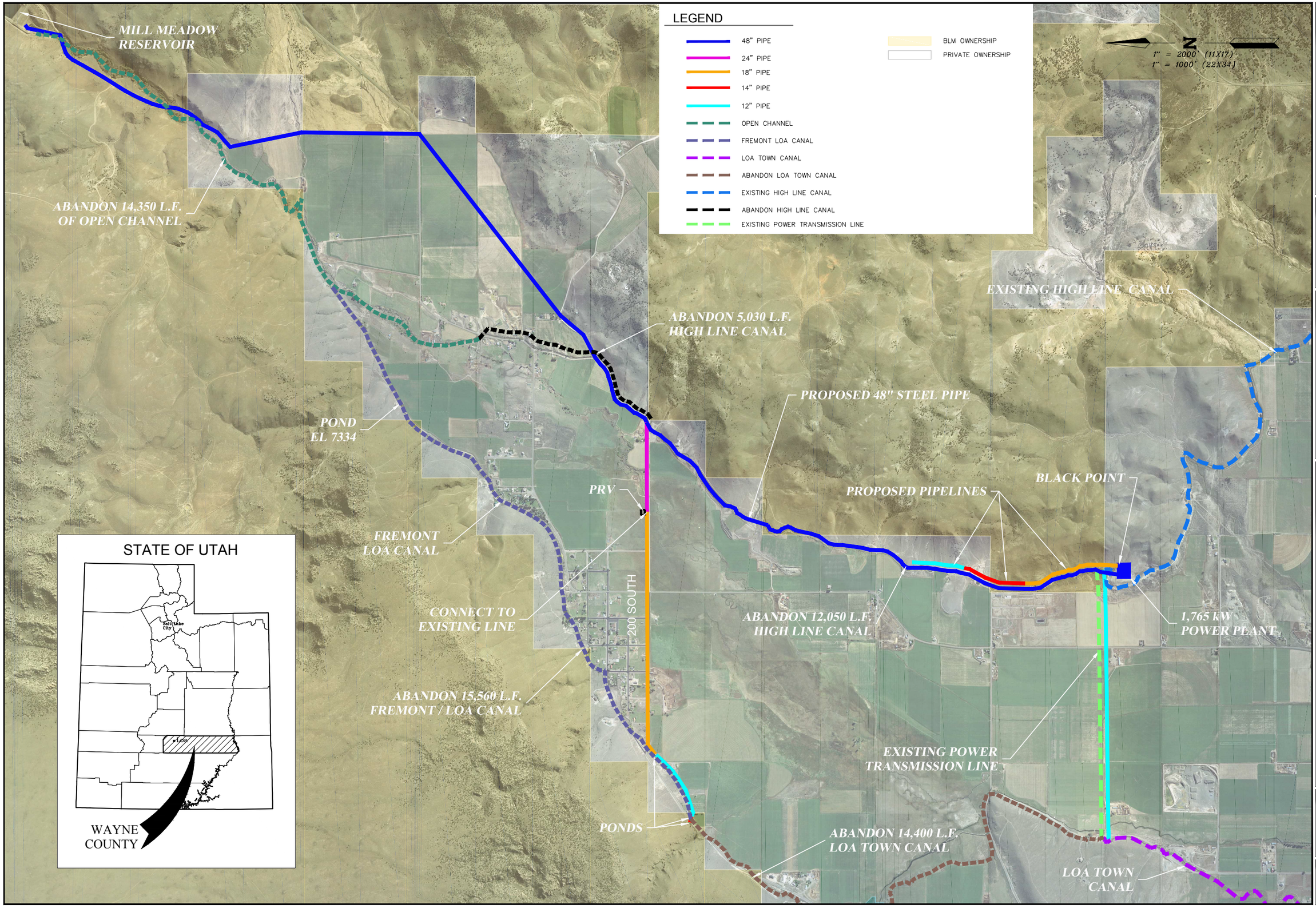
U.S. Fish and Wildlife Service. 2005. 5-year review of the Wright fishhook cactus (*Sclerocactus wrightiae*). U.S. Fish and Wildlife Service Utah Field Office, West Valley City, Utah.

U.S. Fish and Wildlife Service. 2012. Utah Prairie Dog (*Cynomys parvidens*) Revised Recovery Plan. U.S. Fish and Wildlife Service, Denver, CO. i + 122 pp.

