East Hobble Creek Restoration Project

Final Environmental Assessment

Submitted by:

U.S. Department of the Interior, Central Utah Project Completion Act Office
Central Utah Water Conservancy District
Utah Reclamation Mitigation and Conservation Commission

In cooperation with:

June Sucker Recovery Implementation Program

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In cooperation with:

June Sucker Recovery Implementation Program

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

ACS	U.S. Census Bureau's American Community Survey
APE	Area of Potential Effect
APWA	American Public Works Association
asml	above mean sea level
BGEPA	Bald Eagle and Golden Eagle Protection Act
BMP	Best Management Practice
BRT	Bus Rapid Transit
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	cubic feet per second
CO	carbon monoxide
CUP	Central Utah Project
CUPCA	Central Utah Project Completion Act
CUWCD	Central Utah Water Conservancy District
CWA	Clean Water Act
dBA	A-weighted decibels
DERR	Utah Division of Environmental Response and Remediation
DOI	U.S. Department of the Interior
EA	environmental assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRMs	flood insurance rate maps
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FR	Federal Register
GIS	geographic information system
GOPB	Utah Governors Office of Planning and Budget
I	Interstate
ITA	Indian Trust Assets
JSRIP	June Sucker Recovery Implementation Program
LUST	leaking underground storage tank
MBTA	Migratory Bird Treaty Act
MSL	Mapleton-Springville Lateral
NAAQS	National Ambient Air Quality Standards

NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NPL	National Priorities List
NO_2	nitrogen dioxide
NOI	Notice of Intent
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
Pb	lead
PRC	Provo Reservoir Canal
PL	public law
PM	particulate matter
$PM_{2.5}$	particulate matter 2.5 micrograms
PM_{10}	particulate matter 10 micrograms
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
SFPRC	Spanish Fork-Provo Reservoir Canal
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SWPPP	storm water pollution prevention plan
T&E	threatened and endangered species
TRI	Toxic Release Inventory
UDAQ	Utah Division of Air Quality
UDNR	Utah Department of Natural Resources
UDOT	Utah Department of Transportation
USHHS	U.S. Department of Health and Human Services
ULS	Utah Lake Drainage Basin Water Delivery System
UST	underground storage tanks
UPDES	Utah Pollutant Discharge Elimination System
URMCC	Utah Reclamation Mitigation and Conservation Commission
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VdB	Vibration decibels
VRCP	Voluntary Release Cleanup Program

CHAPTER 1: PURPOSE AND NEED

1.1 Introduction

This Environmental Assessment (EA) analyzes the potential environmental effects of the proposed East Hobble Creek Restoration Project. The Joint Lead Agencies for this project are the U.S. Department of the Interior (Interior), the Central Utah Water Conservancy District (CUWCD), and the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission). This EA has been prepared pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA), as amended; Public Law 102-575, Central Utah Project Completion Act of 1992 (CUPCA), as amended; the Council on Environmental Quality's (CEQ's) implementing regulations under NEPA (40 Code of Federal Regulations [CFR] 1500 through 1508); and the revised Interior NEPA Implementing Procedures (43 CFR Part 46). This EA evaluates potential impacts to the environment associated with implementation of the Proposed Action Alternative, as well as providing an analysis of the No-Action Alternative for comparison purposes.

Cooperating Agencies

To assist with the preparation of this EA, the Utah Department of Natural Resources (UDNR), U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Reclamation (Reclamation), and Springville City have accepted an invitation from the Joint Lead Agencies to be cooperating agencies for this project. As defined by the CEQ, a cooperating agency actively participates in the NEPA and scoping processes, provides information for preparing environmental analyses which the cooperating agency has special expertise, and is part the projects interdisciplinary team.

1.2 Project area

The East Hobble Creek Restoration Project is located in Springville, Utah and extends approximately 5.6 miles along Hobble Creek from Interstate 15 (I-15) east to the discharge location of the Mapleton-Springville Lateral (MSL) pipeline into Hobble Creek (Figure 1-1: Project Location). The project area consists of the existing Hobble Creek channel and areas adjacent to five existing diversion structures. As part of this EA, potential June sucker habitat restoration is being evaluated adjacent to the Hobble Creek channel between I-15 and 400 West in Springville. The surrounding land uses include agricultural, commercial, and residential areas.

1.3 Project Background

Utah Lake Drainage Basin Water Delivery System

The proposed project is associated with the Utah Lake Drainage Basin Water Delivery System (ULS), a component of the CUPCA. The ULS Environmental Impact Statement (EIS) and Records of Decision (RODs) signed by the DOI on December 22, 2004 and by the Mitigation Commission on January 27, 2005, provide for the construction and operation of the ULS.

East Hobble Creek Restoration Project

Figure: 1-1
Project Location

ULS Supplemental Water

At the time of publishing the ULS EIS, supplemental water flow volumes averaging 12,037 acre-feet were anticipated to be delivered annually through the MSL pipeline into Hobble Creek and on to Utah Lake. Of this 12,037 acre-feet, 4,000 acre-feet of conserved water (PL 102-575, Section 207) was to be available annually (subject to shortages), specifically for June sucker (*Chasmistes liorus*) spawning and rearing in Hobble Creek.

The remaining 8,037 acre-feet was to be delivered as necessary (depending upon hydrologic conditions and Utah Lake levels) and is associated with the water exchange operation of Jordanelle Reservoir. The supplemental water discussed and analyzed in this EA includes both the exchange water and the conserved water.

Exchange Water

Exchange water is an annual average of 8,037 acre-feet of water delivered from Strawberry Reservoir to Hobble Creek based on a 50-year analysis of the historical flows with deliveries ranging from 0 to approximately 33,500 acre-feet. There could be years when exchange water may be available to assist with the flows in Hobble Creek. If available, this trans-basin water could be delivered via Hobble Creek to Utah Lake in exchange for water stored in Jordanelle Reservoir. This trans-basin exchange follows requirements of Bonneville Unit water rights and the State Engineer's *Utah Lake Interim Water Distribution Plan* (Utah Division of Water Rights 1993).

Conserved Water

Water conserved under section 207 of CUPCA can be turned over to the Secretary of the Interior to use as in-stream flows. If the conserved water is turned over, the Secretary must give a credit against the repayment obligations of CUWCD for the water received. In south Utah County, the following seven water conservation measures have been or are anticipated to be implemented:

- Spanish Fork Secondary Irrigation (1,000 acre-feet)
- Santaquin Secondary Irrigation (1,000 acre-feet)
- Salem Secondary Irrigation (1,000 acre-feet)
- Mapleton-Springville Lateral Pipeline (1,000 acre-feet)
- Payson Secondary Irrigation (500 acre-feet)
- Mapleton Secondary Irrigation (1,000 acre-feet)
- Springville Secondary Irrigation (3,000 acre-feet)

The ULS EIS described that the 4,000 acre-feet of water turned back from the Spanish Fork, Santaquin, Salem, and the Mapleton-Springville Lateral Pipeline projects would be used for in-stream flow purposes in Hobble Creek to benefit the June sucker. It is anticipated that the contractual arrangements for these projects will be completed to allow water to be delivered to Hobble Creek by Spring of 2013.

The remaining projects: Payson, Mapleton, and Springville could provide an additional 4,500 acre-feet when fully implemented. Once the projects are completed it is anticipated that the contractual arrangements will be made to turn the conserved water over to the Secretary. This water could be used in either Hobble Creek or the Provo River as determined each year by the Flow Work Group, CUWCD, and Interior. If it is used in Hobble Creek it would bring the conserved water total to 8,500 acre-feet. This EA addresses and evaluates the possible use of this water in Hobble Creek.

Conserved water originates from the Bonneville Unit municipal and industrial water supply and as such is subject to the same shortages as other municipal and industrial water uses.

The ULS supplemental water analyzed in the ULS EIS and evaluated as part of the East Hobble Creek Restoration Project is summarized in Table 1-1: ULS Supplemental Water.

Table 1-1: ULS Supplemental Water

Supplemental Water	Volume of Water (acre-feet)	Analyzed in the ULS EIS?	Comments
Exchange Water	8,037[a]	Yes	Water stored in Strawberry Reservoir anticipated to be exchanged in conjunction with the operation of Jordanelle Reservoir and water levels in Utah Lake
Conserved Water	4,000[b]	Yes	Original ULS commitment to Hobble Creek for June sucker spawning and rearing
	4,500[c]	No	Additional water beyond ULS EIS commitment
Total Supplemental Water	16,537		

[a] Volume is an annual average between 0 and approximately 33,500 acre-feet.

[b] For use in Hobble Creek for June sucker spawning and rearing per ULS EIS.

[c] For use in Hobble Creek or the Provo River on a space available basis within the Spanish Fork-Provo Reservoir Canal (SFPRC) and/or the MSL pipelines and subject to shortages.

Capacity Constraints

The ULS supplemental water will be delivered from Strawberry Reservoir, through the Diamond Fork System, to the Spanish Fork Canyon pipeline. From the Spanish Fork Canyon pipeline, ULS supplemental water will be delivered to the MSL and the SFPRC[1] pipelines. Water deliveries through these systems are constrained by actual capacity of the delivery facilities and periodic maintenance needs.

[1] The Provo Reservoir Canal was recently piped and its name changed to the Provo River Aqueduct by the Provo River Water Users Association. This document continues to use the Spanish Fork-Provo Reservoir Canal reference.

June Sucker

The June sucker is a lake sucker fish endemic to Utah Lake. It was federally listed as an endangered species with critical habitat on the lower 4.9 miles of the Provo River under the Endangered Species Act (ESA) on April 30, 1986 (51 FR 10857). At that time, the species had a documented wild population of less than 1,000 individuals. Section 7 of the ESA mandates federal agencies to consult with the USFWS on any action that may affect an endangered species or adversely modify designated critical habitat. Partly as a result of such consultations required on federally funded water development projects, the June Sucker Recovery Implementation Program (JSRIP) was established to coordinate interagency recovery actions for the June sucker while concurrently allowing water development and operations to continue.

The June Sucker Recovery Plan was completed in 1999 by a team appointed by the USFWS. As described in the June Sucker Recovery Plan, factors threatening species survival include but are not limited to, "habitat alteration through dewatering, channelization of tributary streams and degrading water quality, competition and predation by nonnative species, commercial fishing, and killing of adults during the spawning run". The June Sucker Recovery Plan states "In order to reduce chances for catastrophic losses of June sucker spawners, a spawning run should be developed in at least one additional tributary of Utah Lake, the most likely candidates being Hobble Creek or the Spanish Fork River" (USFWS 1999).

The JSRIP conducted a spawning tributary feasibility study on Utah Lake which identified Hobble Creek as having the potential to be restored to provide habitat for spawning June sucker (JSRIP 2002). The habitat improvement concepts (only evaluated between I-15 and 400 West in this EA) subsequently developed indicated that additional stream flows would greatly improve water quality and therefore the viability of the June sucker in Hobble Creek (JSRIP 2003).

Habitat restoration work, evaluated in the Hobble Creek Stream Restoration Project Final EA between I-15 and Utah Lake (CUPCA 2008), was developed to provide June sucker access to Hobble Creek. That project enhanced the interface between Hobble Creek and Utah Lake to provide both spawning and rearing habitat for June sucker. The project also included elements for wetland mitigation.

1.4 Purpose and Need for the Proposed Action

Need for Proposed Action

The need for the Proposed Action is to facilitate recovery of the June sucker through improvement of spawning habitat and enhancement of stream flow in Hobble Creek. In addition, the Proposed Action would facilitate delivery of ULS supplemental water from the MSL pipeline and/or the Hobble Creek Valve Station to Utah Lake (June Sucker Recovery Plan – USFW 1999).

Purposes of the Proposed Action

The purposes of the Proposed Action include:

- Restoration and enhancement of suitable spawning habitats in Hobble Creek between I-15 and 400 West through increasing stream sinuosity, developing in-stream habitat structures, creating suitable substrates, and supplementing flows;

- Modification or Removal of existing irrigation diversion structures between I-15 and the MSL pipeline that are a barrier for June sucker migration and impede delivery of the ULS supplemental water. This will be accomplished in a manner that maintains legal diversions while improving access to June sucker spawning habitat and allowing passage of supplemental water in Hobble Creek;

- Providing additional (beyond the previous ULS commitment of 4,000 acre-feet) conserved water as in-stream flows in Hobble Creek;

- Adoption of the *Lower Hobble Creek Ecosystem Flow Recommendations* report and associated flow regime targets[2]; and

- Delivery of supplemental water (including the additional conserved water) to Hobble Creek through the Hobble Creek Valve Station in addition to the MSL pipeline.

1.5 Proposed Action

Below is a summary of the Proposed Action. It is more fully discussed in Chapter Two of this document. The Proposed Action includes:

- Hobble Creek Habitat Restoration (between I-15 and 400 West in Springville, Utah);
- Stream Channel Enhancement within Hobble Creek (between I-15 and 400 West in Springville, Utah);
- Modification or Removal of Diversion Structures (while maintaining legal diversions);
- Provision of Additional Stream Flows;
- Adopting the *Lower Hobble Creek Ecosystem Flow Recommendations* report; and
- Use of Hobble Creek Valve Station for release of supplemental stream flows.

[2] Flow regime targets are intended to provide a flow value around which actual flows rates vary. For further discussion of flow regime targets see the *Lower Hobble Creek Ecosystem Flow Recommendations* report (see page 41 – A Note Regarding Variability).

1.6 Interrelated Projects and Programs

Utah Lake Drainage Basin Water Delivery System

Construction of the ULS facilities began in 2007 to initiate the final component of the Bonneville Unit of the Central Utah Project (CUP). Once completed, the ULS will deliver an average 101,900 acre-feet annually from Strawberry Reservoir to the Wasatch Front.

Delivery of supplemental flows to Utah Lake via Hobble Creek is a commitment documented in the ULS EIS. The ULS EIS analyzed potential changes in water quality and environmental factors and aquatic resources in Hobble Creek as a result of the ULS supplemental flows. Overall water quality in Hobble Creek is anticipated to improve, with an anticipated beneficial impact in summertime water temperatures and dissolved oxygen levels (CUWCD 2004: section 3.3.8.3.2.2).

June Sucker Recovery Implementation Program (JSRIP)

The JSRIP is a multi-agency, cooperative effort designed to coordinate and implement specific recovery actions for the endangered June sucker. The JSRIP includes the Joint Lead Agencies for this project, together with the USFWS, UDNR, Reclamation, Provo River Water Users Association, Provo Reservoir Water Users Company, and a non-governmental environmental interest's representative. Recovery efforts to date include ongoing removal of common carp from Utah Lake; obtaining and securing water to support spawning and rearing flows in the Provo River and Hobble Creek; rehabilitation of Red Butte Dam in Salt Lake County, in part, as a refuge outside of Utah Lake for June sucker; modifications to the Fort Field Diversion on the lower Provo River to allow passage of June sucker; construction of June sucker hatchery facilities and subsequent stocking of June sucker to augment the population in Utah Lake; and outreach efforts to provide information on the need for and benefits of recovery.

Habitat Restoration on Hobble Creek West of I-15

In 2008, the JSRIP completed habitat restoration work along Hobble Creek west of I-15 (see Figure 2-2 in Chapter Two). This restoration work, which was evaluated in the *Hobble Creek Stream Restoration Project Environmental Assessment* (CUPCA 2008), included the acquisition of a 21-acre parcel adjacent to Hobble Creek between I-15 and Utah Lake. This restoration effort was implemented in cooperation with the JSRIP, State of Utah, Utah Transit Authority, and the USFWS and was completed in 2008. The project relocated the Hobble Creek stream channel to the subject property to provide access to Hobble Creek for spawning. The restoration work improved June sucker spawning and rearing habitat through provision of a more naturally functioning stream channel, floodplain, and riparian wetland ecosystem and to connect Hobble Creek spawning habitat to Provo Bay rearing habitat.

Proposed Provo River Delta Restoration

The proposed Provo River Delta Restoration Project would facilitate recovery of June sucker by implementing the requirement of the June Sucker Recovery Plan to provide for spawning, hatching, larval transport, survival, rearing and recruitment of June sucker on a self-sustaining basis in the Provo River. The purposes of the proposed project are: to restore a naturally functioning delta ecosystem at the Provo River/Utah Lake interface, to preserve and improve other fish, wildlife, riparian, and wetland

habitats near the lower Provo River and its interface with Utah Lake, and to provide recreational improvements and opportunities associated with the habitat restoration project.

Springville City Community Park

Springville City is currently constructing a Community Park north of the Hobble Creek channel located between approximately 1200 West and 950 West; a portion of the park construction is completed. Once completed, the Springville City Community Park will be approximately 45 acres in size and include facilities for baseball/softball, soccer, football, lacrosse, rugby, field hockey, tennis, and basketball. The park will also include playgrounds, pavilions, restrooms, picnic areas, a pond, and walking paths as well as a trail along the Hobble Creek channel.

Springville City Secondary Irrigation Project

Springville City has conducted studies that illustrate future water needs within the city. The city is planning to construct a secondary irrigation system in phases and use water rights it has purchased in the Springville Irrigation Company. CUWCD and Interior have entered into agreements to provide federal funding for the Springville City Secondary Irrigation Project as a water conservation measure under section 207 of CUPCA.

1.7 Technical Reports and Related Documents

A number of NEPA and other technical documents have been prepared with a direct connection to Hobble Creek. Table 1-2 summarizes the reports.

Table 1-2: NEPA and Technical Documents

Report Name	Agency(ies)	Year Published or Approved	Summary
NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE DOCUMENTS			
Utah Lake Drainage Basin Water Delivery System – Final Environmental Impact Statement and Record of Decisions	CUWCD, Interior, Mitigation Commission	2004 and 2005	NEPA compliance documents to provide for the construction of the ULS system
Environmental Assessment for the Mapleton-Springville Lateral Pipeline Project	CUWCD, Interior, Mitigation Commission	2007	Prepared to assess changes to MSL pipeline from the ULS EIS
Hobble Creek – Stream Restoration Project Final Environmental Assessment	Interior	2008	Restoration on Hobble Creek west of I-15
TECHNICAL REPORTS/DOCUMENTS			
June Sucker Recovery Plan	USFWS	1999	Identified specific actions needed for recovery of the June sucker and provides JSRIP fundamental program guidance

Table 1-2: NEPA and Technical Documents

Report Name	Agency(ies)	Year Published or Approved	Summary
Feasibility Analysis of Establishing an Additional Spawning Location to Benefit the Endangered June Sucker	JSRIP	2002	Identified Hobble Creek as the best location for reestablishment of a second June sucker spawning run
Lower Hobble Creek Ecosystem Flow Recommendations	JSRIP	2009	Recommended year round flow regimes for Hobble Creek, based on water year
Hobble Creek Habitat Enhancement Concepts to Benefit the Endangered June Sucker	JSRIP	2003	Identified specific June sucker habitat improvement measures by stream reach
Ecological Evaluation of June Sucker Spawning and Larval Production in Utah Lake Tributaries: 2009 Data Summary	JSRIP	2009	Documented evidence of June sucker spawning in tributaries other than Provo River
Hobble Creek Stream Restoration Project – Assessment of Conditions and Restoration Potential	Mitigation Commission	2012	Prepared to evaluate potential of restoration on Hobble Creek between I-15 and 400 East in Springville, Utah

1.8 Permits, Authorizations, and Continued Coordination Efforts

The following permits are anticipated to be required in order to implement the Proposed Action Alternative:

- Depending on the length of disturbance, a Stream Alteration Permit from the State of Utah, Division of Water Rights for modifying the Hobble Creek stream channel. This permit is a Programmatic General Permit 40 issued by the U.S. Army Corps of Engineers to the State of Utah. Most likely, this permit would be needed for the modification or removal of diversion structures on Hobble Creek.

- A Section 404 Permit would likely be required for the restoration work along Hobble Creek. This permit is obtained from the U.S. Army Corps of Engineers for work in Waters of the U.S. including jurisdictional wetlands.

- Utah Pollutant Discharge Elimination System (UPDES) permit for disturbing an acre or more of land during construction and is issued by the State of Utah, Division of Water Quality. This permit includes the development of a Storm Water Pollution Prevention Plan (SWPPP) to help control storm water runoff impacts from and during construction.

- The Joint Lead Agencies will continue to coordinate and consult with the USFWS regarding the Ute ladies'-tresses and the June sucker including the Section 7 consultation under the Endangered Species Act.

- The Joint Lead Agencies will continue to coordinate with the U.S. Army Corps of Engineers regarding jurisdictional wetlands and waters of the U.S.

- The Joint Lead Agencies will continue to coordinate with Springville City regarding the Proposed Action, the potential modification or removal of diversion structures, and City's recreation plan for a trail system along Hobble Creek.

The implementation of the Proposed Action would be completed in compliance with all applicable laws, regulations, and Executive Orders.

2.1 Introduction

Chapter One of this Environmental Assessment (EA) provides background information describing the project purposes and need for implementing the Proposed Action. Chapter Two provides a detailed description of the Proposed Action Alternative, the No-Action Alternative, as well as a discussion of alternatives that were considered but eliminated from further consideration.