U.S. Fish and Wildlife Service. 2012. Final Recovery Plan for the Mexican Spotted Owl (*Strix occidentalis lucida*), First Revision. U.S. Fish and Wildlife Service. Albuquerque, New Mexico, USA. 413 pp.

Utah State University Extension. Publications 4/https://extension.usu.edu/files/publications/publication/AG_Econ_county-2005-31.pdf

Chapter 9 Figure



P:\894-02 Mill Meadow\Drawings\Construction Drawings\FREMONT IRRIGATION EXHIBIT1.dwg, MILL MEADOW PIPELINE PROJECT EXHIBIT, 11/23/2015 9:13:15 AM, tgardner, DWG To PDF.pc3

NO.	DATE	BY	DESCRIPTION

REVISIONS

ALPHA ENGINEERING
43 South 100 East, Suite 100 • St George, Utah 84770
T: 435.628.6500 • F: 435.628.6553 • alphaengineering.com

PROJECT EXHIBIT

FREMONT IRRIGATION COMPANY
FREMONT, UTAH

PROJECT #	894-02
NAME	TBG
DATE	NOVEMBER 2015
SCALE	AS NOTED

SHEET
FIGURE 1
PAGE 3

FILE
FREMONT IRRIGATION EXHIBIT1.dwg

Chapter 10 Appendices

Appendix A

Hydrology Study

Fremont River

Below Mill Meadow Dam

Wayne County, Utah

May 2017

ALPHA ENGINEERING
43 South 100 East, Suite 100 • St George, Utah 84770
T: 435.628.6500 • F: 435.628.6553 • alphaengineering.com

A hydrologic analysis has been performed on the Fremont River from its outlet at Mill Meadow Reservoir to the High Line Canal diversion near Loa, Wayne County, Utah. The purpose of this study was to quantify storm runoff to the river from adjacent tributary areas. Two storm events have been analyzed which include, the 1-year 12-hour storm and the 1-year 24-hour storm. These storm events represent a storm that has a 100% probability of occurring every year. The following summarizes the methods used in this analysis.

1.1 Selection of Hydrologic Model

The *HEC-1 Flood Hydrograph Package* developed by the United States Army Corps of Engineers as revised June 1, 1988 was used to determine the flows for this study.

1.2 Model Input Parameters

The HEC1 model uses the following parameters to model the peak runoff values for each subbasin:

- Watershed area
- SCS Curve Number
- SCS Lag Time
- Rainfall depth
- Time distribution of rainfall

These input parameters are explained below.

1.3 Watershed Area

The tributary basins to the Fremont River in the area of interest were delineated based on existing topography.

1.4 Curve Number

The United States Department of Agriculture *Urban Hydrology for Small Watersheds Manual* was consulted in estimating curve numbers, for the given soil and land cover type. At this time there is no published soil data for this area in Wayne County. Interim soil data from the *National Resources Conservation Service* was obtained, which shows that various hydrologic groups exist within each soil group map symbol. For this analysis the soil group was estimated as group "C". The land cover type for the basins was determined as brush-weed-grass mixture with brush the major element, which corresponds to a curve number of 77.

1.5 Lag Time

The time of concentration for each basin was calculated using the following lag time equations. For basins smaller than one square mile the lag time was calculated using the SCS Lag Equation as shown in Equation 1:

$$T_{LAG} = \frac{L^{0.8}\left(\frac{1000}{CN} - 9\right)^{0.7}}{1900\, S^{0.5}} \qquad \text{Equation 1}$$

Where

T_{LAG} = Lag time in hours,
L = Distance of longest drainage path in feet,
CN = Curve Number
S = Average watershed slope in percentage.

For basins larger than one square mile, lag time was calculated as outlined in the *U.S. Bureau of Reclamation Flood Hydrology Manual (1989)* and shown in Equation 2:

$$T_{LAG} = 26K_n \left(\frac{L\,L_c}{S^{0.5}}\right)^{0.33} \qquad \text{Equation 2}$$

Where

T_{LAG} = Lag time in hours,
K_n = Basin Manning's n value,
L = Distance of longest watercourse in miles,
L_c = Distance from watershed outlet to a point opposite centroid of basin in miles,
S = Overall slope of L measured from gauging station or point of interest to basin divide, in feet per mile.

1.6 Rainfall Depth

Precipitation analysis was based on a 1-year storm with estimates for the 12-hour and 24-hour duration events. The precipitation values are summarized in the following table, as taken from the *NOAA Atlas 14 Point Precipitation Frequency Estimates.*

Storm Event	Precipitation Total (inches)
1-Year 24-Hour	0.823

**Western Regional Climate Center*

1.7 Time Distribution of Rainfall

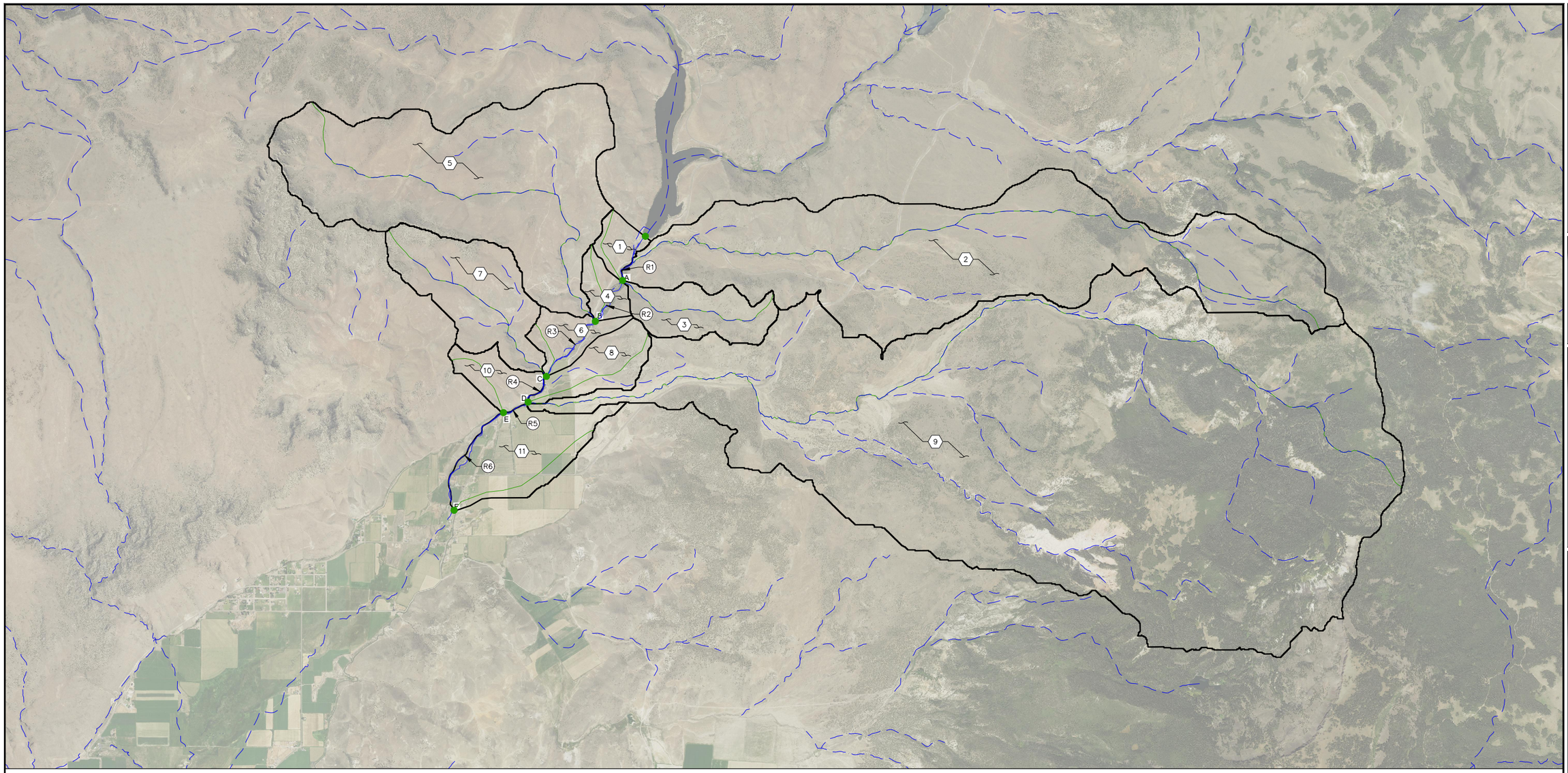
This study uses the SCS Type II storm distribution. For storm durations shorter than 24 hours the 24-hour rainfall distribution was transformed.