2.2 Development of Proposed Action Alternative

Issues associated with the development of the Proposed Action Alternative included:

- Environmental Commitments found in the Utah Lake Drainage Basin Water Delivery System Environmental Impact Statement (ULS EIS);
- Public and Agency Input Provided During the Scoping Process;
- Lower Hobble Creek Ecosystem Flow Recommendations Report;
- Need for Modification or Removal of Diversion Structures;
- Potential for Use of the Hobble Creek Valve Station; and
- Conserved Water Obtained since Completion of the ULS EIS.

ULS EIS Environmental Commitments

The ULS EIS commits an annual delivery of 4,000 acre-feet of conserved water along with an average of 8,037 acre-feet of exchange water for a total supplemental delivery of 12,037 acre-feet into Hobble Creek. The 4,000 acre-feet of conserved water is committed specifically for the benefit of June sucker spawning (ULS EIS 2004). The ULS EIS evaluated the delivery of this supplemental water from the Mapleton-Springville Lateral (MSL) pipeline.

Input Provided During the Scoping Process

The public scoping process served as a component in the development of the Proposed Action Alternative. Scoping is the process by which the agencies seek to identify issues related to the Proposed Action through interfacing with key stakeholders, resource agencies, citizen groups, and the general public. The scoping process is identified in the Council on Environmental Quality (CEQ) guidelines found in 40 CFR 1501.7.

The scoping process for the East Hobble Creek Restoration Project was initiated with a Notice of Intent (NOI) to prepare an EA, published in the Federal Register on March 15, 2011 (FR Doc. 2011-6090). Other scoping activities included:

- Field surveys by resource specialists;
- Meetings with and/or presentations to irrigation company personnel, adjacent property owners, Springville City staff and other interested parties;

- A public scoping meeting held on April 19, 2011. Notices of this meeting were published in local newspapers; and
- An interested persons letter sent out (prior to the scoping meeting) to federal, state, and local agencies, as well as potential stakeholders.

Issues identified during the scoping process were taken into consideration during the development of the Proposed Action Alternative. For a complete list of issues raised during scoping and for a detailed description of all scoping activities refer to Chapter Four.

Use of the Hobble Creek Valve Station as a Point of Release

Water delivered to Hobble Creek from the Hobble Creek Valve Station was not proposed or evaluated in the ULS EIS. The Hobble Creek Valve Station was constructed to evacuate water from the Spanish Fork-Provo Reservoir Canal (SFPRC) pipeline in case of an emergency or other various non-routine operational needs. However, during the design phase of the SFPRC pipeline, Central Utah Water Conservancy District (CUWCD) and the U.S. Department of the Interior (Interior) determined that the Hobble Creek Valve Station could also be used as an alternate delivery point of supplemental water to Hobble Creek when space is available[3] in the SFPRC pipeline. Delivering the supplemental water at the Hobble Creek Valve Station avoids potential operational conflicts with irrigation diversions located upstream (Island Dam, Sage Creek Dam, and Swenson Dam). This EA evaluates the potential to utilize the valve station as an alternate location to the MSL pipeline for the release of supplemental water into Hobble Creek.

Lower Hobble Creek Ecosystem Flow Recommendations Report

The JSRIP has developed seasonal flow recommendations for Hobble Creek and has documented the findings in the *Lower Hobble Creek Ecosystem Flow Recommendations* report (JSRIP 2009). The Joint Lead Agencies have taken these flow recommendations into account during the development of the Proposed Action Alternative. More information on the *Lower Hobble Creek Ecosystem Flow Recommendations* report is found in Section 2.4 – Proposed Action Alternative of this Chapter.

Need for Modification or Removal of Diversion Structures

The Proposed Action Alternative includes providing for fish passage and/or allowing water flows past five existing irrigation diversion structures. Within the project area, existing diversion structures in the Hobble Creek channel can be a barrier to fish passage and/or impede supplemental water flows. The lower two diversions (1000 North Dam and Packard Dam) also potentially inhibit the downstream transport of larvae and adult June suckers returning to Utah Lake.

Conserved Water Obtained Since Completion of the ULS EIS

Since completion of the ULS EIS, an additional 4,500 acre-feet of conserved water has been identified under Central Utah Project Completion Act (CUPCA) Section 207 (public law 102-575). This 4,500 acre-feet of additional conserved water could be released into Hobble Creek as described in this document, or could be conveyed on a space available basis through the SFPRC pipeline for release into the Provo River. Any potential release into the Provo River will be discussed and analyzed in a separate NEPA

[3] Space available refers to flow capacity within the SFPRC and the MSL pipelines. Capacity may be available depending on the seasonal demand by contract water users. More information is found in Section 2.4 under Use of Hobble Creek Valve Station in this chapter.

document. The previously analyzed supplemental water that will be released into Hobble Creek and additional conserved water that could be released into Hobble Creek as part of this project is summarized below (also see Table 1-1 in Chapter One):

- **Exchange Water** – Annual average of 8,037 acre-feet of exchange water as a result of Jordanelle Reservoir/Utah Lake operations (analyzed in the ULS EIS). The 8,037 acre-feet of exchange water is an average volume over a 50-year time period ranging from 0 to approximately 33,500 acre-feet; and

- **Conserved Water** – 8,500 acre-feet of conserved water (subject to shortages). This includes 4,000 acre-feet anticipated and analyzed in the ULS EIS, together with an additional 4,500 acre-feet identified since the publication of the ULS EIS.

Accordingly, an average total of 16,537 acre-feet of supplemental water could potentially be released annually into Hobble Creek from the ULS system.

2.3 No-Action Alternative

Under the No-Action Alternative, the Joint Lead Agencies would deliver the supplemental water to Utah Lake as a means to fulfill ULS EIS commitments. However, this supplemental water delivery would be restricted to the annual average of 12,037 acre-feet evaluated and approved in the ULS EIS. In addition, the 12,037 acre-feet of supplemental water would be delivered only through the MSL pipeline, not via SFPRC pipeline and the Hobble Creek Valve Station. The additional conserved water that could be used to maintain stream habitat, benefit June sucker, and improve the ecosystem would not be delivered to Hobble Creek. Under the No-Action Alternative, the existing diversion structures would be left in place in their current configuration and no modifications or removal would be made to allow for the passage of supplemental water. June sucker fish passage during spawning and return to Utah Lake would not be provided. Under the No-Action Alternative, there would be no habitat restoration or stream channel enhancements (between I-15 and 400 West) proposed on Hobble Creek.

2.4 Proposed Action Alternative

The Proposed Action Alternative includes:

- Hobble Creek Habitat Restoration (between I-15 and 400 West in Springville, Utah);
- Stream Channel Enhancement within Hobble Creek (between I-15 and 400 West in Springville, Utah);
- Modification or Removal of Diversion Structures (while maintaining legal diversions);
- Provision of Additional Stream Flows;
- Adopting the *Lower Hobble Creek Ecosystem Flow Recommendations* report; and
- Use of Hobble Creek Valve Station for Release of Supplemental Stream Flows.

Hobble Creek Habitat Restoration

The proposed habitat restoration on Hobble Creek focuses on improvements to the June sucker spawning environment (see Figure 2-1: Potential Restoration Areas). The potential restoration efforts would occur between I-15 and 400 West in Springville. Habitat restoration efforts would require property acquisitions outside of the existing Hobble Creek channel. The JSRIP and the Joint Lead Agencies would work through their partner agencies to acquire appropriate interests in property adjacent to the Hobble Creek channel. Public access along Hobble Creek would remain the same as it is currently. The Proposed Action (including the Hobble Creek Habitat Restoration) would not preclude the development and use of a trail system along the banks of the channel as planned.

The JSRIP has conducted multiple investigative efforts on Hobble Creek to gather information and data including hydrology, water quality, biological conditions, geomorphology, sediment transport rates and bed loads, and the existing vegetative community (several documents are listed in Table 1-2). This information and data has been used in developing Hobble Creek habitat restoration concepts and will be used in the development of final designs.

Generally, elements of habitat restoration may consist of:

- Increasing the width of the floodplain or the channel meander corridor by relocating the stream banks;
- Restoration of ecologically important floodplain connections;
- Increasing the sinuosity of Hobble Creek;
- Modifying or removing irrigation diversions (part of the Proposed Action Alternative – see discussion below);
- Removing invasive vegetation species; and
- Restoring native riverine and riparian habitats.

Legend

- Diversion Dams
- Potential Restoration Area

0 500 1,000 Feet

East Hobble Creek Restoration Project

Figure: 2-1
Potential Restoration Areas

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The specific restoration elements are discussed by the reaches of Hobble Creek as follows: I-15 to 1650 West, 1500 West to 950 West, and 950 West to 400 West.

I-15 to 1650 West

Along this reach, Hobble Creek is approximately 30 to 40 feet wide with stream banks that constrain the ability of the stream channel to meander. The 1000 North Dam and Packard Dam diversions are located in this reach. The 1000 North Dam provides irrigation water to the agricultural fields located west of I-15; Packard Dam provides irrigation water to an agricultural field directly north of Hobble Creek and east of I-15. At the eastern end of this reach, Hobble Creek crosses under the 1650 West roadway, the 1500 West roadway, and two sets of railroad tracks. Through this reach, Hobble Creek appears to have been rerouted to an artificial-looking right-angle bend approximately 1,800 feet south of where it crosses under I-15. Habitat restoration concepts along this reach include:

- Modifying the 1000 North Dam and Packard Dam diversions (Part of the Proposed Action Alternative – see discussion later in this section);
- Removing the northern stream bank to improve and widen the floodplain/ecosystem connection and to improve the channel capacity;
- Reconstructing the Hobble Creek channel and alignment to provide increased sinuosity and meandering and for the development of larger, more defined riffle-pool sequences;
- Removing the artificial right-angle bend on Hobble Creek;
- Improving and restoring areas with native riverine and riparian habitats; and

Developing a channel slope that is consistent with the new I-15 crossing and recently constructed Hobble Creek habitat improvements west of I-15.The habitat restoration concept presented for the area between I-15 and 1650 West could only be constructed and developed if all or a significant portion of the agricultural field to the north of Hobble Creek were acquired.

1500 West to 950 West

Hobble Creek along this reach is approximately 35 to 40 feet wide with stream banks located on both the north and south sides of Hobble Creek. Springville City has acquired most of the property north of Hobble Creek and is currently constructing a Community Park (see Figure 2-1 for general location of the Community Park). The Joint Lead Agencies have been and will continue to coordinate with Springville City about the possibility of integrating recreational and educational opportunities as part of the Community Park along Hobble Creek. A residential development has been constructed on the south side of Hobble Creek between approximately 1100 West and 950 West. The remainder of the property along this reach of Hobble Creek is agricultural or pasture. There are no active irrigation diversions within this reach, although

Hobble Creek appears to have been straightened to accommodate agricultural development. The habitat restoration concept presented for the area between 1500 West and 950 West could only be constructed and developed if property was acquired or agreements with Springville City were developed to use a portion of the Community Park.

Habitat restoration near 950 West would be limited due to the recently constructed parking lot of the Springville City Community Park on the north side of Hobble Creek and the residential development on the south side. In addition, habitat restoration would be limited downstream (western portion) because of the roadway and railroad bridges (1650 West, 1500 West and UPRR tracks). Habitat restoration concepts being considered include:

- Relocating the stream banks to allow for increased channel meandering and capacity. The stream banks could be relocated approximately 300 feet north and/or south of the centerline of Hobble Creek;

- Reconstructing the Hobble Creek channel and alignment to provide increased sinuosity and meandering and for the development of larger, more defined riffle-pool sequences;

- Restoring native riverine and riparian habitats and removing invasive species; and

- Integrating the southern edge of the Springville City Community Park into the habitat restoration concepts (e.g. bird-watching areas, pathways with interpretive/educational signage).

950 West to 400 West

Hobble Creek along this reach is approximately 65 feet wide between the tops of the north and south stream banks. A residential development is located on the southern banks of Hobble Creek and agricultural and pasture lands are located to the north in this reach. There are no active diversions within this reach of Hobble Creek. There is evidence of remnant or abandoned Hobble Creek channels in the remaining agricultural area. Potential habitat restoration concepts are located to the north of the existing Hobble Creek channel. The habitat restoration components would require acquisition of some property from adjacent landowners to the north. Habitat restoration concepts along this reach include:

- Relocating the northern stream bank 250 to 500 feet north to provide increased stream channel meandering, flood flow capacity, and improved floodplain ecosystem. The southern stream bank would remain at its current location;

- Reconstructing the Hobble Creek channel and alignment to provide increased sinuosity and for the development of larger, more defined riffle-pool sequences;

- Incorporating segments of the remnant or abandoned Hobble Creek channel as small backwater features that would provide high-flow stopover rearing June sucker habitat;

- Removing invasive vegetation species; and

- Restoring native riverine and riparian habitats.

Stream Channel Enhancement on Hobble Creek

The enhancement component on Hobble Creek would occur between I-15 and 400 West (see Figure 2-1 for general location). Stream channel enhancements could occur in areas not suitable for habitat restoration work or along stream reaches where acquisition of adjacent land is not possible. Habitat enhancement involves in-stream improvements within the existing stream banks that would not impact lands outside of the Hobble Creek channel. Generally, these are improvements to the habitat within Hobble Creek channel and would not require the purchase of additional property. The stream channel habitat enhancement may include:

- Protection of existing pools;

- Creation of additional pool habitat using boulders and large woody debris to establish heterogeneous stream channels with numerous types of habitat;

- Creation of low velocity pools;

- Modification or removal of in-channel obstructions (1000 North Dam and Packard Dam);

- Improvement of overhead cover and restoration of vegetation along the creek channel. The addition of large woody debris, specifically logs to create or improve overhead cover for fish;

- Removal of invasive plant species along the Hobble Creek channel;

- Addition of cobble/gravel substrate for June sucker spawning;

- Addition of larger substrate for June sucker resting areas, including large woody debris to help stabilize gravel bars, assist in the creation of pools, and add to the heterogeneity of the stream bottom;

- Placement of boulders and riprap along the creek margins to decrease the likelihood of erosion and to help maintain water quality; and

- Increase Hobble Creek's sinuosity.

Generally, enhancement efforts may include improving spawning substrates, protecting existing pools, improving habitat diversity, improving overhead cover, and removing invasive species and planting appropriate riparian vegetation.

Modification or Removal of Diversion Structures

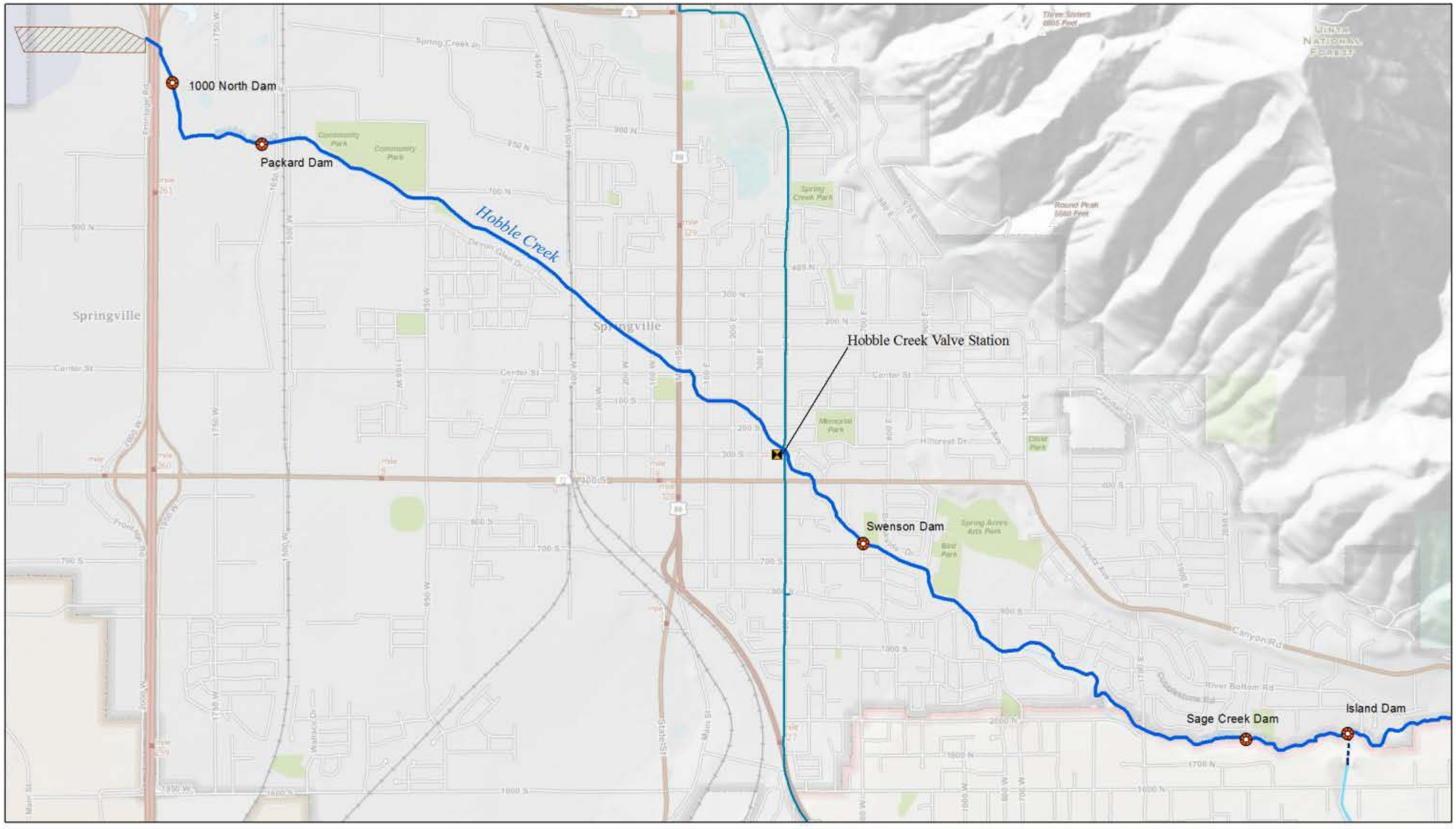
The Proposed Action Alternative includes modifying or removing five irrigation diversion structures within Hobble Creek between I-15 and the MSL pipeline (see Figure 2-2: Location of Diversion Dams and Hobble Creek Valve Station).

The five irrigation diversions include: Island Dam, Sage Creek Dam, Swenson Dam, Packard Dam, and 1000 North Dam. These existing diversion structures can be a barrier for fish passage and impede the ULS supplemental water from reaching Utah Lake. Also these diversion structures potentially inhibit the downstream transport of larvae and adult June suckers returning to Utah Lake after spawning. The Joint Lead Agencies would coordinate with the irrigation companies that maintain and operate these diversion structures. For each diversion, a design would be developed specific to the needs at that location to provide for legal water delivery and to allow for the passage of fish and ULS supplemental water. The potential area of impact for each diversion includes an area that is approximately a 45-foot radius from the edge of each structure, based on surveys completed for this EA. The necessary permits and clearances would be obtained as specific design details are finalized.

A stream-gauge is located below Packard Dam near I-15 which maintained and operated by the U.S. Geologic Service. An additional stream-gauge would be installed upstream from the Hobble Creek Valve Station to measure the Hobble Creek flow and to verify that the ULS supplemental water (if released from the MSL pipeline) passes the Island Dam, Sage Creek Dam, and Swenson Dam diversions. This new stream-gauge would supplement the existing gauge below Packard Dam.

Provision of Additional Stream Flows

The ULS EIS evaluated the release of an annual average of 12,037 acre-feet of water from the MSL pipeline into Hobble Creek. As discussed in Section 1.3 of this EA, the current anticipated flow release includes the 12,037 acre-feet of water along with a potential of an additional 4,500 acre-feet of conserved water. The potential impacts from the release of the additional conserved water above the 4,000 acre-feet (part of the 12,037 acre-feet evaluated ULS EIS) is evaluated in this document. Some or all of the 4,500 acre-feet of additional conserved water may be released into the Provo River through the SFPRC pipeline on a space available basis. Analysis of the impacts of this action on Provo River hydrology would be addressed in a separate NEPA document.



East Hobble Creek Restoration Project

Figure: 2-2
Location of Existing Diversion Dams and Hobble Creek Valve Station

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Adoption of the Lower Hobble Creek Ecosystem Flow Recommendations Report

The volume of supplemental water delivered to Hobble Creek would vary from year to year, depending on natural hydrology, the need to deliver exchange water, and space available constraints in various conveyance systems. As discussed in Section 1.3 of this EA, the average supplemental flows have been estimated to be up to 16,537 acre-feet per year. Of this 16,537 acre-feet average, 8,500 acre-feet is generated annually by conserved water returned to the Interior from water conservation projects completed under Section 207 of the CUPCA. Additionally, an annual average of 8,037 acre-feet (ranging from 0 to approximately 33,500 acre-feet) is projected to be available as a result of obligations associated with the Central Utah Project exchange water in Utah Lake. The conserved water released into Hobble Creek is for in-stream flows, as provided for in Section 207(b)(4) of Public Law 102-575 (CUPCA legislation), and is specifically intended to support June sucker recovery. Releases of water into Hobble Creek are intended to more nearly mimic the natural hydrology of the stream whenever possible.