1.8 Model Output

The peak flows and volume of runoff for each storm event as calculated in the HEC-1 analysis are summarized on **Figure 1** for the 1-year 12-Hour storm and **Figure 2** for the 1-Year 24-Hour storm. The basin and reach characteristics are also summarized on each figure.

Figure 1 – 1 year 12 Hour Storm

Figure 2 – 1 Year 24 Hour Storm



BASIN TABLE

Keyed Note	Basin	Area (acres)	Area (sq. mi.)	CN	Longest Flow Path (ft)	Slope (ft/mile)	Slope (ft/ft)	Volume of Storm Runoff (acre-ft)
1	B1	72	0.1121	77	3100	740	0.140	0.02
2	B2	2266	3.5405	77	30650	469	0.089	0.48
3	B3	230	0.3595	77	6990	437	0.083	0.05
4	B4	79	0.1241	77	3140	755	0.143	0.02
5	B5	1533	2.3946	77	18320	256	0.048	0.33
6	B6	115	0.1792	77	2310	743	0.141	0.02
7	B7	439	0.6866	77	8850	539	0.102	0.09
8	B8	171	0.2671	77	5630	467	0.088	0.04
9	B9	6210	9.7026	77	41770	350	0.066	1.32
10	B10	117	0.1822	77	3270	787	0.149	0.02
11	B11	334	0.5220	77	6390	199	0.038	0.07
								Total = 2.5

RIVER REACH TABLE

Keyed Note	River Reach	Length (ft)	Slope (ft/ft)	Roughness, n	Side Slope	Bottom Width (ft)	Peak Runoff in Reach Segment (cfs)
R1	R1	950	0.040	0.030	4:1	5	2
R2	R2	1960	0.036	0.030	4:1	5	3
R3	R3	3090	0.013	0.030	4:1	5	4
R4	R4	1370	0.029	0.030	4:1	5	9
R5	R5	1070	0.006	0.030	4:1	5	9
R6	R6	4740	0.024	0.030	4:1	5	9

LEGEND

- LONGEST FLOW PATH
- EXISTING FLOW PATH
- BASIN BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR

N

GRAPHIC SCALE

2000 0 1000 2000 4000 8000

(IN FEET)

1 inch = 2000 ft. (22x34 SHEET)

1 inch = 4000 ft. (11X17 SHEET)

NO.	DATE	BY	DESCRIPTION

REVISIONS

ALPHA ENGINEERING
43 South 100 East, Suite 100 • St George, Utah 84770
T: 435.628.6500 • F: 435.628.6553 • alphaengineering.com