In order to develop more detailed daily and seasonal flow rates to implement the stream flow commitments contained in the ULS EIS, the JSRIP completed the *Lower Hobble Creek Ecosystem Flow Recommendations r*eport (Flow Recommendations Report) in April 2009 (JSRIP 2009). Through the NEPA process for this EA, the Proposed Action Alternative includes adopting the Flow Recommendations Report and implementing its target flow regimes. As detailed in the Flow Recommendations Report the flow regimes are intended to be adaptive. The Joint Lead Agencies understand that additional biological monitoring and studying is needed to better understand June sucker use of lower Hobble Creek habitat and its biological needs in general. The Flow Recommendations Report provides seasonal flow recommendations and specific target release patterns for average, wet, and dry years by season (spring, summer, autumn, and winter). The Hobble Creek target flow rates for dry, average, and wet years are shown in Table 2-1: Target Flow Recommendations.

TABLE 2-1: TARGET FLOW RECOMMENDATIONS

Year Type	Target Flow Rate (cfs)		
	Winter	Summer	Autumn
Average	18	19	20
Wet	19	22	23
Dry	14	12	14

A general discussion of the flow recommendations, as documented in the Flow Recommendations Report, for each season is found below:

- Winter (January – March) flow recommendations assume that the natural flows of Hobble Creek are generally already meeting the target flow recommendations and that supplemental water deliveries would generally not be required during this time period. These assumptions are based on the fact that irrigation diversions are not active during these months. Exchange water deliveries to Hobble Creek may be required during this period.

- Summer (July – September) target flow recommendations attempt to mimic natural hydrologic conditions and are primarily based on the need to protect water temperature for the cold water fisheries in Hobble Creek. The existing summer flows are heavily influenced by irrigation water diversions. Conserved water would generally be needed to meet summer target flows. Exchange water deliveries to Hobble Creek may be available to aid in meeting target flow recommendations during this time period.

- Autumn (October – December) target flow recommendations assume that the natural flows of Hobble Creek are generally already meeting the target flows. Conserved water deliveries would generally not be required during this time period except during some years in the first couple of weeks in October when active irrigation is occurring. Exchange water deliveries to Hobble Creek may be available to aid in meeting target flow recommendations during this time period.

- Spring (April – June) flow target regime suggest that the "majority of the lower Hobble creek springtime runoff volume will typically come naturally from the upstream watershed, and its timing and volume will largely be dictated by the natural runoff patterns in a given year" (JSRIP 2009). These natural conditions indicate that conserved water would likely only be required during the springtime runoff for certain years to mimic a springtime attraction flow. Irrigation diversions are likely to reduce peak flows only during dry to moderate years. Exchange water deliveries to Hobble Creek may be available to aid in meeting target flow recommendations during this time period.

Details of the flow recommendations for the spring to early summer are shown in Figure 2-3: Spring Target Flow Regime.

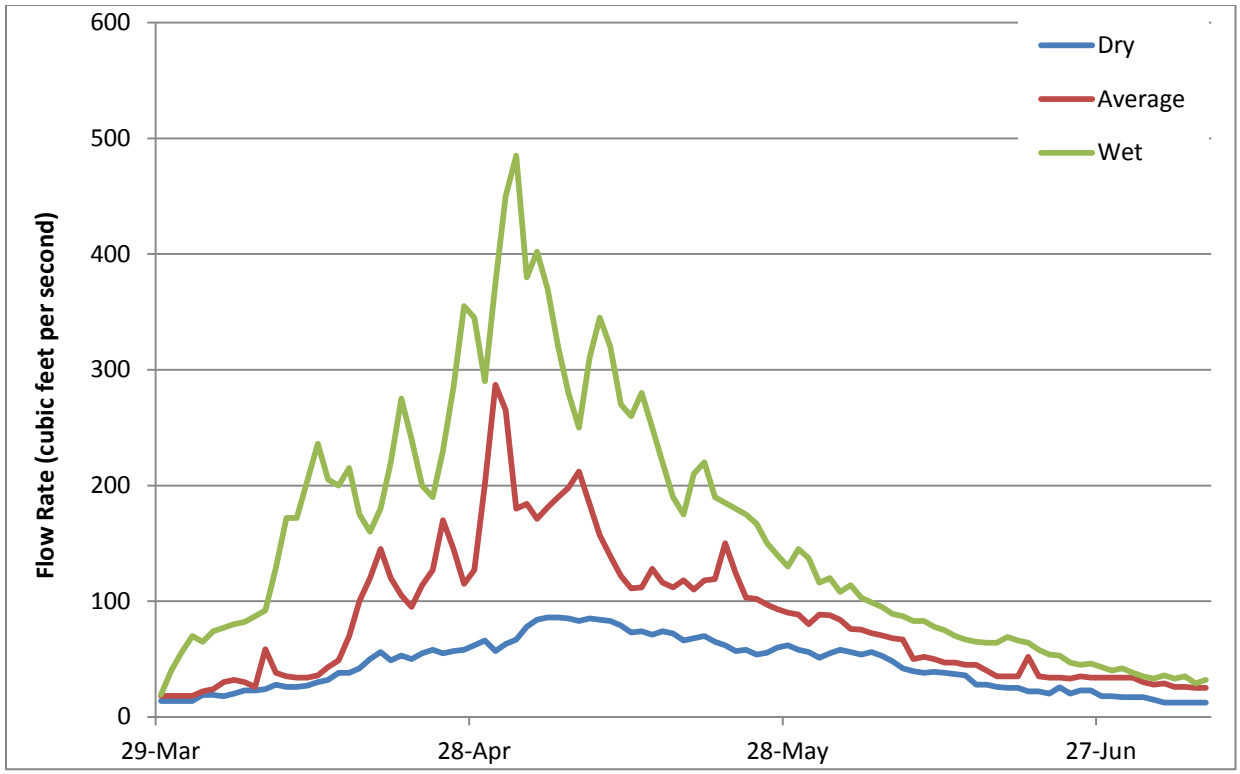

FIGURE 2-3: SPRING TARGET FLOW REGIME (DATES ARE APPROXIMATE)

Efforts would be made to coordinate the use of supplemental water to achieve target flows. Target flow rates may not always be met due to capacity constraints of the facilities (see section 1.3 – Project Background), natural hydrologic conditions, and operation and maintenance requirements. The flow in Hobble Creek may also be exceeded due to timing and volume of exchange water deliveries.

JSRIP Flow Work Group and Priorities of Supplemental Water Release

Each year the Flow Work Group[4] meets to discuss the outlook for the upcoming water year for the Provo River drainage. In the future, the Flow Work Group would also evaluate the water outlook for the Hobble Creek drainage. The Flow Work Group would then advise the JSRIP regarding the outlook for the upcoming water year. The JSRIP would discuss the needs of the June sucker, taking into account the Flow Recommendation Report, available water supplies, and environmental commitments for delivery of water to the Provo River and Hobble Creek. Based on these factors the JSRIP would recommend a flow pattern to Interior. There could be years when exchange water may be available to assist with the flow regime targets. On these years, the Flow Work Group will be advised by CUWCD on anticipated exchange flows.

[4] A multi-agency coordination group comprised of water users and stakeholders in the Provo River and Hobble Creek drainages. This group meets as needed to coordinate flow patterns. The Flow Work Group is a sub-committee of the JSRIP.

Consistent with the 2009 Flow Recommendation Report for Hobble Creek, the JSRIP has adopted the following priorities:

1. Provide base flows during the spring and/or early summer to support June sucker spawning activity.

2. Provide supplement flows in the low water periods of late summer when irrigation and other uses may reduce stream flows to levels that may be detrimental to the health of the stream ecosystem.

3. Provide a spring runoff peak. These peaks can serve as a cue to adult June sucker to initiate spawning migrations into Utah Lake tributaries. They also provide sediment transport, preparing substrate for use as June sucker spawning sites.

4. Provide flows following the peak to facilitate the movement of spawning adults back into Utah Lake and also transport larval suckers to Utah Lake or other suitable rearing habitat, where available.

These priorities are based on the current understanding of June sucker needs and the availability of water in the Provo River and Hobble Creek systems. These priorities may change as more information about June sucker needs is obtained or conditions in the respective tributaries change. A copy of the priority resolution adopted by the JSRIP is found in Appendix A.

Use of Hobble Creek Valve Station

The Hobble Creek Valve Station is a component of the SFPRC pipeline and is located adjacent to Hobble Creek at 400 East and approximately 250 South in Springville (see Figure 2-2 for location of Hobble Creek Valve Station). In addition to providing a non-routine release point for the SFPRC pipeline, the Proposed Action Alternative includes operating the valve station to serve as an alternate release point for the supplemental water for in-stream flows. Using the valve station has the benefit of allowing supplemental water deliveries to be made sooner to lower Hobble Creek than would otherwise be possible because of the construction schedule for completing the MSL pipeline. Also, the point of release from the Hobble Creek Valve Station is downstream from three irrigation diversions (Island Dam, Sage Creek Dam, and Swenson Dam) that currently present difficulty in passing supplemental water flows.

The Hobble Creek Valve Station could only be used when space is available in the SFPRC pipeline; the flow capacity of the SFPRC pipeline was not sized to include the ULS supplemental water intended for Utah Lake delivered by way of Hobble Creek. At other times, when space in the SFPRC pipeline is not available, the initially committed supplemental flows (12,037 acre-feet) would need to be provided through the MSL pipeline, as originally intended and documented in the ULS EIS. It is anticipated, however, that due to the operational flexibility of the SFPRC pipeline, there would frequently be space available for delivery of these flows and subsequent use of the Hobble Creek Valve Station, particularly

during the June sucker spawning season. There may be instances, based on available space, which the supplemental water could be delivered through the MSL pipeline and through the Hobble Creek Valve Station at the same time.

2.5 Alternatives Considered but Eliminated from Further Consideration

During the development of the Proposed Action, several alternatives were considered but eliminated from consideration. Numerous modifications were considered to the diversion structures located along Hobble Creek within the Project Area. Some of these modifications included building bypass channels at the existing diversions to allow for the flow of ULS supplemental water; removal of the existing structures and building pipelines to provide irrigation water to users; and the building of pond sites to allow for the diversion of irrigation waters outside of the Hobble Creek channel. While many of these alternatives could potentially meet the project's purpose and need, they were eliminated from further consideration due to logistical concerns.

The request for a water rights trade or transfer exchanging Hobble Creek water for ULS supplemental water from Strawberry Reservoir as an alternative was eliminated from further consideration. The request proposed that ULS supplemental water be delivered to Hobble Creek through the MSL pipeline to water users. In exchange, the natural Hobble Creek water would be conveyed to Utah Lake to meet the requirements of the Jordanelle exchange from Utah Lake to Jordanelle Reservoir. In order for the Bonneville Unit water rights to function as planned and approved, water from Strawberry Reservoir must be used. It is import water and therefore under Utah water law and under the Utah Lake Interim Water Distribution Plan can be stored in Utah Lake on a space available basis subject only to incremental evaporation. This storage can carry over multiple years and is 100 percent depletable. The supply is backed up by the 1.1 million acre-feet Strawberry Reservoir. Using the Hobble Creek water to make the Jordanelle exchange does not provided the benefits of using import water and the needed flexibility to operate the Bonneville Unit and the Jordanelle Exchange as designed.

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CHAPTER 3: AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION

3.1 Introduction

In accordance with the NEPA regulations codified in 40 CFR 1502.14, this chapter discusses the existing environmental conditions that may be impacted, beneficially or adversely by the Proposed Action. Baseline data were collected by reviewing existing documentation, conducting field investigations, and through consultation with various individuals including agencies with jurisdiction over resources in the Project Area. This chapter discusses environmental consequences of the No-Action Alternative and Proposed Action Alternative for each resource evaluated in the affected environment and any associated mitigation measures. The impact analyses account for potential direct, indirect, and cumulative impacts on each of the identified resources within the Project Area. All relevant issues that were identified during scoping are taken into account during the resource evaluation.

The impacts are grouped into one of three categories as defined in CEQ regulations 40 CFR 1500-1508 and include:

- **Direct Impacts** – Defined as "effects which are caused by the [proposed] action and occur at the same time and place" (40 CFR 1508.8(a)).

- **Indirect Impacts** – Defined as "effects which are caused by the [proposed] action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate…" 40 CFR 1508.8(b). Indirect impacts are discussed in section 3.21 of this chapter.

- **Cumulative Impacts** – Defined as "the 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 (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time" (40 CFR 1508.7). The cumulative impacts are discussed in section 3.22.

Resources evaluated in this chapter include:

- Air Quality;
- Land Use;
- Environmental Justice;
- Farmlands;

- Floodplains and Stream Channel Conditions;
- Hazardous Materials;
- Cultural Resources;
- Noise;
- Vibration;
- Hydrology;
- Water Quality;
- Wildlife;
- Fisheries;
- Threatened, Endangered, and Sensitive Species;
- Visual Resources;
- Wetlands and Waters of the U.S.;
- Vegetation and Invasive Species;
- Indian Trust Assets;
- Construction Impacts;
- Indirect Impacts; and
- Cumulative Impacts.

Except for resources having specific legal requirements, resources that would not be affected or would be only negligibly affected by the Proposed Action Alternative are not discussed further in this document. These resources include the following:

- Wild and Scenic Rivers;
- Groundwater;
- Energy; and
- Climate Change.

Project Setting

The Project Area is located in Springville City, Utah. The headwaters of Hobble Creek originate in the Wasatch Mountains east of Springville at an elevation of approximately 9,000 feet. The total drainage area of Hobble Creek is approximately 114 square miles. Hobble Creek flows northwest through Springville from the mouth of Hobble Creek Canyon to Utah Lake. Springville City, which was incorporated in 1853, is situated in Utah County approximately two miles east of Utah Lake and 45 miles south of Salt Lake City. According to the Utah State Office of Budget and Planning, Springville City's current population is approximately 30,000 with the city experiencing 4.6% average annual population growth rate over the past five years. Springville City's workforce consists primarily of those in the trade, transportation, professional, and educational industries (Springville City Profile 2011). Springville City was named for the numerous natural springs that are located throughout the city. For the purposes of the evaluation in this Chapter, the analysis area for each resource includes at least the footprint of the Proposed Action at each diversion structure, the habitat restoration area between I-15 and the MSL, and the stream channel enhancement within Hobble Creek (see Figures 2-1 and 2-2 in Chapter Two).

3.2 Air Quality

The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), particulate matter (PM), and lead (Pb). The Clean Air Act (CAA) requires that air quality conditions within all areas of a state be designated with respect to the NAAQS as attainment, maintenance, nonattainment, or unclassifiable. Areas that do not exceed the NAAQS are designated as attainment, while areas that exceed the standards are designated as nonattainment. A maintenance area is an area that was previously designated as a nonattainment area that a state or local government has developed a plan to reduce the criteria pollutant in violation to obtain attainment status.

Affected Environment

The major air pollutants of concern within the study area are Particulate Matter 10 (PM_{10}) and Particulate Matter 2.5 ($PM_{2.5}$). The Project Area is located within the Utah Valley Airshed which has been designated by the EPA as a non-attainment area for both PM_{10} and $PM_{2.5}$.

Environmental Consequences

No-Action Alternative

The No-Action Alternative would be the same as those analyzed in the USL EIS and have no impact on the existing air quality conditions in the Project Area.

Proposed Action Alternative

Temporary and localized impacts to air quality could occur during construction of the habitat restoration, stream enhancement, or modification or removal of the diversion structures. Construction impacts are discussed in section 3.20 of this chapter.

3.3 Land Use

This section evaluates the impacts of the project's alternatives on land use within the Project Area. This evaluation was completed by analyzing current land use, zoning, and planning information for Springville City and Utah County.

Affected Environment

The East Hobble Creek Restoration Project is within the incorporated boundary of Springville City. Land uses in the Project Area include a wide array of zoning including: Single-family Residential, Mobile Home Park, Multi-family Residential Medium Density, Professional Office, Town Center, Community Commercial, Light Industrial Manufacturing, and Heavy Industrial Manufacturing. The existing land use within the Project Area includes agricultural uses, residential development, commercial development, and recreational activities uses. Between I-15 and 400 West, the main land use is agricultural on the north side of Hobble Creek and agricultural and residential on the south side. Springville City recently initiated construction of a Community Park on the north side of Hobble Creek between 1200 West and 950 West (see Figure 2-1 in Chapter Two). Between 400 West and the Mapleton-Springville Lateral (MSL) pipeline the current land use is a mix of residential and commercial developments.

Environmental Consequences

No-Action Alternative

The No-Action Alternative would have no impact on the existing land uses in the Project Area.

Proposed Action Alternative

The habitat restoration portion of the Proposed Action Alternative would have a minor impact on the existing land uses in the Project Area. The habitat restoration component of the Proposed Action Alternative would involve acquiring adjacent properties through some reaches between I-15 and 400 West. Impacts would be the same regardless of method used for property acquisition.

The other aspects of the Proposed Action Alternative (stream channel enhancement, modification or removal of diversion structures, provision of additional stream flows, adoption of Lower Hobble Creek Flow Recommendation, and the use of the Hobble Creek Valve Station) would not alter or impact current land uses. Therefore, the improvements proposed under the Proposed Action Alternative would have a minor impact on adjacent land uses.

There are times when exchange water would need to be delivered to Utah Lake via Hobble Creek that would be in excess of the non-irrigation season target flows. Supplemental water will not be added to high spring runoff flows if there is a risk of flooding along Hobble Creek. The peaks of the target flow regimes are below the 10-year flood value of 633 cfs.

Mitigation

Property for the habitat restoration will be acquired in accordance with U.S. Department of the Interior (Interior) regulations, meeting all requirements for federal agency land acquisitions. The stream channel enhancements, modification or removal of diversion structures, provision of additional stream flows, and the use of Hobble Creek Valve Station would not require additional property acquisition.

3.4 Environmental Justice

This section addresses the federal requirements to consider project effects to low-income and minority populations. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, require each federal agency to evaluate and determine if their projects would have disproportionately high adverse effects on low-income or minority populations. Executive Order 12898 defines low-income populations as those households that are at or below the U.S. Department of Health and Human Services (USHHS) poverty guidelines. The USHHS issues the poverty guidelines each year for determining public eligibility for specific federal programs. In 2010, an individual living alone would need to have an income of $10,830 or less to qualify as low-income. For each additional person living in the household, $3,740 is added to the $10,830 base figure. For example, the poverty level for a household of two would be $14,570; the poverty level for a household of five would be $25,790, and so on.

Affected Environment

According to U.S. Census data, Utah's population in 2010 was 2.76 million which represents a 24% increase since 2000. Approximately 14% of the State's population is identified as an ethnic minority. Utah County is currently the fourth fastest growing county in Utah. During this time period, Springville's population saw a 44% population growth from 20,424 to 29,466. The State of Utah Governors Office of Planning and Budget (GOPB) report that the economic trends for the state indicate that Utah's annual average wage increased 1.6% to $38,663 (GOPB 2011).

The demographic data for the Project Area was taken from the U.S. Census Bureau's American Community Survey 2007-2009 (ACS 2012). The U.S. Census Bureau's American Community Survey (ACS) survey presents information at the Census Tract level. The Census Tract data represents a geographic area much larger than the Project Area which lies in U.S. Census Tracts 29, 31.01 and 31.02. The 2010 census data indicates that approximately 84% of Springville City's population identifies as "White." Those who identified as "Hispanic/Latin American" represent approximately 12% of the City's population. Demographic information and personal income levels are presented in Table 3-1.

TABLE 3-1: RACE, ETHNICITY, AND INCOME DATA BY CENSUS TRACT

Race, Ethnicity or Income	Census Tract		
	29	31.01	31.02
Total Number of People	6,343	6,529	6,714
White Only	5,052 (79.6%)	5,634 (86.3%)	6,346 (94.5%)
Hispanic/Latino Only	453 (7.1%)	637 (10.3%)	168 (2.5%)
Black or African American Only	41 (0.7 %)	50 (0.8%)	0 (0%)
American Indian or Alaskan Native Only	14 (0.2%)	0 (0%)	40 (0.6%)
Asian Only	150 (2.4%)	56 (0.9%)	29 (0.4%)
Native Hawaiian or Other Pacific Islander Only	29 (0.5%)	8 (0.1%)	42 (0.6%)
Some Other Race Alone	488 (7.7%)	0 (0%)	17 (0.3%)
Two or More Races	116 (1.8%)	144 (2.2%)	72 (1.1%)
Median Household Income	$50,526	$39,105	$79,119
Percent of Persons Below the Poverty Level	10.1%	16.4%	3.3%

Environmental Consequences

No-Action Alternative

The No-Action Alternative would have no impact on environmental justice populations.

Proposed Action Alternative

The Proposed Action Alternative would have no disproportionately adverse affects on minority or low-income populations.

3.5 Farmlands

The Farmland Protection Policy Act (FPPA) [Subtitle I of 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 farmland to nonagricultural uses, and to assure that federal programs are administered in a manner that, to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland."