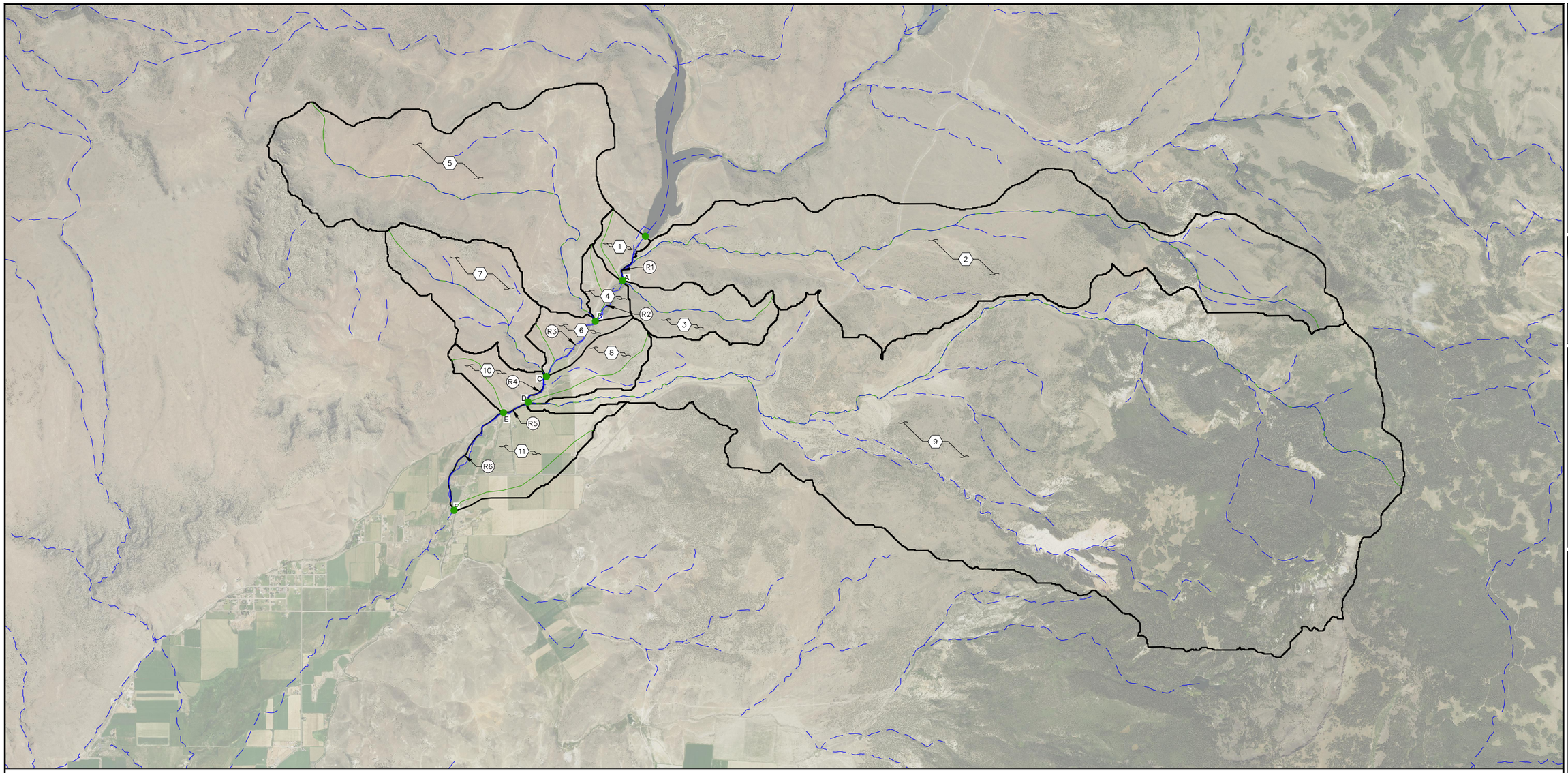
TITLE: FREMONT RIVER ANALYSIS
1-YEAR 12-HOUR STORM

PROJECT: FREMONT IRRIGATION COMPANY
WAYNE COUNTY, UTAH

PROJECT # 894-02
NAME JRH
DATE MAY 5, 2017
SCALE AS NOTED

SHEET FIGURE 1 1 OF 2
FILE 894-02 CANAL HYDROLOGY.dwg

P:\894-02 Mill Meadow\Drawings\Exhibit Drawings\894-02 CANAL HYDROLOGY.dwg, RIVER 1YR 12HR, 05/05/17 1:22:10 PM, jlweard, DWG To PDF.pc3



BASIN TABLE

Keyed Note	Basin	Area (acres)	Area (sq. mi.)	CN	Longest Flow Path (ft)	Slope (ft/mile)	Slope (ft/ft)	Volume of Storm Runoff (acre-ft)
1	B1	72	0.1121	77	3100	740	0.140	0.09
2	B2	2266	3.5405	77	30650	469	0.089	2.99
3	B3	230	0.3595	77	6990	437	0.083	0.30
4	B4	79	0.1241	77	3140	755	0.143	0.10
5	B5	1533	2.3946	77	18320	256	0.048	2.02
6	B6	115	0.1792	77	2310	743	0.141	0.15
7	B7	439	0.6866	77	8850	539	0.102	0.58
8	B8	171	0.2671	77	5630	467	0.088	0.23
9	B9	6210	9.7026	77	41770	350	0.066	8.20
10	B10	117	0.1822	77	3270	787	0.149	0.15
11	B11	334	0.5220	77	6390	199	0.038	0.44
								Total = 15.3