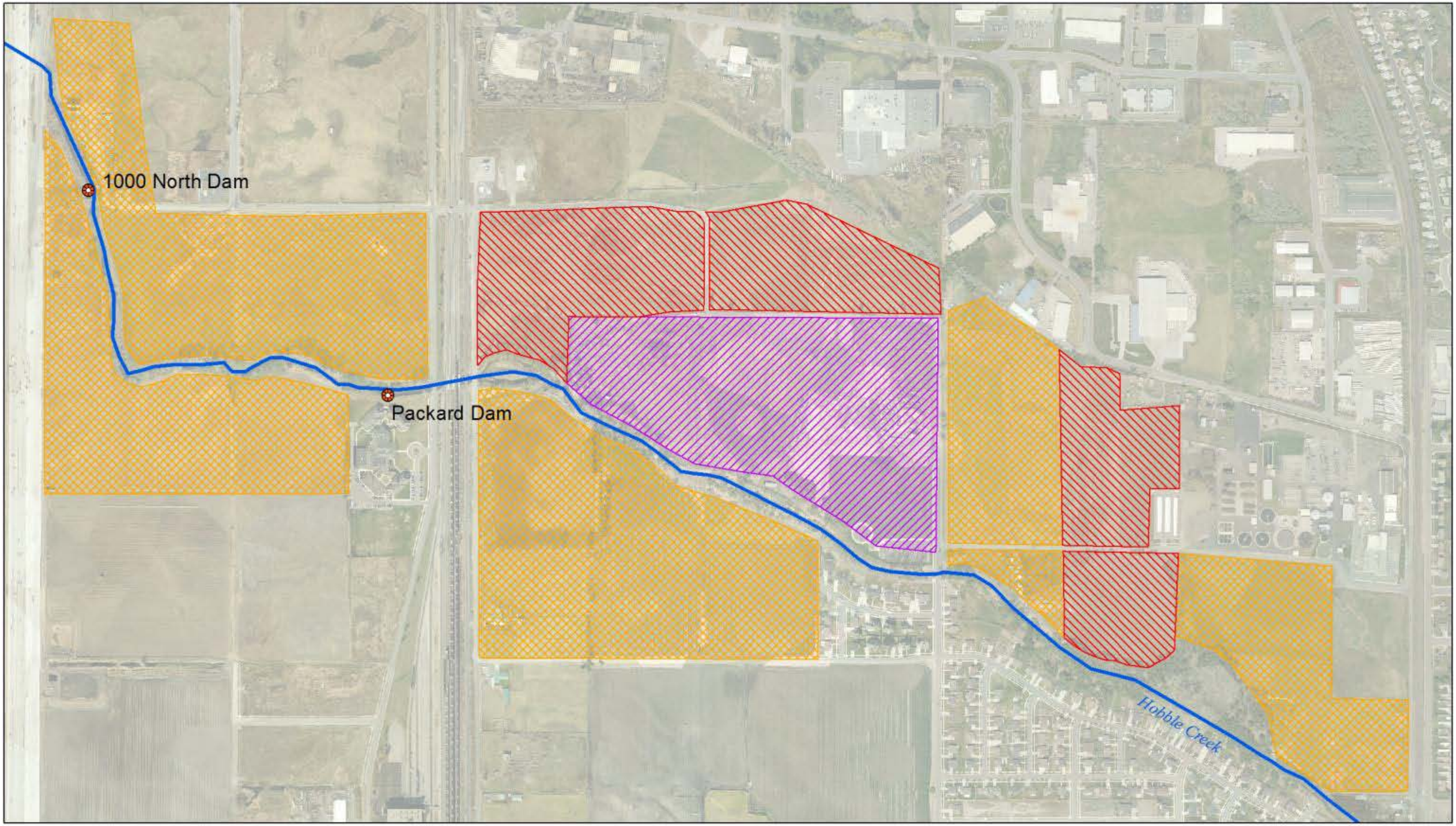
The FPPA is administered by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS).

Affected Environment

Within the Project Area, farmlands as defined by the FPPA exist between I-15 and 400 West and include Prime Farmland and Farmland of Statewide Importance; there are no Unique Farmlands or Farmlands of Local Importance. The types of farmlands found within the Project Area are described below and are shown in Figure 3-1: Farmlands. There are no Agricultural Protection Areas designated by Utah County in the Project Area.

Prime Farmland

Prime Farmland, as defined under the FPPA, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, oilseed and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor. Adjacent to the north bank of Hobble Creek, Prime Farmland exists between I-15 and 1650 West, between 950 West and approximately 750 West, and 600 West and 400 West. Adjacent to the south bank of Hobble Creek, Prime Farmland exists between 1500 West and approximately 1100 West.



Legend

- Diversion Dams
- Farmland of Statewide Importance
- Prime Farmland
- Springville City Park Planned

0 500 1,000 Feet

East Hobble Creek Restoration Project

Figure: 3-1
Farmlands

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Farmland of Statewide Importance

Farmland of Statewide Importance, as defined by the FPPA, is land other than prime (or unique) farmland that is determined and designated as such by the appropriate state agency. Within the Project Area, Farmland of Statewide Importance is located adjacent to the north bank of Hobble Creek between 1650 West and the western limits of the Springville City Community Park (approximately 1200 West) and between 750 West and 600 West.

Environmental Consequences

No-Action Alternative

There would be no impacts to farmland or agricultural practices from the No-Action Alternative. The land adjacent to the Project Area would continue in its current state until such time that the property owner decides to alter the land use.

Proposed Action Alternative

The habitat restoration component of the Proposed Action Alternative could have impacts to existing agricultural lands and operations along the Hobble Creek channel. The other aspects of the Proposed Action Alternative (stream channel enhancement, diversion modification or removal, provision of additional supplemental stream flows, and use of Hobble Creek Valve Station) would not impact existing farmlands.

Habitat Restoration

The habitat restoration aspect of the Proposed Action Alternative would require acquisition of property from farmlands along Hobble Creek. Impacts would be the same regardless of method used for property acquisition. The habitat restoration of Hobble Creek would require property from Prime Farmland, Farmland of Statewide Importance, and Other Farmlands. The impacts by farmland type are listed below:

- Prime Farmland – The habitat restoration may impact Prime Farmlands located adjacent to Hobble Creek. Prime Farmlands are currently located north and south of Hobble Creek between I-15 and 1650 West, south of Hobble Creek between 1500 West and 1100 West, and north of Hobble Creek between 950 West and 700 West and 600 West and 400 West (see Figures 2-1 and 3-1).

- Farmland of Statewide Importance – The habitat restoration may impact Farmland of Statewide Importance located between 1500 West and the Springville City Community Park. In addition, a small section of Farmland of Statewide Importance may be impacted between 950 West and 400 West on the north side of Hobble Creek (see Figure 3-1).

Mitigation

Impacts resulting from implementation of the Proposed Action Alternative to land owners would be compensated in accordance with federal land acquisition policies.

3.6 Floodplains and Stream Channel Conditions

Executive Order 11988 establishes federal policy regarding floodplain management. Encroachment onto floodplains can reduce the flood-carrying capacity of the floodplain and extend the flooding hazard beyond the encroachment area. Congress established the National Flood Insurance Program (NFIP) in 1968 which is administered at the local level. The NFIP is a voluntary mitigation program made available to state and local governments by the Federal Emergency Management Agency (FEMA). FEMA conducts hydrologic and hydraulic studies through the NFIP, and publishes flood insurance rate maps (FIRMs) that identify and delineate flood hazard risks for land use planning. These FIRMs identify three zones of flood hazard risks:

- Flood Zone A corresponds to the 100-year floodplain that is determined by approximate methods. No Base Flood Elevations or depths are shown within this zone (noted as floodplain zones A, AE, and A5 on Figure 3-2: Flood Zones);

- Flood Zone B corresponds to areas between the limits of the 100-year flood and the 500-year flood or certain areas subject to 100-year flooding with average depths less than one foot or where the contributing drainage area is less than one square mile, or areas protected by dikes from the base flood; and

- Flood Zone C corresponds to areas of minimal flood potential (500-plus year floods).

Affected Environment

Generally, within the Project Area, Hobble Creek is constrained between the stream banks which channelize the creek and prevents flooding to adjacent properties. Hobble Creek's sinuosity is very low through the majority of the project area, primarily due to the channelization of the streambed (JSRIP 2002). To determine the existence and limits of floodplains along Hobble Creek, the FIRM for Springville area and Utah County Flood Hazard maps were reviewed. According to these maps, Flood Zones A (and its variations AE and A5), B, and C exist along Hobble Creek. The flood zones are shown in Figure 3-2: Flood Zones.

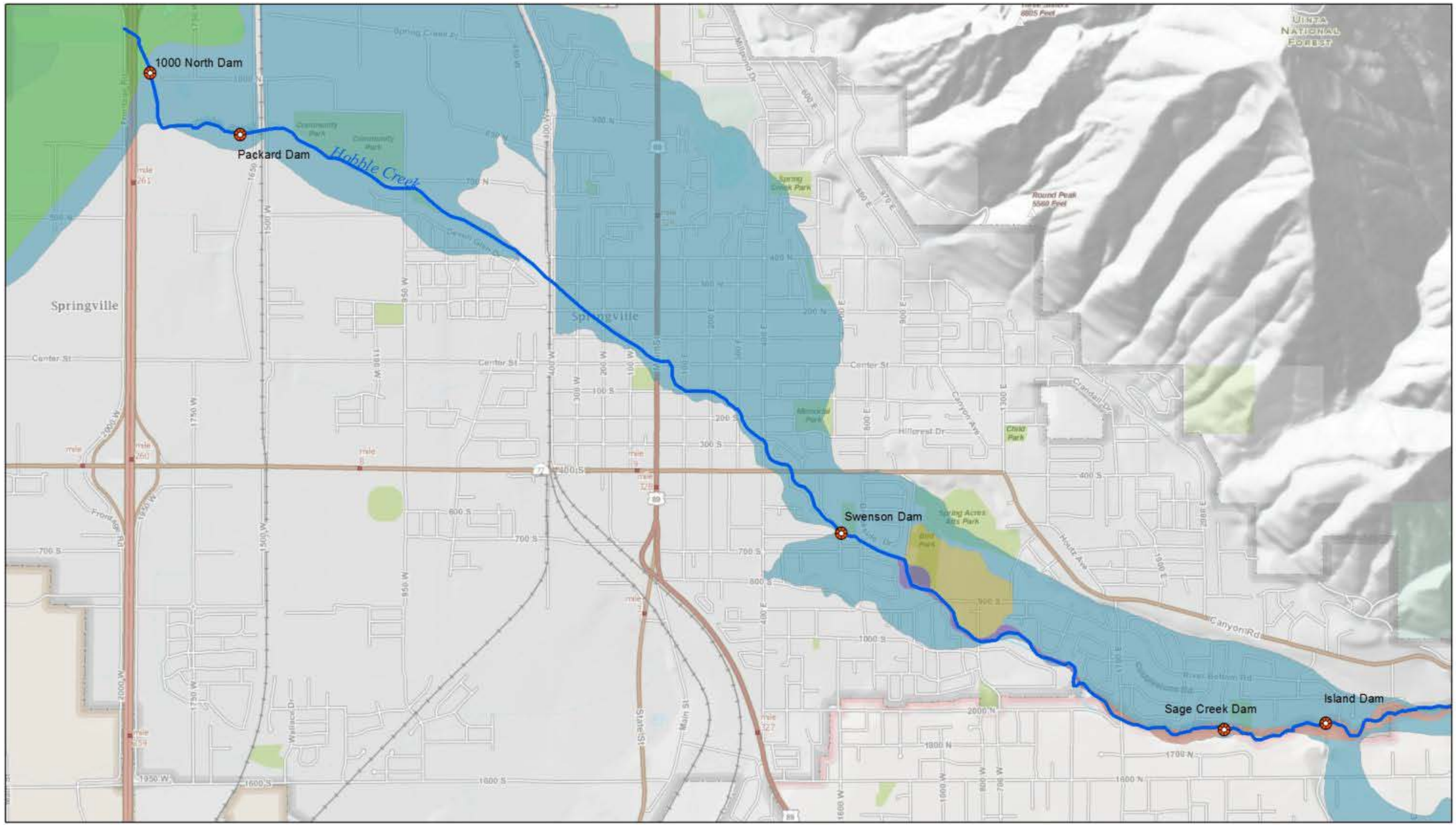
Environmental Consequences

No-Action Alternative

The No-Action Alternative was analyzed in the Utah Lake Drainage Basin Water Delivery System Environmental Impact Statement (ULS EIS) and would not have an impact to the existing floodplains throughout the project area. There would be no changes to the existing condition of the floodplains in the Project Area under the No-Action Alternative.

Proposed Action Alternative

The East Hobble Creek Restoration Project would maintain or increase the flow capacity of Hobble Creek floodplains and the stream channel. Each component of the Proposed Action Alternative is discussed below.



East Hobble Creek Restoration Project

Figure: 3-2
Flood Zones

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Hobble Creek Habitat Restoration

The habitat restoration component includes improvements to Hobble Creek that would maintain or increase the total volume of water that could be carried within the stream channel. The habitat restoration component of the Proposed Action would increase the flood-carrying capacity since the floodplain would be widened in those areas. Dikes would be relocated to the margin of the floodplain instead of the margin of the active channel, to maintain the existing flood zone rating.

Stream Channel Enhancement

Stream channel enhancement would create additional pools, along with the addition of large woody debris within the existing stream channel and would increase the density and heterogeneity of habitat within the stream. Stream channel enhancement would be designed and constructed as to maintain or increase the existing flood capacity of Hobble Creek within the proposed project limits.

Modification or Removal of Diversion Structures

The modification or removal of the diversion structures proposed under the Proposed Action would be designed in a way so as to not impact the capacity of floodplains.

Provision of Additional Stream Flows

The additional conserved water released into Hobble Creek under the Proposed Action Alternative would not cause or exacerbate flooding. The release of supplemental water at the Hobble Creek Valve Station would be timed so as to not impact the existing floodplains or the stream channel conditions. There are times when exchange water would need to be delivered to Utah Lake via Hobble Creek that would be in excess of the non-irrigation season target flows. Supplemental water will not be added to high spring runoff flows if there is a risk of flooding along Hobble Creek. The peaks of the target flow regimes are below the 10-year flood value of 633 cfs.

Adoption of the Lower Hobble Creek Ecosystem Flow Recommendations Report

Adopting the *Lower Hobble Creek Ecosystem Flow Recommendations* report would not impact the existing Hobble Creek floodplains or stream channel.

Use of Hobble Creek Valve Station for Release of Supplemental Stream Flows

The use of Hobble Creek Valve Station would not impact existing Hobble Creek floodplains or the stream channel.

Mitigation

The stream channel enhancement, Hobble Creek habitat restoration, and modification or removal of diversion structures would be designed and constructed such that the existing flood-carrying capacity of Hobble Creek would remain or be increased. The provision of additional stream flows, adoption of the flow recommendation, and use of the Hobble Creek Valve Station for water deliveries would not impact existing or improved floodplains or flood zone protection ratings.

3.7 Hazardous Materials

This section analyzes potential impacts from the Proposed Action Alternative from the disturbance of known hazardous materials sites. The Utah Division of Environmental Response and Remediation (DERR) maintains an environmental database on sites with known contamination and sites that are regulated according to the requirements of state or federal laws. The following is a list of environmental information maintained in the DERR database:

- Superfund Sites, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);
- National Priorities List (NPL), priority CERCLA sites;
- Underground Storage Tanks (UST);
- Resource Conservation and Recovery Act (RCRA);
- Leaking Underground Storage Tanks (LUST);
- Brownfield Projects;
- Toxic Release Inventory (TRI); and
- Voluntary Release Cleanup Program (VRCP).

Affected Environment

A field investigation and review of the DERR's database in June 2012 showed no hazardous waste sites within the Project Area. However, the DERR's database lists six known sites of concern within a ½ mile radius of the Project Area. These sites are detailed in Table 3-2.

TABLE 3-2: KNOWN UNDERGROUND AND LEAKING UNDERGROUND STORAGE TANKS

DERR Site Number	Site Name	Site Address	Type of Site	Comments
1000431	Brookside Service	411 E 400 S	LUSTs	Tanks removed
1000460	Jake's Brookside Service	410 S 400 E	USTs and one LUST	LUST removed
1000806	Art City Auto Supply	14 N Main	UST	Tank removed
1000662	Springville Fire Department	45 S Main	UST	Tank removed
1000187	U.S. West	93 E 200 S	UST	Tank removed
10000894	The New Library	50 S Main	UST	Undocumented tanks discovered and removed during construction of new library

UST – Underground Storage Tank
LUST – Leaking Underground Storage Tank

Environmental Consequences

No-Action Alternative

The No-Action Alternative would have no impact on the existing conditions of the six underground storage tanks adjacent to the Project Area. Furthermore, the No-Action Alternative would not require the generation of hazardous materials.

Proposed Action Alternative

While there are six known sites that contain underground (or previously leaking) storage tanks within a ½ mile radius of the Project Area, none of these sites are directly adjacent to the Project Area (within 500-ft). The Proposed Action Alternative would not impact known underground storage tanks.

3.8 Cultural Resources

This section discusses the known historic, archaeological, and paleontological resources within the study area. NEPA requires agencies to consider the effects of a planned federal undertaking upon the cultural environment, including historical, archaeological, and paleontological resources. In addition to NEPA, planned federal actions must also comply with the National Historic Preservation Act of 1966 (NHPA) (16 USC 470, as amended). Section 106 of the NHPA and its implementing regulations (36 CFR 800) require federal agencies to take into account the effects of their undertakings on historic properties. According to these regulations, a historic property is 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 ... "(36 CFR 800.16). For a cultural resource evaluation, the area of potential effects (APE) in compliance with Section 106 of the NHPA, is defined as the geographic area within which federal actions may directly or indirectly cause alterations in the character or use of historic properties.

Affected Environment

Two cultural resource inventories were conducted within the Project Area and other surveys previously completed were reviewed to determine the existence of historic and archaeological resources. These are discussed below:

Cultural Resource Inventory at the Diversion Structures

A cultural resource inventory was conducted at the five diversion structures (Island Dam, Sage Creek Dam, Swenson Dam, Packard Dam, and 1000 North Dam) under consideration for modification or removal to determine whether they were eligible for inclusion onto the National Register of Historic Places (NRHP). None of the diversion structures were recommended eligible for inclusion on the NRHP. The archaeological resources inventories resulted in the observation of one Isolated Find, a rock and mortar wall. By definition, Isolated Finds are not considered historic resources and are not eligible for inclusion on the NRHP.

Cultural Resource Inventory between 1500 West and the Springville City Community Park

A cultural resource inventory was completed along Hobble Creek between 1500 West and the Springville City Community Park. It's anticipated that this segment of Hobble Creek would likely be the first reach within the Project Area to include any habitat restoration activities. No historic resources were identified.

Other Cultural Resource Inventories

Several other cultural resource inventories have been conducted within the Project Area but not as part of the proposed project. Resulting from these inventories, a total of 14 historic

transportation structures were determined eligible for inclusion onto the NRHP for the ULS EIS (see Table 3-10 in the Cultural Resources Technical Report prepared for the ULS EIS). The Union Pacific Railroad tracks (between 1650 West and 1500 West) and the Denver & Rio Grande Western Railroad tracks (adjacent to 400 West) have been determined eligible for inclusion onto the NRHP.

Springville City Historic District

The Hobble Creek channel passes through the designated Springville City Historic District. The historic district is approximately 500 acres in size with nearly 900 buildings that contribute to the overall historic character of the area. The historic district extends between approximately 400 West to approximately 400 East. The Hobble Creek Valve Station is located within the boundaries of the Springville City Historic District.

Environmental Consequences

No-Action Alternative

There would be no effect on the cultural resources from the No-Action Alternative.

Proposed Action Alternative

The Proposed Action Alternative would not impact known cultural resources. The Utah State Historic Preservation Office (SHPO) has concurred with these findings. The potential habitat restoration areas between I-15 and 1500 West and 950 West and 400 West have not been surveyed for cultural resources. These reaches of Hobble Creek would be surveyed in accordance with Section 106 of the NHPA if the property becomes available for habitat restoration.

3.9 Noise

This section identifies potential changes to existing noise levels from the use of the Hobble Creek Valve Station. The EPA defines noise as an unwanted or disturbing sound that becomes unwanted when it either interferes with normal activities such as sleeping, conversation, or disrupts or diminishes one's quality of life. A decibel (dB) is the unit of measurement used for evaluating the loudness associated with terrestrial sound. For ease of reference while measuring noise levels, an adjusted dB scale is used to account for both volume and frequency. This scale is referred to as the A-weighted decibel scale and provides a single number to account for what the human ear actually perceives. The unit of measurement is designated as dBA. As a reference, the smallest change in noise level that a human ear can perceive is approximately three dBA. A 10 dBA increase is perceived by most people as a doubling of sound level. Long term exposure to loud noises can damage the human ear. Noise levels exceeding 85 dBA over continuous periods can result in permanent hearing loss.

Affected Environment

Existing A-weighted decibel (dBA) noise measurements were recorded during the spring of 2012 to determine the ambient noise levels at the Hobble Creek Valve Station. At the Hobble Creek Valve Station, noise measurements were taken at various times of the day and night. The median or noise

level that exceeded 50% of the measurement cycle (L_{50}) was used to determine a representative ambient noise level. The ambient noise level (L_{50}) ranges between 50 and 54 dBA depending on the time of day or night.

Environmental Consequences

No-Action Alternative

The No-Action Alternative would not have a noise impact within the project area.

Proposed Action Alternative

In May of 2012, Interior and CUWCD conducted a preliminary flow test using the Hobble Creek Valve Station. During the flow test (up to 25 cfs), outside noise measurements were taken to determine the operating noise levels from the Hobble Creek Valve Station. The noise levels recorded during the flow test demonstrated that the operating noise levels of the Hobble Creek Valve Station would not appreciably increase ambient noise levels in the area. However, additional noise measurements will be taken to further substantiate that the operational noise levels for a wide range of flows released from the Hobble Creek Valve Station would have little to no impact on ambient noise levels.

In addition, the back-up generator for the Hobble Creek Valve Station would increase noise levels in the vicinity if operated. Currently, the generator would only operate in a power outage.

3.10 Vibration

This section identifies potential changes to existing vibration from the use of the Hobble Creek Valve Station; the other elements of the Proposed Action Alternative would have no potential to increase vibration.

Affected Environment

Vibration can be a concern for nearby residents causing homes and buildings to shake. The effects of vibration include the ability to feel movement of floors, rattling of windows or doors, and the shaking of items on shelves or hanging on walls. The human response to ground-borne vibration is typically measured by the vibration velocity level in decibels (noted as VdB so as to not be confused with noise level decibels). The approximate threshold of human perception to vibration is about 65 VdB and frequent vibration levels exceeding 70 VdB are considered to be annoying in a residential setting. The background vibration level in a typical residential setting is around 51 VdB and was used as a baseline for this analysis.

Environmental Consequences

No-Action Alternative

The No-Action Alternative would not have vibration impacts within the project area.

Proposed Action Alternative

During the preliminary flow test in May 2012 at the Hobble Creek Valve Station, vibrations were measured approximately 25 feet from the sleeve valve. During the test, recorded vibrations did not exceed 66 VdB's. It should be noted that the nearest adjacent residence is approximately 60 feet from the sleeve valve. During flow testing and initial operation, vibration levels will continue to be monitored at the Hobble Creek Valve Station.

3.11 Hydrology

The hydrology of the lower reaches of Hobble Creek is greatly affected by wide variations in natural flow and by spring and summer water diversions for irrigation use. The Proposed Action Alternative has four aspects that would affect the hydrology in Hobble Creek that were not analyzed in the ULS EIS. Those aspects are:

- Modification or removal of diversion dams to allow ULS supplemental water to reach Utah Lake to meet CUP exchange requirements and to provide fish passage within Hobble Creek;
- Release of up to an additional 4,500 acre-feet of conserved water to Hobble Creek to help meet target flow regime recommendations;
- Adoption of the *Lower Hobble Creek Ecosystem Flow Recommendations* report and associated flow regime targets; and
- Delivery of supplemental water (including the additional 4,500 acre-feet of conserved water) to Hobble Creek through the Hobble Creek Valve Station in addition to the MSL pipeline.

The basis for analysis in this section included the flows in Hobble Creek for the period of record between 1950 and 1999. This is the same period of record utilized in the ULS EIS and was developed from available actual Hobble Creek flow records and correlation with nearby river systems for periods where actual flow records were unavailable.

Affected Environment

The amount of water in Hobble Creek results from natural springs, snowmelt runoff, and irrigation water diverted into and from the creek. The hydrology of Hobble Creek is characterized by springtime flows which usually peak in April and May, with the peak magnitude varying greatly with the particular water year. During the irrigation season, most of the water in Hobble Creek is diverted for agricultural use. The average daily flow in Hobble Creek near its crossing with I-15 for the period of record is shown in Table 3-3 (found on the following page) for each month of the year.

TABLE 3-3: BASELINE HOBBLE CREEK FLOWS (CFS) BY MONTH AS REPORTED IN THE ULS EIS

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual Flow (ac-ft/yr)
Average	7	25	23	22	26	38	60	109	38	4	1	1	21,379
Wet	13	36	33	32	58	78	202	346	183	28	11	10	62,124
Dry	0	14	13	14	16	14	9	0	0	0	0	0	4,831

Note: These are average monthly values and actual instantaneous flow value may vary greatly from these numbers.
see Table 3-1 in ULS EIS

Environmental Consequences

No-Action Alternative

Under the No-Action Alternative, water delivery targets and associated impacts to Hobble Creek would be the same as depicted in the ULS EIS Proposed Action. Flows within lower Hobble Creek under the No-Action Alternative would be similar to those shown in Table 3-4, within the constraints of the delivery system. This includes the release of an annual average of 12,037 acre-feet of supplemental water through the MSL pipeline.

TABLE 3-4: NO-ACTION ALTERNATIVE – HOBBLE CREEK FLOWS (CFS) BY MONTH (PROPOSED ACTION IN THE ULS EIS)

Year Type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Annual Flow (ac-ft/yr)
Average	20	35	32	32	35	46	111	145	65	13	10	10	33,416
Wet	26	36	33	32	58	78	209	346	183	43	26	25	66,007
Dry	6	20	19	20	22	20	96	92	40	6	6	6	21,341

Note: These are average monthly values, actual instantaneous flow values may vary greatly from these numbers, particularly based on exchange flow requirements to Utah Lake.
see Table 1-16 in ULS EIS

Under the No-Action Alternative (considered the Proposed Action in ULS EIS):

> "the average streamflow is 46 cfs, which is 16 cfs (53 percent) more than under baseline conditions. Monthly flows would increase in all months of the year (from 24 to 1,200 percent), with the additional releases resulting from providing June sucker attraction flows and summer-time supplemental flows. The very large percentage increases in July through October (186 to 1,200 percent) are a result of the fact that in the baseline Hobble Creek downstream from the Mapleton-Springville Lateral is nearly dry during those months, so even modest increases of 12 to 13 cfs result in very large percentage increases." (ULS EIS: pg 3-22).

The following actions would not be implemented under the No-Action Alternative: modification or removal of diversion dams and provision of fish passage within Hobble Creek, release of an additional 4,500 acre-feet of conserved water to Hobble Creek to help meet flow regime target recommendations, adoption of the *Lower Hobble Creek Ecosystem Flow Recommendations* report, and delivery of supplemental water (including the additional 4,500 acre-feet of conserved water) to Hobble Creek through the Hobble Creek Valve Station in addition to the MSL pipeline. For hydrology, the impacts under the No-Action Alternative would be the same as addressed in the ULS EIS.

Proposed Action Alternative

One of the purposes of the Proposed Action Alternative is to deliver additional conserved water down Hobble Creek to Utah Lake. In the ULS EIS analysis, the delivery of 4,000 acre-feet of conserved water was proposed and analyzed, in addition to delivery of an average of 8,037 acre-feet of exchange water, for a total annual average delivery of 12,037 acre-feet of supplemental water. Since the ULS EIS was completed, an additional 4,500 acre-feet of conserved water has been identified for possible use in Hobble Creek, bringing the total to 8,500 acre-feet of conserved water. This conserved water would be available each year to assist in meeting the flow regime target within the facilities capacity constraints and subject to shortages. The Proposed Action Alternative includes utilizing the conserved water to reach the flow regime targets recommended in the April 2009 *Lower Hobble Creek Ecosystem Flow Recommendations* report.

To assist with distribution of the conserved water, the Flow Work Group will meet each year and will advise the JSRIP regarding the outlook for the upcoming water year. The JSRIP will discuss the needs of the June sucker, taking into account the flow recommendations, available water supplies, and environmental commitments for delivery of water to the Provo River and Hobble Creek, and distribution system capability (space availability constraints). Based on these factors, the JSRIP will recommend a flow pattern to Interior. Interior will consult with CUWCD to make the appropriate releases to Hobble Creek. There could be years when exchange water may be available to assist with the flow regime targets. On these years, the Flow Work Group will be advised by CUWCD on anticipated exchange flows.

Consistent with the *Lower Hobble Creek Ecosystem Flow Recommendations* report, the JSRIP has adopted the following priorities:

1. Provide base flows during the spring and/or early summer to support June sucker spawning activity.

2. Provide supplemental flows in the low water periods of late summer when irrigation and other uses may reduce stream flows to levels that may be detrimental to the health of the stream ecosystem.

3. Provide a spring runoff peak. These peaks appear to serve as a cue to adult June sucker to initiate spawning migrations into Utah Lake tributaries. They also provide sediment transport, preparing substrate for use as June sucker spawning sites.

4. Provide flows following the peak to facilitate the movement of spawning adults back into Utah Lake and also transport larval suckers to Utah Lake or other suitable rearing habitat, where available.

These priorities are based on the current understanding of June sucker needs and the availability of water in the Provo River and Hobble Creek systems. These priorities may change as more information about June sucker needs is obtained or conditions in the respective tributaries change. Under the Proposed Action Alternative, conserved water would be added to the Hobble Creek baseline flows to reach the pattern recommended in the *Lower Hobble Creek Ecosystem Flow Recommendations* report (JSRIP 2009). These recommendations and priorities identify a proposed spring hydrograph for the months of March to July and target flows for the remainder of the year (see Figure 3-3 and Table 3-5). Recommendations vary based on water year type (dry, wet, and average).

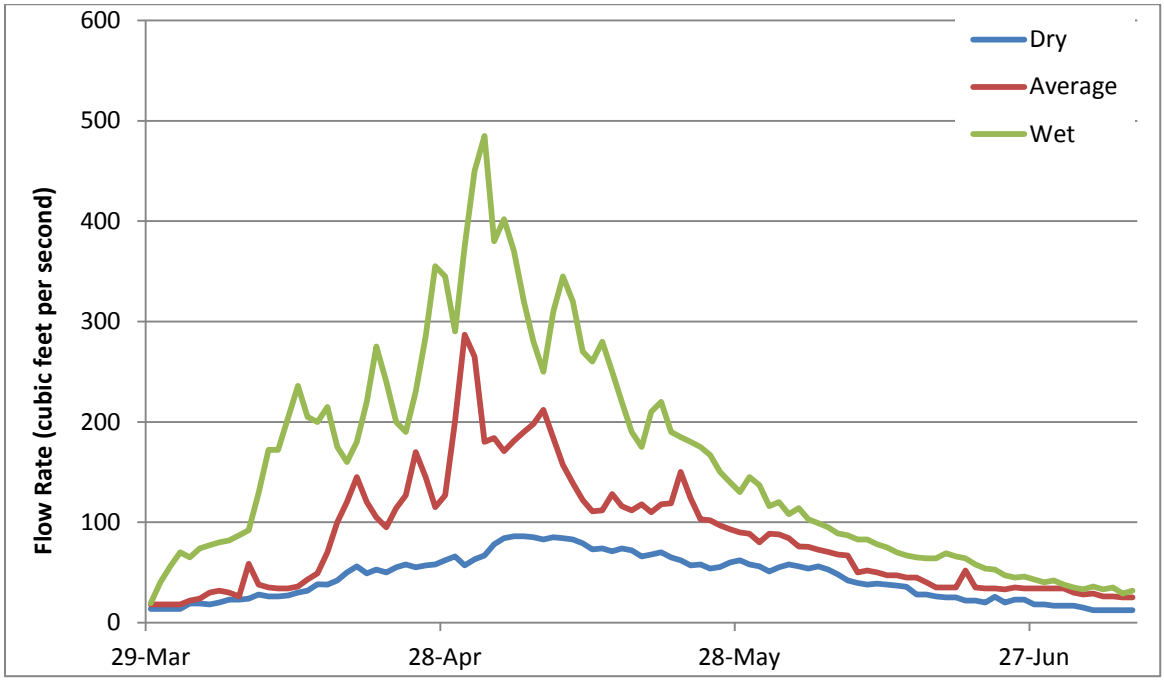

FIGURE 3-3: SPRING TARGET FLOW REGIME (DATES ARE APPROXIMATE)

TABLE 3-5: TARGET FLOW RECOMMENDATIONS

Year Type	Target Flow Rate (cfs)		
	Winter	Summer	Autumn
Average	18	19	20
Wet	19	22	23
Dry	14	12	14

During the irrigation season (April to October), the delivery of conserved water to meet the flow target regimes would increase the amount of water in Hobble Creek compared to baseline. Under the operation of the Proposed Action Alternative, the conserved water increases the irrigation season average Hobble Creek flow to 50 cfs from the baseline/existing flow of 31 cfs representing a 19 cfs increase (59 percent) in flow. The large percentage increase is due to the fact that the baseline condition of Hobble Creek at the gauging station near I-15 is nearly dry in July, August and September due to irrigational use; therefore, an increase of 19 cfs results in a large percentage increase.

There are times when exchange water would need to be delivered to Utah Lake via Hobble Creek that would be in excess of the non-irrigation season target flows. Supplemental water will not be added to high spring runoff flows if there is a risk of flooding along Hobble Creek. The peaks of the target flow regimes are below the 10-year flood value of 633 cfs. The amount of water added to Hobble Creek in any given year will vary depending on weather conditions, local water use, amounts available, need for delivery of exchange water, and delivery system capacity availability. Analysis shows that there are times (generally during the peak irrigation season) that system delivery capacity is fully utilized with contracted water deliveries and thus not available for full delivery of desired supplemental flows.

It should be noted that the 4,500 acre-feet of additional conserved water is available for use in either Hobble Creek or the Provo River (on space available in the SFPRC pipeline and subject to shortages), depending upon the annual recommendation of the JSRIP, as discussed previously. Potential delivery of this water to the Provo River will be analyzed in a later document, currently anticipated to be the Provo River Delta Restoration EIS.

The modification or removal of diversion structures to allow supplemental water to travel to Utah Lake and to provide fish passage is anticipated to have a beneficial effect on the stream's hydrology and associated ecosystem.

The use of the Hobble Creek Valve Station would allow for the release of supplemental water into the lower portion of Hobble Creek prior to the MSL pipeline being fully operational. Providing for an earlier release of the supplemental water would provide the beneficial impacts of the additional water to the lower stretches (below the Hobble Creek Valve Station) of Hobble

Creek as early as Spring 2013, although the benefits anticipated for the upper stretches would not be realized until the later completion of the MSL pipeline and completion of the proposed diversion modifications or their removal through these reaches. The result of delivering water through the Hobble Creek Valve Station to Hobble Creek would be a hydrologic benefit.

Under the Proposed Action Alternative, ULS supplemental flows could be delivered to Hobble Creek, on a space available basis, through either the MSL pipeline and/or at the Hobble Creek Valve Station, providing flexibility for water delivery when both systems are operational and during times when available space is limited or other operational constraints are in place.

3.12 Water Quality

Affected Environment

The Utah Division of Water Quality (UDWQ) has designated Hobble Creek as a class 2B, 3A, 4 stream. The beneficial uses for the stream are listed as infrequent primary contact recreation and secondary contact recreation (2B), cold water fishery (3A), and agricultural uses (4). Hobble Creek currently meets all State standards. The *2010 Water Quality Assessment Integrated Report* prepared by the Utah Department of Environmental Quality (UDEQ) indicates that Hobble Creek is currently meeting its beneficial uses for agriculture and cold water fishery; the recreational beneficial use was not evaluated in this report (UDEQ 2010). According to the *Lower Hobble Creek Ecosystem Flow Recommendations* report total phosphorous and water temperature within Hobble Creek may present problems to fish during certain annual flow rates and climatic conditions (JSRIP 2009). A water quality analysis presented in ULS EIS, noted that Hobble Creek's annual average temperature for July violates the Utah water quality standard for a cold water fishery (CUWCD 2004).

Environmental Consequences

No-Action Alternative

Under the No-Action Alternative, water quality within lower Hobble Creek may improve over current conditions due to the addition of the supplemental water to the stream. The release of supplemental water from the MSL pipeline would increase dissolved oxygen concentrations above the existing conditions and lower the level of total dissolved solids, thereby improving water quality (CUWCD 2004). In addition, the release of supplemental water may also decrease summertime temperatures from existing conditions in Hobble Creek, a beneficial impact to the cold water fisheries.

Proposed Action Alternative

The Proposed Action Alternative would facilitate the release of the additional conserved water and provide a means to shepherd all supplemental water past the existing diversions. The Proposed Action Alternative would increase the dissolved oxygen levels, provide lower water temperatures during the summer months and lower the level of total dissolved solids (JSRIP 2009).

The implementation of delivering supplemental water through the Hobble Creek Valve Station could begin as soon as the Spring of 2013. This would benefit water quality in Hobble Creek below the valve station. When the MSL pipeline is completed the reach of Hobble Creek below the MSL pipeline would receive these same water quality benefits from the supplemental water. Full water quality benefits would not occur until the diversions structures are modified or removed.

3.13 Wildlife

Affected Environment

Based on a literature review of general habitat requirements for wildlife species common to Utah County and several site visits, existing conditions of the project area provide marginal to poor quality habitat for most wildlife species. The structure of the riparian corridor along Hobble Creek east of I-15 is simplified and consists mostly of a narrow, tall overstory and a weedy, non-wetland understory that has been hydrologically disconnected from the channel. The area beyond the riparian corridor consists mostly of agricultural activity near I-15 and changes to more suburban development to the east. East from 400 West, Hobble Creek exists in an almost completely urban environment composed of the city of Springville and contains little wildlife habitat outside of the stream channel itself.

The current stream channel and limited riparian corridor provide some habitat for small mammals and a few bird species. Species such as raccoons (*Procyon lotor*), American beaver (*Castor canadensis*), and numerous other small mammals have been observed in limited numbers within the project area. Waterfowl, some shorebirds, passerines, and upland game birds use the stream corridor and adjacent irrigated fields. However, the limited area supports only small populations of these species. Given historic agricultural and urban uses, habitat structure has been altered severely enough to impact the abundance and diversity of wildlife species within the project area. Such changes alter wildlife species composition and utilization of these areas (Utah Division of Wildlife Resources 2002).

Environmental Consequences

No-Action Alternative

Under the No-Action Alternative, existing wildlife habitat quality would remain unchanged and any benefits for wildlife from the project would not be realized. The riparian corridor along Hobble Creek through the project area would not benefit from restoration efforts that could improve the vegetation and habitat in the area. The lack of improvements in this area would not promote an increase in the abundance and diversity of wildlife in the area.

Proposed Action Alternative

Under the Proposed Action Alternative, the Hobble Creek channel east of I-15 would be rerouted in some areas and in other areas work would be completed within the stream channel to improve habitat conditions. In areas where the stream channel is rerouted, efforts would be made to connect the channel to a floodplain between 200 and 250 feet wide. The floodplain would include constructed backwater areas, side channels, and other seasonally flooded

features associated with stream channels. Under the Proposed Action Alternative, a mosaic of riparian, wetland, and aquatic habitats would be created, resulting in the creation of additional habitat that supports increases in wildlife abundance and diversity.

Periodic inundation of the restored areas could help maintain and regenerate higher quality wildlife habitat (Busch and Smith 1995). This periodic inundation would also promote the structural diversity of habitat necessary for diverse avian communities. On the west side of I-15 where a river restoration project was completed in 2008, the number of bird and small mammal species is greater than that observed east of I-15. Some of these increases are due to the closer proximity to Utah Lake; however the restored area has a larger and more diverse riparian area. This area has provided additional habitat to species such as mule deer (*Odocoileus hemionus*), American avocet (*Recurvirostra Americana*), killdeer (*Charadrius vociferous*), sandhill crane (*Grus canadensis*), great blue heron (*Ardea herodias*), a variety of waterfowl species, and other neotropical migrants. The proposed action would provide similar benefits to these species in the project area.

Under the Proposed Action Alternative, wildlife in general would benefit from these habitat improvements. By creating a diversity of habitat types within the riparian corridor, waterfowl (primarily ducks) would benefit from slow moving water for feeding and loafing. Piscivorous birds would likely be attracted to the project area as the fish community becomes reestablished. The reestablishment of an understory in the riparian areas of the project area would likely attract passerines that depend on structural diversity of vegetation communities. Small mammals would also benefit from the reestablishment of the riparian understory since food and cover would likely be more abundant, supporting an increase in numbers and diversity.

3.14 Fisheries

Hobble Creek is a tributary of Utah Lake that flows directly into Provo Bay. Hobble Creek historically supported spawning migrations of June sucker (Cope and Yarrow 1875), but due to stream alterations, it became unsuitable for June sucker use (USFWS 1999). A habitat restoration project west of I-15 was completed in 2009 allowing June suckers access to the creek. An earlier JSRIP funded study identified Hobble Creek as one of the top candidate streams for establishing an additional spawning population of June sucker (UDNR 2002), a de-listing criterion for the species (USFWS 1999). Each year since completion of the restoration project west of I-15, Hobble Creek has supported some June sucker spawning (UDWR 2011). Habitat alterations and irrigation diversions continue to hinder spawning activity and prevent access to additional spawning habitat within the project area.

Affected Environment

There are 14 known fish species that are native to Utah Lake that likely used the lower reaches of Hobble Creek seasonally. However, of those 14 species, only the June sucker and Utah sucker (*Catostomus ardens*) currently occur regularly in Utah Lake (USFWS 1999). Cutthroat trout (*Oncorhynchus clarkii*) likely occupy some reaches of Hobble Creek; however the status of their population in the project area is unknown. The majority of the fishes currently found in Utah Lake and

its tributaries have resulted from nonnative species introductions. At least 18 of these species are currently in Utah Lake, and many of these are piscivores (fish eaters) that were introduced for sport and have had substantial impacts on the native fish populations (USFWS 1999).