RIVER REACH TABLE

Keyed Note	River Reach	Length (ft)	Slope (ft/ft)	Roughness, n	Side Slope	Bottom Width (ft)	Peak Runoff in Reach Segment (cfs)
R1	R1	950	0.040	0.030	4:1	5	4
R2	R2	1960	0.036	0.030	4:1	5	7
R3	R3	3090	0.013	0.030	4:1	5	8
R4	R4	1370	0.029	0.030	4:1	5	18
R5	R5	1070	0.006	0.030	4:1	5	18
R6	R6	4740	0.024	0.030	4:1	5	19

LEGEND

- LONGEST FLOW PATH
- EXISTING FLOW PATH
- BASIN BOUNDARY
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR

N

GRAPHIC SCALE

2000 0 1000 2000 4000 8000

(IN FEET)

1 inch = 2000 ft. (22x34 SHEET)

1 inch = 4000 ft. (11X17 SHEET)

NO.	DATE	BY	DESCRIPTION

REVISIONS

ALPHA ENGINEERING
43 South 100 East, Suite 100 • St George, Utah 84770
T: 435.628.6500 • F: 435.628.6553 • alphaengineering.com

TITLE: FREMONT RIVER ANALYSIS
1-YEAR 24-HOUR STORM

PROJECT: FREMONT IRRIGATION COMPANY
WAYNE COUNTY, UTAH

PROJECT # 894-02
NAME JRH
DATE MAY 5, 2017
SCALE AS NOTED

SHEET FIGURE 2
2 OF 2

FILE 894-02 CANAL HYDROLOGY.dwg

P:\894-02 Mill Meadow\Drawings\Exhibit Drawings\894-02 CANAL HYDROLOGY.dwg, RIVER 1YR 24HR, 05/05/17 1:21:45 PM, jlweard, DWG To PDF.pc3

Appendix B

Best Management Practices

As part of standard operating procedures, standard BMPs would be implemented throughout the Project in order to reduce potential adverse environmental impacts. Most of the impacts are short term and generally occur during the construction period. Project design and implementation of site-specific or selectively recommended BMPs would minimize the effect of the Project where the potential for long-term, adverse impacts may occur.

STANDARD BMPs
1. All construction vehicle movement outside of the right-of-way would be restricted to pre-designated access, contractor acquired access, or public roads.
2. The limits of construction activities would be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction activity limits. The right-of-way boundary would be flagged in environmentally sensitive areas described in the plan of development to alert construction personnel that those areas would be avoided.
3. In construction areas where re-contouring is not required, vegetation would be left in place wherever possible to avoid excessive root damage and allow for re-sprouting.
4. In construction areas where ground disturbance is significant or where re-contouring is required, surface restoration would occur as required by the landowner or land management agency. The method of restoration typically would consist of returning disturbed areas to their natural contour (to the extent practical) and reseeding or re-vegetating with native plants. Seed viability would be tested and seed mixes would be certified to contain no noxious weeds.
5. Prior to construction, all construction personnel would be instructed on the protection of cultural, paleontological, and ecological resources. To assist in this effort, the construction contract would address (a) Federal and state laws regarding antiquities, fossils, and plants and wildlife, including collection and removal; and (b) the importance of these resources and the purpose and necessity of protecting them.
6. An initial intensive cultural resource inventory survey would be conducted prior to construction. Impact avoidance and mitigation measures developed in consultation with appropriate land management and regulatory agencies and other interested parties would be implemented subsequent to the completion of the NEPA compliance document.
7. Any cultural and/or paleontological resource discovered during construction by the FIC or any person working on their behalf on public or Federal land would be reported immediately to the authorized officer. The FIC would suspend operations in the area until an evaluation is completed to prevent the loss of cultural or scientific values.
8. All construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent and perennial stream banks. In addition, dust-control measures would be utilized as necessary during construction in sensitive areas. Any used existing roads would be left in a condition equal to or better than their condition prior to construction.
9. All requirements of those entities having jurisdiction over air quality matters would be adhered to and any necessary permits for construction activities would be obtained. Open burning of construction trash (cleared trees, etc.) would not be allowed on BLM lands.
10. Fences and gates, if damaged or destroyed by construction activities, would be repaired or replaced to their original pre-disturbed condition as required by the landowner or the land management agency. Temporary gates would be installed only with the permission of the landowner or the land management agency.
11. Totally enclosed containment would be provided for all hazardous materials (if needed) and trash. All construction waste including trash, litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials would be removed to a disposal facility authorized to accept such materials.