The current channel configuration and location of Hobble Creek within the project area have been altered to accommodate flood flows, as well as irrigation and agricultural practices. Obstacles including Packard Dam and existing road and railroad bridges, continued channelization, and flow alterations limit June sucker spawning in Hobble Creek (east of I-15). Increasing the amount of available spawning habitat would maximize the use of the Hobble Creek restoration area and Provo Bay as good rearing habitat for June sucker larvae and juveniles.

Due to poor habitat conditions and dewatering from irrigation use, the current stream channel in the project area appears to support a very limited diversity of fish species. Regular sampling has not been conducted by the Utah Division of Wildlife Resources, but it is likely that non-native species, such as carp (*Cyprinus carpio*), western mosquito fish (*Gambusia affinis*), and brown trout (*Salmo trutta*) are common.

Environmental Consequences

No-Action Alternative

Existing fish use of Hobble Creek would continue under the No-Action Alternative. The current condition of Hobble Creek would continue to limit June sucker spawning. When in use, Packard Dam and the 1000 North Dam irrigation diversions prevent upstream migration of the June sucker and can entrain both adults and larval fish in irrigation structures. The fish passage problems created by these diversions would also continue to impact the Hobble Creek fish community by limiting movement among stream reaches and preventing the establishment of stable resident fish populations. The project area also contains limited spawning habitat, which would not be enhanced under the No-Action Alternative.

Under the No-Action Alternative, supplemental water will be added to Hobble Creek; however without modifications or removal to the irrigation diversions (Island Dam, Sage Creek, Swenson Dam, Packard Dam and 1000 North Dam), the supplemental water may be diverted by irrigators. The diversion of this water would continue to result in periods of low to no flow in reaches of Hobble Creek, a condition that contributes to the low diversity fish community that currently exists.

Proposed Action Alternative

The Proposed Action Alternative would provide substantial habitat improvements for June sucker and other fish in the project area. With implementation of the Proposed Action habitat conditions in the channel would be improved, providing enhanced spawning habitat, areas of cover, and improved habitat diversity. Additionally, the modification or removal of the irrigation diversions would provide a conduit for movement of all species throughout the project area. The improved habitat conditions and modification or removal of fish passage obstructions

should increase diversity within the fish community and allow the establishment of stable resident fish populations. The implementation of delivering supplemental water through the Hobble Creek Valve Station could begin as soon as the Spring of 2013. This would benefit fisheries in Hobble Creek below the valve station. When the MSL pipeline is completed the reach of Hobble Creek below the MSL pipeline would receive these same fisheries benefits from the supplemental water. Full benefits to fisheries would not occur until the diversions structures are modified or removed.

3.15 Threatened, Endangered and Sensitive Species

Federal agencies are required to follow the guidelines set forth in the Endangered Species Act of 1973 (ESA) (16 U.S.C. 1531-1543), the Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. 703-712); the Bald Eagle and Golden Eagle Protection Act of 1940 (BGEPA) and the Magnuson-Stevens Act of 1976 (16 U.S.C 1801). This section evaluates the impact of the Proposed Action on the biological resources in the study area protected under the ESA, the MBTA and the BGEPA.

Affected Environment

Under the ESA, species are categorized as either threatened, endangered, or candidate; the definition for each is found below.

- Endangered – An Endangered species is an animal or plant in danger of extinction within the foreseeable future throughout all or a large portion of its range;

- Threatened – Threatened species are defined by the ESA and include any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range;

- Candidate – Candidate species are plants and animals that the USFWS has concluded that they should be proposed for addition to the federal endangered and threatened species list

Plants (listed on the ESA)

Only the Ute ladies'-tresses (*Spiranthes diluvialis*) may exist within Project Area and is considered threatened under the ESA. Ute ladies'-tresses occurs in seasonally moist soils and wet meadows near springs, lakes, or perennial streams and their associated flood plains below 6,500 feet elevation in Utah, Colorado, and Nevada. Typical sites include old stream channels and alluvial terraces, sub-irrigated meadows, and other sites where the soil is saturated to within 18-inches of the surface at least temporarily during the spring or summer growing seasons. Associated vegetation typically falls into the Facultative Wet wetland vegetation classification category (from the National List of Plant Species that Occur in Wetlands developed by the USFWS). The species occurs primarily in areas where the vegetation is relatively open and not overly dense, overgrown, or over grazed. The moist soil conditions and vegetation

composition of known Ute ladies'-tresses sites suggest that wetlands regulated under the Clean Water Act qualify as potential Ute ladies'-tresses habitat (USFWS, 1992).

Fish (listed on the ESA)

Within Hobble Creek, the only species on the ESA is the June sucker. The June sucker was federally-listed as an endangered species with Critical Habitat on April 30, 1986 (51 FR 10857). In the late 1990s, data collected by the UDWR suggested that there was a spawning population size of less than 1,000 adult June sucker (UDWR 1998). More recent data collected during the 2010 spawning run resulted in a count of 1,116 adult June sucker using the Provo River and 222 using Hobble Creek (UDWR 2011). The increases in spawning population size have been attributed to an aggressive stocking program that places captive reared June sucker in Utah Lake. The establishment of a Hobble Creek spawning run is related to the Hobble Creek Stream Restoration project that occurred in 2008 west of I-15, which provided the fish access to Hobble Creek.

Based on observations on the Provo River, June sucker typically initiate their spawning migration up tributary streams in June, but in dry years they may spawn as early as May. Habitat conditions required for June sucker spawning are not precisely defined, but they have been described as moderately deep riffles or runs (one to three feet deep) in slow-to-moderate current (0.2 to 3 feet per second) with a substrate composed of a mixture of gravel and cobble. Deeper pools adjacent to spawning habitat may also be important resting habitat for June sucker during the spawning period. Historically, June sucker most likely spawned in several tributaries to Utah Lake. The primary tributary now used for spawning remains the Provo River, but evidence documented by Utah State University (USU) suggests that some spawning occurs in the Spanish Fork River, Hobble Creek, Battle Creek, American Fork River, and Spring Creek (near Lehi) (USU 2011). In most tributaries, impacts from altered steam hydrology, diversion withdrawals, diversion dams (i.e., blockages), and channel modification have eliminated or greatly reduced available spawning habitat.

In Hobble Creek, June sucker spawning has been observed in small areas east of I-15. Due to habitat alterations and the presence of fish passage barriers, spawning occurs within a few riffles located between I-15 and Packard Dam. The amount of spawning that occurs in Hobble Creek is limited by poor habitat conditions and the presence of irrigation diversions that can block upstream migration of fish. Increasing the amount of available spawning habitat would maximize the use of the Hobble Creek restoration area and Provo Bay as rearing habitat for June sucker larvae and juveniles. The existing irrigation diversions also pose the risk of entraining both adult and larval suckers into irrigation systems.

Provo Bay within Utah Lake has been identified as an important post-spawning habitat for June sucker due to its proximity to the Provo River, Spanish Fork River, and Hobble Creek and the diverse, productive habitat at higher water levels (USBR and USU 1987) (UDWR and USU 1995). The U.S. Bureau of Reclamation suggested that zooplankton densities in Provo Bay (on average

three times greater than the rest of the lake) provide an important and efficient food source to meet energy demands of post-spawn June sucker. In 1978 and 1979, the U.S. Bureau of Reclamation sampled 126 suckers from Utah Lake, of which 102 were June sucker captured in Provo Bay [USBR and UDWR 1980]. Additionally, the Hobble Creek restoration project in 2008 (west of I-15) created a meandering stream channel and floodplain ponds that function as a delta interface between Hobble Creek and Utah Lake. This area provides rearing habitat for young June suckers that may enter the floodplain ponds and benefit from vegetative cover and productive conditions to grow and survive.

June sucker have also been observed to "stage" in Provo Bay prior to migrating up the Provo River to spawn. In a study conducted by Utah State University, 9 of 13 June sucker that were tagged prior to the spawning run were detected in Provo Bay either prior to, during, or after the spawning in the Provo River in 2004 (Buelow et al. 2006). During the spawning run in the Provo River that year, an additional 11 June sucker were tagged and seven of these fish were subsequently detected moving into Provo Bay. Thus, a total of 67 percent of the 24 tagged fish entered the mouth of Provo Bay between April 12 and June 15, 2004 (CUWCD and JSRIP 2006).

Provo Bay is shallower than other areas of the lake, which may contribute to its suitability as pre- and post-spawning habitat for June sucker. However, shallow conditions result in great variation in water temperature in the bay. Water temperature was monitored in Provo Bay in 2004 using several temperature loggers located throughout the bay, and one placed approximately 1.8 miles from the bay in the open limnetic zone of Utah Lake (CUWCD and JSRIP 2006). Water temperatures in the mouth of Provo Bay ranged from 8 to 26° C, with a mean of 15° C (Standard Deviation 3.64) between April and June 2004.

The research also found that the daily range in water temperature was more significant in Provo Bay than in the lake. Though the temperatures in Provo Bay may contribute to its productivity and suitability for June sucker, there appears to be a minimum lake level below which these fish do not move into the bay. The CUWCD and JSRIP found that when water level receded to 5.2 feet below the "compromise" elevation, abundance of tagged fish declined to zero in the mouth of Provo Bay.

Wildlife (listed on the ESA)

Terrestrial species for which at least marginal habitat potentially occurs in the project area include the Columbia spotted frog (*Rana luteiventris*) (USFWS 2002), a State conservation species (sensitive species) managed under a multi-partner conservation agreement and the western toad (*Bufo boreas*) a species of concern in the state of Utah (Stebbins 1985, Biotics Database 2005). Portions of the existing Hobble Creek channel may provide potentially suitable habitat for these species. Suitable habitat may also be present in the project area around wetlands west of the Springville City Community Park.

The Yellow-billed Cuckoo (*Coccyzus americanus*) is federally-listed as a candidate species, and UDWR lists the Yellow-billed Cuckoo as a sensitive species in Utah County. In Utah the Yellow-billed Cuckoo is known to prefer desert riparian woodlands comprised of willow, Fremont cottonwood (*Populus fremontii*), and dense mesquite (*Prosopis* spp.) (Hughes 1999). Despite the 2006 confirmed Yellow-billed Cuckoo observation listed in Table 3-6, suitable habitat for the species is greatly limited within the project area.

Utah State Sensitive Wildlife Species

These are species that are federally listed as either threatened, endangered or candidate and species for which a conservation agreement is in place. Scientific evidence has been collected to substantiate a threat to continued population viability in the state and this designation is intended to promote conservation actions that would ultimately prevent it from being listed as threatened or endangered under the ESA. These species are also listed in Table 3-6 (found on the following page).

Species listed under the ESA as threatened, endangered, or candidate and the Utah State Sensitive Wildlife Species known to occur within the project area are summarized in Table 3-6. The table indicates the species category (threatened, endangered, candidate, or state sensitive) and its observation within the project area vicinity.

TABLE 3-6: HISTORIC OBSERVATIONS OF THREATENED, ENDANGERED, OR SENSITIVE SPECIES IN THE PROJECT AREA

Common Name (*Scientific Name*)	Category	Year of Confirmed Observation	Comments
AMPHIBIANS			
Columbia spotted frog (*Rana luteiventris)*	State Sensitive	1996	Species with a conservation agreement.
Western toad *(Bufo boreas)*	State Sensitive	Yes (date unknown)	Wildlife species of concern
BIRDS			
American White Pelican *(Pelecanus erythrorhynchos)*	State Sensitive	2010	Wildlife species of concern
Bald Eagle (*Haliaeetus leucocephalus)*	State Sensitive	2010	Wildlife species of concern
Black Swift *(Cypseloides niger)*	State Sensitive		Wildlife species of concern
Bobolink *(Dolichonyx oryzivorus)*	State Sensitive	2003	Wildlife species of concern
Ferruginous hawk *(Buteo regalis)*	State Sensitive	1940	Wildlife species of concern
Greater sage-grouse *(Centrocercus urophasianus)*	ESA Candidate Species	1993	ESA Candidate Species

TABLE 3-6: HISTORIC OBSERVATIONS OF THREATENED, ENDANGERED, OR SENSITIVE SPECIES IN THE PROJECT AREA

Common Name (*Scientific Name*)	Category	Year of Confirmed Observation	Comments
Lewis' woodpecker *(Melanerpes lewis)*	State Sensitive	2008	Wildlife species of concern
Long-billed curlew *(Numenius americanus)*	State Sensitive	2008	Wildlife species of concern
Northern goshawk *(Accipiter gentilis)*	State Sensitive	2005	Species with a conservation agreement.
Short-eared owl (*Asio flammeus)*	State Sensitive	2009	Wildlife species of concern
Yellow-billed cuckoo *(Coccyzus americanus)*	ESA Candidate Species	2006	ESA Candidate Species
INVERTEBRATES			
California floater *(Anodonta californiensis)*	State Sensitive	1936	Wildlife species of concern
MAMMALS			
Kit fox *(Vulpes macrotis)*	State Sensitive	1972	Wildlife species of concern
Townsend's big-eared bat *(Corynorhinus townsendii)*	State Sensitive	1998	Wildlife species of concern
REPTILES			
Smooth greensnake *(Opheodrys vernalis)*	State Sensitive	1941	Wildlife species of concern
FISH			
June sucker *(Chasmistes liorus)*	Endangered	2012	Endangered
Least chub *(Iotichthys phlegethontis)*	ESA Candidate Species	1950	ESA Candidate Species

Source: Utah Conservation Database, available at http://dwrcdc.nr.utah.gov/ucdc/.

Environmental Consequences

The Joint Lead Agencies have been prepared a Biological Assessment for the East Hobble Creek Restoration Project. In response to the Biological Assessment, the USFWS has prepared a Biological Opinion (see Appendix B for copy of the Biological Opinion). The Biological Assessment and Biological Opinion detail the proposed project, lists the threatened, endangered, and candidate species that may occur within the project area, the proposed project effects on each ESA species, and conservation measures to avoid and minimize potential impacts to ESA species.

No-Action Alternative

Under the No-Action Alternative, the amount of June sucker spawning would continue to be limited by poor habitat conditions and the presence of fish barriers. This limitation of spawning

will continue to result in reduced production of June sucker within Hobble Creek and hinder the establishment of a self sustaining spawning run within the tributary. Additionally, without modification or removal of the Packard Dam and 1000 North irrigation diversions the possibility of entrainment of adult and larval June sucker will remain and could result in harm or mortality of an endangered species.

The other ESA listed species and Utah State Sensitive Wildlife would not be impacted by the No-Action Alternative.

Proposed Action Alternative

The elements of the Proposed Action Alternative that may potentially impact threatened, endangered, candidate and sensitive species would be the habitat restoration, stream channel enhancement, and the modification or removal of the diversion structures. Table 3-7 lists the effect determination for the June sucker, Ute-ladies'tresses, and the Yellow-billed cuckoo.

Table 3-7: Determination of Effect on Endangered, Threatened, or Candidate Species that may occur within the Project Area

Common Name (*Scientific Name*)	**Effect Determination**
June sucker (*Chasmistes liorus*)	May affect, but is not likely to adversely affect
Ute ladies'- tresses (*Spiranthes diluvialis*)	May affect, likely to adversely affect
Yellow-billed cuckoo (*Coccyzus americanus*)	No effect

The endangered June sucker would benefit from the Proposed Action Alternative as it would improve spawning conditions and allow for movement of adults and drifting larvae. These steps would aid in creating a self-sustaining spawning run in Hobble Creek, one of the criteria for delisting the species under the ESA. The Proposed Action Alternative, through enhancement of the stream channel and improvements of river function would potentially improve habitat conditions for sensitive species such as the Columbia spotted frog and the western toad.

The Proposed Action would provide indirect benefits to other threatened, endangered, or state sensitive species by improving habitat conditions for the species themselves or their prey. An improvement in fish community abundance and diversity would benefit pelicans and other piscivorous birds that may use the area to search for prey. Similarly, raptor species such as the ferruginous hawk could also benefit from an increase in the abundance of small mammals as restoration activities provide a more diverse and productive understory.

Mitigation

The mitigation (or conservation measures) for June sucker and Ute ladies'-tresses are listed below (none for the Yellow-billed cuckoo since it likely doesn't occur within the area). The Joint Lead Agencies will continue Section 7 consultation under the ESA with the USFWS. Additional mitigation measures are found in the Construction Impacts section of this document.

June Sucker

Potential impacts to the June sucker would occur during the construction phase of the project. In order to avoid those impacts no construction would be allowed to occur during the June sucker spawning period beginning April 1st and continuing through July 31st. In addition, during construction the contractor or responsible representative shall take appropriate care to reduce sedimentation or foreign matter generated by the construction activities from entering Hobble Creek. Precautions will include, but are not limited to; appropriate distance buffers, dust control measures, screens, and other considerations.

Ute ladies'-tresses

The State of Utah has documented an occurrence of Ute ladies'-tresses adjacent to the project area and preliminary surveys have indicated the presence of suitable Ute ladies'-tresses habitat within the proposed project area. Additionally, some anecdotal accounts suggest that Ute ladies'-tresses do occur near Hobble Creek, particularly along the reach from I-15 to 1650 West. In order to avoid and minimize project impacts to Ute ladies'-tresses the joint lead agencies would commit to the following conservation measures:

- Prior to any ground disturbing activities, pre-project habitat assessments will be completed within potential habitat across 100% of the project disturbance area, including areas where hydrology might be affected by project activities, to determine if suitable Ute ladies'-tresses habitat is present. These assessments may be conducted outside of the flowering period to determine whether the project area exhibits the characteristics of suitable habitat. If suitable habitat is found to exist on the site, then surveys for Ute ladies'-tresses must be conducted.

- Surveys for Ute ladies'-tresses will be conducted in accordance with the USFWS Interim Survey Requirements. Surveys will be conducted during the blooming season, typically in early August through mid-September. The appropriate flowering time for Ute ladies'-tresses will be identified from coordination with the USFWS based upon a nearby reference population. Surveys within suitable habitat are recommended annually for three consecutive years by a qualified botanist to determine if the orchid is present within the habitat. If Ute ladies'-tresses surveys cannot be conducted annually for three consecutive years, all suitable habitat will be considered occupied[5] habitat for Ute ladies'-tresses.

[5] *Occupied habitat* is defined as areas currently or historically known to support Ute ladies'-tresses; synonymous with "known habitat."

- A qualified botanist will flag areas of suitable habitat within each reach prior to construction activities, and assist the contractor with establishing ingress and egress areas to avoid and minimize impacts to suitable habitat.

- The contractor or responsible representative will avoid and minimize impacts to suitable habitat from all construction activities associated with the project. When complete avoidance is not possible, the area of permanent, direct impact to Ute ladies'-tresses suitable habitat will be documented and calculated by a qualified botanist to help determine mitigation requirements.

    a. Mitigation will be performed to compensate for direct, permanent impacts to suitable Ute ladies'-tresses habitat. Mitigation will not be performed for temporary impacts to Ute ladies'-tresses suitable habitat. Temporary impacts include activities that will temporarily disturb suitable habitat but will not render the habitat unsuitable for the species.

    b. Mitigation measures for direct, permanent impacts include offsetting these impacts at a 3:1 area ratio through land preservation or land conservation of unaffected, occupied habitat.

- When avoidance of suitable habitat is not possible, the upper part of the soil profile will be salvaged and relocated to another location within the same parcel where the hydrology is sufficient to support Ute ladies'-tresses. Because salvage efforts have a high failure rate, this activity is considered an impact minimization strategy, but the salvaged area would still be included in the mitigation calculation. However, if the re-establishment or creation of suitable habitat is successful and Ute ladies'-tresses remains on the site after construction, the protected habitat of Ute-ladies'-tresses from this project may be considered as a mitigation bank for future projects to offset impacts to the species.

- No construction will occur during the flowering period of Ute ladies'-tresses if flowering Ute ladies'-tresses are present, July 31 – September 15.

Once completed, the project may have a positive impact on Ute ladies'-tresses by restoring habitat features more suitable for supporting populations of the flower. With the supplementation of flows in Hobble Creek, such habitat and suitable hydrologic conditions will be maintained.

3.16 Visual Resources

This section describes the existing visual resources within the Project Area and the potential impacts of the Proposed Action. NEPA requires that consideration be given to determine the effects of the Proposed Action on the quality of the human environment which includes visual resources. Visual

resources are evaluated for impacts based on effects to view corridors, landscape features, streetscape and natural physical features.

Affected Environment

The visual composition of the Project Area includes a mix of residential, agricultural, and commercial sites. There are a number of transportation corridors within the project area including Union Pacific and Denver & Rio Grande railroads, I-15, State Street (US-89), and many residential streets. Hobble Creek and its adjacent vegetation provide a fundamental component of the area's visual resources. The Wasatch Mountains serve as another primary visual resource in the Project Area.

Environmental Consequences

No-Action Alternative

The No-Action Alternative would have no negative impacts to visual resources within the Project Area. The release of the ULS water would likely slightly improve the visual quality of the Project Area by increasing the amount of water in Hobble Creek.

Proposed Action Alternative

The habitat restoration would slightly change the visual quality in the immediate location of the restoration. The habitat restoration includes reestablishing native vegetation including trees, shrubs, and other riparian plants.