STANDARD BMPs
12. Third-party environmental contractors would be used throughout the construction effort, from clearing through rehabilitation.
13. The FIC would trim trees in preference to cutting trees, and would cut trees in preference to bulldozing them.
14. Construction holes left open overnight would be covered to prevent livestock or wildlife from harm.
15. The contractor would clean off-road equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts prior to moving equipment onto public land.

Additional Stipulations

The following additional stipulations would be implemented throughout the construction and operation of the Project and would be included as part of the standard operating procedures.

STIPULATIONS – STANDARD OPERATING PROCEDURES
1. The FIC would construct, operate, and maintain the facilities, improvements, and structures within this ROW in strict conformity with the plan of development as it is approved. Any relocation, additional construction, or use that is not in accord with the approved plan of development would not be initiated without the prior written approval of the authorized officer. A copy of the complete ROW grant or acknowledgment, including all stipulations and approved plan of development, would be made available on the ROW area during construction, operation, and maintenance to the authorized officer. Noncompliance with the above shall be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or a material threat to the environment.
2. This plan of development describes in detail the construction, operation, maintenance of the ROW and its associated improvements and/or facilities. An approved plan of development may be referred to for interpretation of the right-of-way grant.
3. The FIC would contact the authorized officer at least 10 days prior to the anticipated start of construction and/or any surface-disturbing activities. The authorized officer may require and schedule a preconstruction conference with the FIC prior to commencement of construction and/or surface-disturbing activities on the ROW. The FIC, its contractor(s), or agents involved with the construction and/or surface-disturbing activities on the ROW should attend this conference to review the stipulations of the grant and the plan(s) of development.
4. The FIC would designate a representative(s) who would have the authority to act upon and implement instructions from the authorized officer within a reasonable time when construction or other surface-disturbing activities are underway.
5. The holder would protect all survey monuments found within the right-of-way. Survey monuments include but are not limited to General Land Office and BLM Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the FIC would immediately report the incident, in writing, to the authorized officer and the respective installing authority, if known. Where General Land Office or BLM ROW monuments or references are obliterated during operations, the FIC shall secure the services of a registered land surveyor or a BLM cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the *Manual of Surveying Instructions for the Survey of the Public Lands of the United States*, latest edition. The FIC shall record such survey in the appropriate county and send a copy to the authorized officer. If the BLM cadastral surveyors or other federal surveyors are used to restore the disturbed survey monument, FIC would be responsible for the survey cost.

STIPULATIONS – STANDARD OPERATING PROCEDURES
6. The holder of the ROW grant or the holder's successor in interest shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et. seq.) and the regulations of the Secretary of Interior issued pursuant hereto.
7. The FIC would mark the exterior boundaries of the ROW with a stake and/or lath. The intervals may be varied at the time of staking at the discretion of the authorized officer. The tops of the stakes and/or laths would be painted and the laths flagged in a distinctive color as determined by the holder. The survey station numbers would be marked on the boundary stakes and/or laths at the entrance to and exit from public land. Holder would maintain all boundary stakes and/or laths in place until final cleanup and restoration are completed and approved by the authorized officer. The stakes and/or laths would then be removed at the direction of the authorized officer.
8. The holder would conduct all activities associated with the construction, operation, and maintenance of the right-of-way within the authorized limits of the ROW and approved plan of development.
9. The holder would survey and clearly mark the centerline and/or exterior limits of the ROW, as determined by the authorized officer.
10. All design, material, and construction, operation, maintenance, and termination practices would be in accordance with safe and proven engineering practices.
11. The holder would inform the authorized officer within 48 hours of any accidents on federal lands that require reporting to the Department of Transportation as required by 49 CFR Part 195.
12. During conditions of extreme fire danger, operations may be suspended or limited in certain areas.
13. The holder would be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2803.1-4. The holder would be held to a standard of strict liability for damage or injury to the United States resulting from fire or soil movement (including landslides and slumps as well as wind and water-caused movement of particles) caused or substantially aggravated by any of the following within the ROW or permit area: ■ Activities of the holder including but not limited to construction, operation and maintenance of the facility. ■ Activities of other parties acting under color of authority from the FIC, including but not limited to land clearing and earth-disturbing and earth-moving work
14. Within 30 days of completion, the holder would submit to the authorized officer, as-built drawings and a certification of construction verifying that the facility has been constructed (and tested) in accordance with the design, plans, specifications, and applicable laws and regulations.
15. Construction sites would be maintained in a sanitary condition at all times; waste materials at those sites would be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including but not limited to human waste, debris, garbage, refuse, oil drums, petroleum products, ashes, and equipment.
16. Prior to preconstruction activities on the subject parcel, the lessee would identify all noxious weeds present. A list of the weeds would be provided to the authorized officer. A determination would be made by the authorized officer of any noxious weeds that may require flagging for treatment. The lessee shall treat the noxious weeds as required by the authorized officer.
17. The lessee would clean off-road equipment (power or high-pressure cleaning) of all mud, dirt, and plant parts prior to moving equipment onto public land authorized under this lease.
18. Gravel and/or fill material to be placed in relatively weed-free areas must come from weed-free sources. Prior to obtaining gravel and/or fill material, the authorized officer would inspect the source for weeds and determine adequacy of site.
19. The lessee would identify a road maintenance program, which would include monitoring for noxious weeds. If lessee identifies any noxious weeds, the lessee would notify the authorized officer immediately. A treatment program would be identified and the lessee would be responsible for weed abatement.

Appendix C

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

June 1, 2015

Barbara Walling-Frank
Intersearch
325 West 1725 North
Cedar City UT 84721

RE: Paleontological File Search and Recommendations for the Alpha-Fremont Irrigation Company Survey Project (U-15-IG-0384bp), Wayne County, Utah
U.C.A. 79-3-508 (Paleontological) Compliance; Request for Confirmation of Literature Search

Dear Barbara:

I have conducted a paleontological file search for the Alpha-Fremont Irrigation Company Survey Project in response to your request on May 29, 2015.

There are no paleontological localities recorded in our files for this project area. Quaternary, Recent and Tertiary alluvial and volcanic deposits that are exposed here have a low potential for yielding significant fossil localities (PFYC 1-2). 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

1594 West North Temple, Suite 3110, PO Box 146100, Salt Lake City, UT 84114-6100
telephone (801) 537-3300 • facsimile (801) 537-3400 • TTY (801) 538-7458 • *geology.utah.gov*

Appendix D

GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

State of Utah
DEPARTMENT OF NATURAL RESOURCES
MICHAEL R. STYLER
Executive Director
Division of Wildlife Resources
GREGORY SHEEHAN
Division Director

January 20, 2015

Terry J. Hickman
2246 Sonoma Lane
St. George, Utah 84770
435-668-8933

Subject: Species of Concern Near the Fremont Irrigation Company Pipeline, Wayne County, Utah

Dear Terry J. Hickman:

I am writing in response to your email dated January 5, 2015 regarding information on species of special concern proximal to the proposed Fremont Irrigation Company Pipeline located in Sections 3, 9-10, 16-20, and 29-32 of Township 27 South, Range 3 East, SLB&M in Wayne County, Utah.

The Utah Division of Wildlife Resources (UDWR) does not have recent records of occurrence for any threatened, endangered, or sensitive species within the project area noted above. However, within a two-mile radius there are recent records of occurrence for bobolink, Colorado River cutthroat trout, ferruginous hawk, long-billed curlew, pygmy rabbit and Utah prairie-dog, and historical records of occurrence for bald eagle and western toad. All of the aforementioned species are included on the *Utah Sensitive Species List*.

The information provided in this letter is based on data existing in the Utah Division of Wildlife Resources' central database at the time of the request. It should not be regarded as a final statement on the occurrence of any species on or near the designated site, nor should it be considered a substitute for on-the-ground biological surveys. Moreover, because the Utah Division of Wildlife Resources' central database is continually updated, and because data requests are evaluated for the specific type of proposed action, any given response is only appropriate for its respective request.

In addition to the information you requested, other significant wildlife values might also be present on the designated site. Please contact UDWR's habitat manager for the southern region, Gary Bezzant, at (435) 865-6113 if you have any questions.

Please contact our office at (801) 538-4759 if you require further assistance.

Sincerely,

Sarah Lindsey

Sarah Lindsey
Information Manager
Utah Natural Heritage Program

cc: Gary Bezzant

1594 West North Temple, Suite 2110, PO Box 146301, Salt Lake City, UT 84114-6301
telephone (801) 538-4700 • facsimile (801) 538-4709 • TTY (801) 538-7458 • *www.wildlife.utah.gov*