The modification or removal of the existing diversions would alter the look of these structures. However, the modification or removal of the structures would not degrade the visual quality of the area. Along the majority of the Project Area the modification or removal of these structures would return the visual quality of Hobble Creek to a more natural state. The modification or removal of these structures would decrease the amount of debris that builds up behind the diversions. This debris often includes trash and other items that degrade the visual quality of the stream. Furthermore, the release of supplemental water is likely to maintain a better visual quality by providing water to the streambed and supporting adjacent vegetation.

Overall, the Proposed Action Alternative would have little to no negative impact on visual quality. Furthermore, the habitat restoration, modification or removal of diversion structures and the release of supplemental water would likely improve the visual quality along Hobble Creek.

3.17 Wetlands and Waters of the U.S.

This section describes wetlands areas in and adjacent to the study area. Wetlands have been defined by the USACE and the EPA, pursuant to Section 404 of the CWA. Wetlands are also defined by Executive Order 11990: Protection of Wetlands. The following presents the federal definition of Waters of the U.S., including wetlands. Wetlands are a subset of waters of the United States and receive protection under Section 404 of the CWA. The term "Waters of the U.S." as defined in Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) includes:

1. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.

2. All interstate waters including interstate wetlands. (Wetlands are defined by the federal government [CFR, Section 328.3(b), 1991] as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.)

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:

    - that are or could be used by interstate or foreign travelers for recreational or other purposes;
    - from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    - that are used or could be used for industrial purposes by industries in interstate commerce.

4. All impoundments of waters otherwise defined as waters of the United States under the definition.

5. Tributaries of waters identified in numbers 1 through 4.

6. Territorial seas.

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in numbers 1 through 6.

Waters of the U.S. do not include previously converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with EPA (328.3[a][8] added 58 FR 45035, Aug. 25, 1993).

Affected Environment

Wetlands were delineated in accordance with USACE's guidelines. The National Wetlands Inventory (NWI) Maps were used as a base map to determine the presence of potential jurisdictional waters.

Wetlands

To determine jurisdictional wetland areas, the three wetland indicators need to be documented; vegetation type, hydric-soil characteristics, and hydrology. All three wetland indicators are required for a wetland area to be determined jurisdictional under USACE authority.

Waters of the U.S.

The Hobble Creek channel between the Ordinary High Water Mark (OHWM) is considered 'waters of the U.S.' and is regulated by the USACE and the Utah Division of Water Rights.

Environmental Consequences

No-Action Alternative

The No-Action Alternative would not alter the existing conditions in the Project Area and would have no impact on wetland resources.

Proposed Action Alternative

The stream channel enhancement, Hobble Creek habitat restoration, and modification or removal of diversion structures has the potential to impact wetlands and/or waters of the U.S. The other aspects of the Proposed Action Alternative would have no impact on wetlands or waters of the U.S.

Stream Channel Enhancement on Hobble Creek

Stream channel enhancements would occur within the Hobble Creek channel.

Hobble Creek Habitat Restoration

It's anticipated that habitat restoration would impact some jurisdictional wetland areas. However, a formal jurisdictional wetland delineation has not been completed within the Project Area. However, as land is acquired jurisdictional wetland delineations would be completed.

Modification or Removal of Diversion Structures

The modification or removal of the diversion structures may impact waters of the U.S. if the construction is below the OHWM.

Mitigation

Upon implementation of the Proposed Action Alternative, further coordination with USACE and the Utah Division of Water Rights is warranted to determine permitting and specific mitigation requirements. A Section 404 of the CWA permit will be obtained for all work prior to impacting any jurisdictional wetlands or waters of the U.S.

3.18 Vegetation and Invasive Species

This section evaluates the existing vegetative resources in the Project Area, along with the likelihood of the Proposed Action Alternative to introduce invasive species and/or noxious weeds into the Project Area. Noxious weeds typically have characteristics that enhance their capability to successfully reproduce and spread over long distances. For example, these species often have abundant seed

production, the ability to reproduce and highly effective means of seed dispersal (e.g., the presence of hooks or barbs on the seeds enabling them to attach to animal fur, clothing, vehicles, and equipment). The Utah Noxious Weed Act (Section 4-17-3) defines noxious weeds as "any plant that is especially injurious to public health, crops, livestock, land or other property".

Affected Environment

Vegetation

The land adjacent to the Project Area is primarily composed of disturbed lands containing residential or agricultural uses. Between I-15 and 400 West both Hobble Creek is contained by stream banks which are typically well-vegetated with willows, cottonwoods, and Russian olives. However, the lateral extent of riparian vegetation is limited because the stream banks prevent the Hobble Creek from being connected to a broad, well-developed floodplain. The total width of riparian vegetation typically extends about 20 to 35 feet beyond the banks of Hobble Creek on both sides. One relatively large stand of mature cottonwood trees is present beyond the stream bank on the north side of Hobble Creek upstream of 950 West; this stand is likely a relic from a previous channel or floodplain location.

Between 400 West and the MSL pipeline, the banks of Hobble Creek have been stabilized and/or confined by the stream banks. Hobble Creek is largely located within the urban Springville City area. The riparian habitat is limited to a narrow width along the channel banks.

Invasive Species

Invasive species and noxious weeds are known to exist in the general vicinity of the Project Area. These species may include giant ragweed (*Ambrosia trifida*), bull thistle (*Cirsium vulfare*), Russian olive (*Elaeagnus angustifolia*) and hemp dogbane (*Apocynum cannabum*).

Environmental Consequences

No-Action Alternative

Vegetative resources are not likely to change under the No-Action Alternative. Therefore there would be no impacts to vegetation and invasive species from the No-Action Alternative.

Proposed Action Alternative

The Proposed Action is not anticipated to adversely impact the vegetative resources within the Project Area. However, the Hobble Creek Habitat Restoration component of the Proposed Action would directly impact the vegetation under its footprint. It should be noted that the recommended flow regimes would provide more water to vegetation adjacent to Hobble Creek by increasing water levels during the summer months thus benefiting the vegetative resources along the stream. The change in the flow regimes would have a beneficial impact on all native vegetation in the project area. The habitat restoration and the stream enhancements aspects of the Proposed Action include the removal of non-native, invasive vegetation with the addition of native vegetation species.

3.19 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for federally recognized Indian tribes or individuals. The U.S. Department of Interior's policy is to recognize and fulfill its legal obligations to identify, protect and conserve the trust resources of federally recognized Indian tribes and tribal members, and to consult with the tribes on a government-to-government basis whenever plans or actions affect tribal trust resources, trust assets, or tribal safety. Under this policy, the federal government is committed to carrying out its activities in a manner that avoids adverse impacts to ITAs when possible, and to mitigate or compensate for such impacts when it cannot. All impacts to ITAs, even those considered insignificant, must be discussed in the trust analyses in NEPA compliance documents and appropriate compensation or mitigation must be implemented.

Trust assets may include lands, minerals, hunting and fishing rights, traditional gathering grounds, and water rights. Impacts to ITAs are evaluated by assessing how the action affects the use and quality of ITAs. Any action that adversely affects the use, value, quality or enjoyment of an ITA is considered to have an adverse impact on the resources.

Affected Environment

There are no known ITAs in the Project Area. Formal consultation with Native American tribes was undertaken during the scoping process (see discussion in Chapter 4). At this time no ITA concerns have been identified and no tribes have responded to the request for consultation.

Environmental Consequence

No-Action Alternative

The No-Action Alternative would have no effect on ITAs.

Proposed Action Alternative

There are no ITAs identified for the Project Area. Therefore, the Action Alternative would have no effect on ITAs.

3.20 Construction Impacts

Construction activities for the Proposed Action Alternative (stream channel enhancement, habitat restoration, and modification or removal of diversion structures) would cause temporary impacts to the environment. These impacts would be a result of heavy earth-moving equipment, construction staging areas, and other construction related activities. The provision of the additional conserved water and use of Hobble Creek Valve Station would not result in construction impacts. Where applicable, the standard specifications from the American Public Work Association (APWA) are referenced by name (2007 edition Utah Chapter of the APWA, Manual of Standard Specifications). The 2007 APWA standard specifications are currently used by the City of Springville.

Air Quality

Construction activities associated with the modification or removal of the diversions, the construction of the habitat restoration, and the habitat enhancement may result in a short-term, temporary impact to

air quality in the Project Area. Construction activities are likely to temporarily increase fugitive dust (PM_{10}) levels from the use of construction vehicles for earthwork activities.

Best Management Practices (BMPs) would be employed during construction to mitigate for potential short-term, temporary impact on air quality due to construction related activities. The BMPs may include, but are not limited to, the application of dust suppressants and watering to control fugitive dust, minimizing the extent of disturbed surfaces, restricting earthwork activities during times of high wind, and limiting the use of and speeds on unimproved road surfaces. To mitigate potential air quality impacts during construction, the Contractor would be required to follow APWA specifications for Abatement of Air Pollution and Dust Control which are summarized below:

Abatement of Air Pollution

The Contractor would be required to utilize reasonable methods and devices to prevent, control, and otherwise minimize atmospheric emissions or discharges of air contaminants. Equipment and vehicles that show excessive emissions of exhaust gases would not be allowed to operate until corrective repairs or adjustments are made to reduce emissions to acceptable levels.

Dust Control

The Contractor would be required to comply with all applicable federal, state, and local laws and regulations, regarding the prevention, control, and abatement of dust pollution. The Contractor would attend to all dust control requirements within 500-feet of residences and buildings. The methods of mixing, handling, and storing cement and concrete aggregate would include means of eliminating atmospheric discharges of dust.

Farmlands

During construction of the habitat restoration and the modification or removal of diversion structures, it's anticipated that some agricultural operations may be temporarily impacted (the direct conversion of agricultural lands is addressed under Land Use in this chapter). Construction staging areas, haul roads, or other construction activities may temporarily impact agricultural operations but would be restored after construction.

The Joint Lead Agencies would maintain access to existing farmland and agricultural areas during the construction phase to the proposed project. Impacts on irrigation systems would be avoided or reconstructed. Construction work for the modification or removal of diversion structures would be completed during the low-flow, non-irrigation season on Hobble Creek. The Joint Lead Agencies would coordinate with affected property owners and irrigation companies to address their concerns to the extent possible.

Hazardous Materials

Construction activities have the potential to discover unknown hazardous materials. In addition, typical construction activates may involve the use of known hazardous chemicals or materials which must be disposed in accordance with federal, state, and local regulations.

Due to the location of the Project Area, BMPs would be implemented to reduce the risk of potential introduction of hazardous materials into the Project Area during construction. Since construction activities associated with the Proposed Action Alternative are planned within the Hobble Creek stream channel, BMPs would be in place to prevent hazardous materials from entering the water. The measures would likely include performing construction activities during times of low flows and outside of the irrigation season, the placement of sediment control structures within areas of construction, and the monitoring of the Project Area to control runoff and sediment from construction activities. The Contractor would be required to follow APWA standard specification for handling hazardous materials which is summarized below:

Waste Disposal

Hazardous materials (defined by 40 CFR 261.3; Federal Standard No. 313) used by the Contractor or discovered during work would be disposed of in accordance with applicable federal, state, and local laws and regulations. Waste materials discovered at the construction site would be immediately reported to the appropriate officials.

Cultural Resources

Prior to construction, a cultural resource survey would be conducted to identify any historic, archaeological, and paleontological resources previously undocumented. However, construction activities have the potential to discover previous unknown cultural resources.

For cultural resources discovered during construction, the contractor would be required to suspend all activities in the vicinity and to notify the Project Manager. A treatment plan would be developed and coordination with the State Historic Preservation Office (SHPO) would occur immediately. The Contractor would be required to follow APWA standard specification (and CUWCD requirements) for preservation of cultural resources which is summarized below:

Preservation of Cultural Resources

The Contractor would cease work in the vicinity of any historical, prehistorical, or archaeological materials discovered during construction. A qualified archaeologist would determine the importance of the discovery. All access roads, construction staging areas, fill disposal sites or other areas impacted as a result of construction activities would have a cultural clearance completed prior to disturbance. Cultural clearances must be done in advance to allow for coordination with SHPO, and the SHPO's response of concurrence or non-concurrence with findings.

Noise

Noise would be generated during the construction of the Proposed Action Alternative and could be an inconvenience to nearby residents and businesses. However, the impacts would be temporary and only occur during the construction phase of this project. The majority of construction noise is a result of equipment. Table 3-8 (found on following page) lists some of the more common types of construction equipment that could be used for the East Hobble Creek Restoration Project.

TABLE 3-8: CONSTRUCTION EQUIPMENT NOISE LEVELS

Construction Equipment	Noise Level 50 feet from Source (dBA)
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Crane	83-88
Dozer	85
Generator	81
Impact Wrench	85
Jack Hammer	88
Loader	85
Paver	89
Pneumatic Tool	85
Saw	76
Scraper	89
Truck	88

Construction noise impacts are considered temporary. The Contractor would be required to follow APWA standard specification for noise levels in the construction area which is summarized below:

Noise Levels in the Construction Area

The Contractor would be required to comply with applicable federal, state, and local laws, orders, and regulations concerning the prevention, control, and abatement of excessive noise. The Contractor would monitor construction noise levels within the construction area. Mufflers on construction equipment shall be checked regularly to minimize noise.

Vibration

Vibration would be generated during the construction of the Proposed Action Alternative and could be an inconvenience to nearby residents and businesses. However, the impacts would be temporary and only occur during the construction phase of this project. The majority of construction vibration is a result of heavy equipment use. The Contractor will be required to adhere to APWA specification for Compliance with Laws and Regulations.

Water Quality

During construction, effects to water quality would be temporary. Depending on the activity, construction outside of Hobble Creek channel would have minimal impact on the water quality while the stream channel enhancement and modification or removal of diversion structures would have more of an impact. Construction work within Hobble Creek would require the stream to be temporarily diverted to the opposite bank of the construction activities. This could be accomplished by the use of coffer

dams. Upon completion of the work, the coffer dams (or whatever means used to reroute the water in Hobble Creek) would be removed. These impacts would be temporary and only last during construction.

For construction work within or near Hobble Creek, plans and specifications would be prepared showing the limits of potential impact, the methods anticipated to complete the work, along with a restoration component. The Contractor would be required to monitor water quality for turbidity and pH Control to meet the States water quality standards.

Construction activities that disturb more than one acre require the development of a Storm Water Pollution Prevention Plan (SWPPP) to comply with the Utah Pollutant Discharge Elimination System permit (UPDES). The SWPPP may include such measures as using silt fences, fiber rolls, check-dams, or other techniques to minimize impacts to the surrounding receiving waters. The Contractor will be required to adhere to APWA standard specification for Drainage and Sediment Control.

Wildlife

Construction related activities may disturb wildlife and their habitats due to higher than usual noise levels, proximity of construction equipment, and other effects. The Contractor would be required to follow APWA specification for Wildlife Species Protection.

Fisheries

Construction related activities within Hobble Creek may disturb fisheries and their habitats. The Contractor would be required to schedule and perform construction work to minimize the impacts to aquatic life. The Contractor will be required to adhere to APWA specification for Aquatic Life and Associated Habitat Protection.

Threatened, Endangered and Sensitive Species

Construction related activities within Hobble Creek have the potential to disturb threatened, endangered, and sensitive species. Construction activities within Hobble Creek would be limited between August 1st and March 31st to avoid adversely affecting June sucker, an endangered species. During and prior to implementation of the proposed action, the Joint Lead Agencies will employ the conservation measures described below. These conservation measures are not specific to biological resources protected under the ESA, but are intended to avoid and minimize project impacts altogether:

- Minimizing soil erosion in wetland areas with the use of silt fences;
- Minimizing soil disturbance by operating heavy equipment on top of temporary earth fills above geotextile mats;
- No excavated fill material will be placed in wetland areas;
- Relocating salvaged soils to an appropriately graded location;
- Removal of invasive plant species along the Hobble Creek channel as part of stream restoration work;
- Disturbed areas will be re-graded to their natural contours and re-vegetated with appropriate vegetation;

- If bank stabilization and erosion control structures are necessary, they should be properly designed to maintain or enhance natural stream function (sinuosity, gradient, hydrology, and sediment transport);
- Concrete, asphalt, steel or other human-made materials will not be used for bank stabilization or in the active stream channel. Boulders, root-wads and other natural materials found locally will be used to stabilize stream banks (if needed);
- Equipment will be cleaned to remove noxious weeds/seeds and petroleum products prior to moving on site;
- Fueling of machinery should occur off site or in a confined, designated area to prevent spillage into waterways and wetlands. Oil booms will be on site and placed downstream of the project site prior to beginning work if equipment will be operating in the low flow channel;
- Materials will not be stockpiled in the riparian area or other sensitive areas (i.e., wetlands);
- Fill materials will be free of fines, waste, pollutants, and noxious weeds/seeds;
- Equipment will work from the top of the bank or from the channel to minimize disturbance to the riparian area and to protect the banks. Heavy equipment will avoid or minimize crossing and/or disturbing wetlands;
- Ingress and egress access will be kept to a minimum;
- Excavated soils will be sorted into mineral soils and top soils. When backfilling a disturbed site top soils will be placed on top to provide a seed bed for native plants;
- Disturbed areas will be monitored for noxious and undesirable plant species during construction and control actions will be implemented if necessary by the construction contractor; and
- Disturbed areas (work site(s), ingress, egress, stockpile site(s), pit) will be revegetated when appropriate after construction with native plants or certified weed-free native seed. The planting will be monitored for success. If the planting fails it will be reseeded/planted.

Wetlands and Waters of the U.S.

The construction of the habitat restoration, stream channel enhancement, and modification or removal of diversion structures may impact jurisdictional wetlands and waters of the U.S. within the potential area of impact, all wetland areas would be mapped and marked prior to construction.

Depending on the acreage of impact to Hobble Creek and its associated wetlands, either a stream alteration permit would be obtained from the Utah Division of Water Rights or a Clean Water Act Section 404 permit would be obtained from the U.S. Army Corps of Engineers. During the design phase, the Joint Lead Agencies would coordinate with the Utah Division of Water Rights and/or the U.S. Army Corps of Engineers to determine the appropriate permit(s) and other BMPs that may used to minimize impacts to wetlands and waters of the U.S. The Contractor would be required to follow APWA standard specification for Wetlands and Riparian Areas which is summarized below:

Wetlands and Riparian Areas

A plan would be prepared by the Contractor outlining methods to protect wetlands and riparian vegetation during construction. Procedures to avoid wetland impacts may include the use of silt fencing and avoiding impacts on surface waters. Heavy equipment in wetland areas would be

operated on temporary earth fills placed on geotextile mats (or other appropriate measures) to minimize soil disturbance. No excavated material would be placed in wetland areas. Impacted wetland soils would be removed, segregated and stockpiled in upland areas for reuse, if appropriate. Disturbed areas would be graded to match previous contour elevations and revegetated with a mixture of wetland plant species.

Vegetation and Invasive Species

Construction activities associated with the Proposed Action Alternative have the potential to introduce or increase invasive species and/or noxious weeds in the project area. In addition, staging areas, access roads, and other construction activities would temporarily require the removal of native vegetation. Earth-moving equipment would be cleaned prior to mobilizing onto the project site. Also, known locations of invasive species would be sprayed with an appropriate and approved herbicide 10 days prior to construction activities. The Contractor would be required to follow APWA standard specification for invasive weed control, the use of herbicide and pesticides, and revegetation which are summarized below:

Invasive Weed Control

The Contractor shall identify target species for treatment to avoid treating or removing non-target, native species.

Use of Herbicides and Pesticides

Should the Contractor find it necessary to use herbicides and pesticides, a plan would be submitted for such use for approval. Permitted herbicides and pesticides would be only those registered with the Environmental Protection Agency.

Revegetation

The Contractor would be required to reestablish vegetation in impacted construction areas. Vegetated areas disturbed during construction would be returned to their natural contours and be revegetated.

Public Information and Coordination

The Joint Lead Agencies would continue to coordinate with the general public and appropriate federal, state, and local officials during construction of the proposed project. The Contractor may be required to follow APWA standard specification for a Public Information Program.

Construction Work Hours

The work hours would be coordinated with the local jurisdictions prior to construction. The Contractor will be required to adhere to APWA standard specification for Compliance with Laws and Regulations.

3.21 Indirect Impacts

The nature of the East Hobble Creek Restoration project is such that no indirect impacts are anticipated. Therefore, indirect impacts are not analyzed in this Environmental Assessment.

3.22 Cumulative Impacts

This section evaluates potential cumulative effects that result from the incremental effects of the proposed project improvements when combined with past, present, and reasonably foreseeable future actions (40 CFR 1508.7). The geographic area addressed for this cumulative impact analysis is Springville City.

Past Actions

The major past actions that have had an effect on the Springville City area include:

- Land Development – Land development occurred as the area was settled by pioneers sent from Salt Lake City. Upon arriving in the general area, pioneers converted undisturbed lands within the city boundaries to farmlands for growing crops and pasture. With non-agricultural job growth in the Provo/Orem area (and within Springville City), the population of the Springville area grew which began the conversion of farmland to residential and commercial developments.

- Transportation Corridors – With the completion of I-15 through the area in the late 1960s, the majority of traffic on US-89 (State Street in Springville) used the newly completed interstate to access areas north and south of the city. Commercial developments were constructed near the interstate mainly near the two Springville interchanges. US-89 continued to play a vital role for local and regional transportation and commercial development. The two main railroad corridors through Springville, the Union Pacific Railroad (UPRR) and the Denver and Rio Grande Western Railroad (D&RGW), were completed in the late 19th Century. These railroads helped connect Springville City with the more populated areas to the north including Provo and Salt Lake City and to cities in the south part of Utah County.

- Development of Hobble Creek for Irrigation – The construction of the Island Dam, Swenson Dam, Sage Creek Dam, Packard Dam, and the 1000 North Dam for irrigation water has impacted Hobble Creek. Often, these diversions leave little to no water in Hobble Creek during dry years in the late summer months.

- Construction of The Mapleton-Springville Lateral – The Mapleton-Springville Lateral (MSL) pipeline was constructed in 1918 as part of the Strawberry Valley Project. The MSL pipeline is seven miles long and extends from the mouth of Spanish Fork Canyon to Hobble Creek and provides irrigation water to agricultural fields in Mapleton and Springville. The MSL was converted to a 54-inch diameter HDPE pipe in 2008.

- Habitat Restoration on Hobble Creek West of I-15 – The JSRIP began construction of habitat restoration work along Hobble Creek west of I-15 which was completed in 2008 (see Figure 2-2 in Chapter Two). The restoration work included the acquisition of a 21-acre parcel adjacent to Hobble Creek between I-15 and Utah Lake. The project provides spawning and rearing habitat

for the June sucker and also connected Hobble Creek spawning habitat to Provo Bay rearing habitat.

Present Actions

The present actions that may have an effect on the Springville area include:

- Land Development – The conversion of farmland/agricultural operations to residential and commercial developments is on-going within Springville City. In addition, Springville City is currently constructing the Community Park between 1500 West and 950 West on the north side of Hobble Creek.

- Transportation Corridors – The reconstruction of I-15 through Utah County is anticipated to be completed in December 2012 and would provide for increased access to areas surrounding Springville City.

- Construction of the SFPRC Pipeline – The Interior and CUWCD are currently constructing a 60-inch welded steel pipe from the mouth of Spanish Fork Canyon to the mouth of Provo Canyon. The Provo Reach 2 of this pipeline is currently under construction through Provo City with a connection to the Provo River anticipated within the next two years. The SFPRC included the construction of the Hobble Creek Valve Station located within Springville City.

- MSL Pipeline – The current capacity of the MSL pipeline is limited to 50 cfs during irrigation season since installation of a 54-inch HDPE pipeline in 2008. The capacity is frequently used during the irrigation season by irrigators who have first priority use of the pipeline. In addition, the current configuration of the MSL pipeline has limited availability to release supplemental water to Hobble Creek. The existing MSL connection to Hobble Creek is only 27-inches in diameter and is in deteriorating condition.

Reasonably Foreseeable Future Actions

The reasonable foreseeable future actions include:

- Land Development – The conversion of lands to residential and commercial developments is anticipated to continue into the foreseeable future.

- Transportation – The Utah Transit Authority (UTA) is currently constructing a commuter-rail line from Salt Lake to Provo (FrontRunner) which began operation in December 2012. This commuter-rail line is planned to extend south to Payson by 2030 and would be constructed along the UPRR tracks. A station is planned at 400 South in Springville. In addition, Bus Rapid Transit line between Provo and Spanish Fork is planned along US-89 (State Street) through Springville City by 2030.

- Springville City Community Park – Springville City recently constructed a portion of their Community Park located north of Hobble Creek and west of 950 West. The city plans on constructing other features including baseball diamonds, basketball courts, tennis courts and other amenities.

- MSL Pipeline (Phase 2) – The planned Phase 2 of the MSL pipeline would be constructed by CUWCD as part of the ULS. Phase 2 includes connecting to the Spanish Fork Canyon Pipeline at the south end of the MSL and installing a new, larger pipeline with a new discharge structure on the north end at Hobble Creek. The phase 2 construction will increase the MSL pipeline capacity to 90 cfs during the irrigation season and non-irrigation season capacity to 125 cfs, and allow year-round delivery capability that doesn't presently exist.

- Springville City Secondary Irrigation Project – Springville City has conducted studies that show the need of future water needs within the city. Based on these reports, the city is planning to construct in phases a secondary irrigation system using water rights the city has purchased in the Springville Irrigation Company. CUWCD and Interior have entered into agreements to provide federal funding for the Springville City Secondary Irrigation Project as a water conservation measure under section 207 of CUPCA.

Cumulative Impacts

The incremental impacts resulting from the proposed East Hobble Creek Restoration Project taken into consideration with the past, present, and foreseeable future actions are discussed by each resource that would have a minor impact as addressed in this chapter.

Land Use

The minor impacts to land use would be the footprint of the Proposed Action Alternative for the habitat restoration. Land use would continue to convert from farmland or other uses to residential and commercial developments with or without implementing the Proposed Action Alternative.

Farmlands

The minor impacts to farmlands would be the footprint from the Proposed Action Alternative (habitat restoration) where existing farmlands are located. It is anticipated that farmlands would continue to convert to residential and commercial uses with or without implementing the Proposed Action Alternative.

Floodplains and Stream Channel Conditions

The proposed stream restoration improvements in addition to the related actions would provide improved habitat diversity, increased vegetative cover and improved stream channel conditions throughout the length of Hobble Creek. The stream channel conditions would be improved by implementing the Proposed Action Alternative.

Water Quality

Water quality is likely to see a net benefit when compared to the impact of cumulative effects of related actions. Water temperature during summer months is likely to decrease, while total dissolved solids should decrease and dissolved oxygen levels are likely to increase. With the release of the supplemental water, it is anticipated that the water quality within Hobble Creek would improve.

Wildlife

The habitat restoration component of the Proposed Action Alternative would benefit terrestrial wildlife species.

Fisheries

Fisheries would see a net benefit from the habitat restoration along Hobble Creek, stream channel enhancements, improved water quality and increased flow rates, and the modification or removal of diversion structures.

Threatened, Endangered and Sensitive Species

Threatened, endangered, and sensitive species would benefit by the Proposed Action Alternative. The June sucker would benefit from improved and additional habitat within Hobble Creek, improved water quality and increased flow rates, and the modification or removal of diversion structures.

Visual Resources

The Proposed Action Alternative would most likely provide a net benefit to the visual quality along Hobble Creek.

Wetlands and Waters of the U.S.

The direct impacts to this resource would be the footprint of the Proposed Action in locations where wetlands and waters of the U.S. exist. The incremental impact would result from land use changes as the project area continues to develop to residential and commercial uses.

Cumulative impacts are not anticipated for the following resources:

- Air Quality;
- Environmental Justice;
- Hazardous Materials;
- Cultural Resources;
- Noise;
- Vibration;
- Hydrology;
- Vegetation and Invasive Species; and
- Indian Trust Assets.

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CHAPTER 4: PUBLIC INVOLVEMENT, CONSULTATION, AND COORDINATION

The project's public involvement process was developed to provide early, continuous, and meaningful communication with the project's stakeholders. Public participation and agency consultation for the East Hobble Creek Restoration Project was accomplished using a variety of formal and informal methods, including inter-agency meetings, a public scoping meeting, interested party letters, and stakeholder meetings. The Joint Lead Agencies for the East Hobble Creek Restoration Project are the U.S. Department of the Interior – Central Utah Project Completion Act Office, Utah Reclamation Mitigation and Conservation Commission, and the Central Utah Water Conservancy District. Their responsibilities include implementing the NEPA process and preparing this Environmental Assessment.

4.1 Public Involvement and Scoping

Formal public involvement for this process began in spring 2011. The formal scoping process for the Proposed Action was initiated with a Notice of Intent to Prepare an Environmental Assessment (NOI), published in the Federal Register on March 15, 2011 (FR Doc. 2011-6090). Stakeholders identified for this project include the public, resource agencies, local irrigation companies, Springville City, and Utah County.

Scoping Activities

Scoping activities included field surveys by resource specialists, meetings with and/or presentations to irrigation company personnel, adjacent property owners, Springville City staff and other interested parties.

Interested Parties Letter

A letter was mailed to interested persons (mainly those with property adjacent to Hobble Creek), organizations, and state, local, and federal agencies. The purpose of this letter was to identify the project proponents (the Joint Lead Agencies), summarize the project background, outline the proposed project, to solicit comments or concerns, and invite to the public scoping meeting.

Cooperating Agencies

To assist with the preparation of this EA, the Utah Department of Natural Resources (UDNR), U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Reclamation (Reclamation), and Springville City were invited to be cooperating agencies. A cooperating agency provides technical expertise during the project.

Public Scoping Meeting

A public scoping meeting was held on April 19, 2011 at the Springville Civic Center. CUWCD placed public notices in local newspapers announcing the public meeting to identify and discuss any issues and concerns of the Proposed Project. The meeting type was an open house format with presentation boards that outlined the project's purpose and need, the overall NEPA process, the Proposed Action,

and proposed diversion modifications or removal, and solicited public input. According to the sign-in sheet, 14 individuals attended the public scoping meeting. A total of three responses were received during the public scoping period; two from the general public and the other from a state agency (see discussion below).

Issues Raised by General Public and Agencies

Three responses were received during the public scoping process. Each is summarized below:

- An individual that irrigates from the 1000 North Diversion commented that they have been irrigating from this diversion for a number of years and does not support removing the diversion. This individual suggested that the additional water from the ULS be piped to Utah Lake and not use Hobble Creek for this purpose.

- An individual that walks along and fishes Hobble Creek commented that dewatering practices are damaging to the fish. The commentator suggests that sustained flows yearlong will improve fishing and the overall experience of using the Hobble Creek trail.

- The Utah Division of Wildlife Resources commented through the Utah Public Lands Policy Coordination Office that the Joint Lead Agencies consider exchanging water with irrigation companies that divert out of Hobble Creek through the Hobble Highline/Mapleton Irrigation Diversion in Hobble Creek Canyon. This would help restore flows in Hobble Creek below the debris basin at the mouth of the canyon during the dry mid-summer months.

Review of the Draft EA

The Draft EA was released to the general public and agencies on January 11, 2013. Interested party letters were sent to each property owner along the Hobble Creek channel between I-15 and the MSL. In addition, letters were sent to those that had commented or attended the scoping meeting. A legal notice announcing the availability of the Draft EA was placed in the Daily Herald, Salt Lake Tribune, and the Deseret News newspapers on January 13 and a Federal Register Notice of Availability was published on January 14, 2013. A total of five comments were received on the Draft EA; they are listed along with a response in Table 1 in the Finding of No Significant Impact document.

4.2 Consultation and Coordination

Early consultation invited agencies to participate in the environmental assessment process. Scoping letters were sent to agencies informing them of the project location, project background, Proposed Action and asking for input.

Native American Consultation

The U.S. Department of Interior – Central Utah Project Completion Act Office sent Native American consultation letters to various tribes to solicit comments regarding the proposed project. These letters were sent on August 25, 2011; no response was received from any of the tribes. Follow-up telephone calls were made approximately a month later; no interest was expressed by any of the tribes contacted.

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APPENDIX A – JSRIP RESOLUTION

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Resolution of the June Sucker Recovery Implementation Program (JSRIP)
Use of supplemental water within Hobble Creek to support recovery of the June sucker
Approved by the JSRIP Administration Committee on the 6th day of December 2012

WHEREAS, the JSRIP has been formed to bring about the recovery of the June sucker so that it no longer requires protection under the federal Endangered Species Act and also to allow for the continued operation of existing water facilities and future water development for human use; and

WHEREAS, the Department of the Interior has acquired water through section 207 of the Central Utah Project Completion Act (CUPCA, PL 102-575), for in stream flows and to support June sucker recovery at Hobble Creek; and

WHEREAS, habitat restoration activities have improved conditions in Hobble Creek to provide access for spawning June sucker and rearing habitat for young of year June sucker; and

WHEREAS, the JSRIP continues to pursue opportunities to improve habitat conditions in Hobble Creek to support a self sustaining spawning run of June sucker;

NOW, THEREFORE, based on the 2009 Lower Hobble Creek Ecosystem Flow Recommendation report, the JSRIP recognizes the following priorities and process for determining the use of acquired water within Hobble Creek:

First: Provide base flows during the spring and/or early summer to support June sucker spawning activity.

Second: Provide supplemental flows in the low water periods of late summer when irrigation and other uses may reduce stream flows to levels that may be detrimental to the health of the stream ecosystem.

Third: Provide a spring runoff peak. These peaks can serve as a cue to adult June sucker to initiate spawning migrations into Utah Lake tributaries. They also provide sediment transport, preparing substrate for use as June sucker spawning sites.

Fourth: Provide flows following the peak to facilitate the movement of spawning adults back into Utah Lake and also transport larval suckers to Utah Lake or other suitable rearing habitat, where available.

Flow Pattern Recommendation Process: Each year the Flow Work Group meets to discuss the outlook for the upcoming water year for the Hobble Creek drainage. The Flow Work Group would then advise the JSRIP regarding the outlook for the upcoming water year. The JSRIP would discuss the needs of the June sucker, taking into account the 2009 Lower Hobble Creek Ecosystem Flow Recommendation report, available water supplies, and environmental commitments for delivery of water to Hobble Creek. Based on these factors the JSRIP would recommend a flow pattern to the Department of Interior for use of the water acquired under section 207 of CUPCA. The Department of Interior would work with the Central Utah Water Conservancy District to make appropriate releases to Hobble Creek.

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APPENDIX B – BIOLOGICAL OPINION

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United States Department of the Interior
FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

March 26, 2013

In Reply Refer To:
FWS/R6
ES/UT
6-UT-13-F-010
2013_F_0060

Mr. Reed Murray
U.S. Department of the Interior
Central Utah Project Completion Act Office
302 East 1860 South
Provo, Utah 84606

Mr. Michael C. Weland
Executive Director
Utah Reclamation Mitigation and Conservation Commission
230 South 500 East, Ste. 230
Salt Lake City, UT 84102-2045

Mr. Jason A. Gipson
Regulatory Chief
U.S. Army Corps of Engineers
533 West 2600 South, Suite 150
Bountiful, Utah 84010 -7714

RE: Final Biological Opinion for Department of the Interior Central Utah Project Completion Act Office (CUPCA) East Hobble Creek Restoration Project, Utah County, Utah.

Dear Mr. Murray, Mr. Weland, and Mr. Gipson,

In accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.) and the Interagency Cooperative Regulations (50 CFR 402), this transmits the U.S. Fish and Wildlife Service's (USFWS or Service) final biological opinion (BO) for impacts to federally listed species and designated critical habitat for the East Hobble Creek Restoration Project, Utah County, Utah County, Utah (Project). We

received your request for consultation and final biological assessment (BA) for the Project on March 26, 2013. You determined that the Project "may affect and is likely to adversely affect" the Ute ladies'-tresses orchid (*Spiranthes diluvialis*). You also determined that the Project "may affect but is not likely to adversely affect" the June sucker (*Chasmistes liorus*). Lastly, you determined that the project will have "no effect" for the candidate species the western yellow-billed cuckoo (*Coccyzus americanus occidentalis)*.

We concur that the proposed project may affect, but is not likely to adversely affect the June sucker, or destroy or adversely modify designated critical habitat. We base this conclusion on the fact that the construction window is outside of the spawning period for June sucker, and based on the species' life-history, neither juvenile nor adult June sucker individuals would be present in the project's action area during construction. At a minimum, June sucker would be at least 0.75 miles downstream of the project's action area in Utah Lake. The Service also believes that with proper construction methods being employed, no sedimentation impacts should exist downstream where individuals are present (at least 0.75 miles downstream) in Utah Lake).

This biological opinion evaluates the effect of the Project to the Ute ladies'-tresses orchid. The Ute ladies'-tresses orchid is federally listed as a threatened species and occurs within the proposed project area.

Consultation History

This section summarizes significant steps in the consultation process:

On November 21, 2012, Central Utah Water Conservancy District (CUWCD) submitted a Draft Environmental Assessment (EA) for the East Hobble Creek Restoration Project for our review.

On December 6, 2012, CUWCD requested that we become a cooperating agency on the Hobble Creek EA.

On December 19, 2012, we provided comments on the Draft EA for the East Hobble Creek Restoration Project.

On January 4, 2013, the Service, CUWCD, and CUPCA staff visited various sites discussed in the EA. After the site visits, we discussed our comments submitted to CUWCD on December 19, 2012. The comments were addressed individually and incorporated into the text of the Final EA; however, questions remained regarding the effects determination for Ute ladies'-tresses and the appropriate conservation measures. We requested time to review the project with staff botanists to provide clarity.

On January 7, 2013, we contacted CUWCD via phone to discuss the project relative to Ute ladies'-tresses impacts and the surveys that will be required. It was determined that there will potentially be impacts to Ute ladies'-tresses and suitable habitat. CUWCD was

unsure if three years of surveys for Ute ladies'-tresses would be possible since the land acquisition has not been secured. We stated that if the survey requirements cannot be met, then all suitable habitat within the project area must be considered occupied by the species. We then offered to provide recommended conservation measures for the species to be included in a Biological Assessment (BA). We recommended that a programmatic biological opinion for Ute ladies'-tresses and June sucker would streamline the project and requested that a BA be submitted by CUWCD. CUWCD agreed to submit a BA.

On January 25, 2013, we provided recommended conservation measures to CUWCD for Ute ladies'-tresses.

On February 22, 2013, CUWCD submitted the East Hobble Creek Draft BA, with the conservation measures incorporated. On March 14, 2013, we provided comments on the East Hobble Creek Draft BA.

On March 14, 2013, CUWCD submitted a revised East Hobble Creek BA for our review.

On March 19, 2013, we provided comments for the revised East Hobble Creek BA to CUWCD.

On March 26, 2013, we received the final BA and request for formal consultation from CUWCD.

BIOLOGICAL OPINION

1. Description of the Proposed Action

1.1 Action Area

The action area for the Project is based on the total impact of the Project to the Ute ladies'-tresses. This includes the direct project footprint of actions, the construction area, staging areas, ingress and egress areas, spoils areas, temporary water diversion areas, riprapped stream banks, and downstream effects from channel disturbances. The action area includes the Hobble Creek segment and its associated 100-year floodplain between I-15 and 400 West in Springville, Utah County, Utah.

1.2 Proposed Action

A complete description of the proposed action is found within the BA. The project is summarized briefly, here. The U.S. Department of the Interior Central Utah Project Completion Act Office (CUPCA), the Central Utah Water Conservancy District (CUWCD), and the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), as Joint Lead Agencies, and in cooperation with the June Sucker Recovery Implementation Program (JSRIP), are proposing habitat restoration and enhancement of Hobble Creek between I-15 and 400 West in Springville, Utah County, Utah. The proposed action includes habitat restoration and enhancement in Hobble Creek to improve June sucker (*Chasmistes liorus*) spawning conditions, the addition of

supplemental water to enhance stream flows and the removal or modification of irrigation diversion structures to allow for fish passage. Habitat restoration activities may include: increasing the width of the floodplain or the channel meander corridor by relocating the stream banks, restoring ecologically important floodplain connections, increasing the sinuosity of Hobble Creek, removing invasive vegetation species, and restoring native riverine and riparian habitats. Stream channel enhancements include: creating additional pool and overhead cover habitat, creating low velocity pools, removing invasive plant species along the channel, and adding cobble/gravel substrate for June sucker spawning. Additionally, boulders and riprap may be installed along the Creek to reduce erosion and help maintain the water quality. The work will be performed in areas where feasible and where property or interests in property can be acquired outside of the existing Hobble Creek channel. In other locations, restoration activities will be restricted to the existing stream channel. The proposed project will modify a maximum of 1.9 linear miles of stream channel and remove or modify five irrigation diversion structures. One documented occurrence of Ute ladies'-tresses is predicted to be impacted.

Direct and indirect impacts to Ute ladies'-tresses are estimated based upon a known population within the Project action area for this programmatic consultation. Suitable habitat assessments and surveys for the species have not been performed within the Project area at this time. Impacts to Ute ladies'-tresses will be estimated after suitable habitat assessments and surveys for the species are performed prior to construction activities within each reach of the Project action area. A final calculation of impacted Ute' ladies-tresses individuals and acreage of suitable habitat will be made post-construction and submitted to USFWS.

1.2.1 Applicant Committed Conservation Measures

1.2.1.1 Ute ladies'-tresses

1. Prior to any ground disturbing activities, pre-project habitat assessments will be completed within potential habitat[1] across 100% of the project disturbance area, including areas where hydrology might be affected by project activities, to determine if suitable Ute ladies'-tresses habitat is present. These assessments may be conducted outside of the flowering period to determine whether the project area exhibits the characteristics of suitable habitat[2]. Ute ladies'-tresses occurs on a variety of surfaces ranging from alluvial banks, terraces and floodplains to wet meadows and abandoned ox-bows. In streamside or riparian settings, the species is typically found on shallow alluvial soils that have accumulated over permeable cobbles, gravels or other sediments. In these areas,

[1] Potential habitat is defined as areas which satisfy the broad criteria of the species habitat description; usually determined by preliminary, in-house assessment.

[2] *Suitable habitat* is defined as areas which contain or exhibit the specific components or constituents necessary for plant persistence; determined by field inspection and/or surveys; may or may not contain Ute ladies'-tresses. Habitat descriptions can be found in Recovery Plans and Federal Register Notices for the species at <http://www.fws.gov/endangered/>.

the species typically occurs on surfaces that are old and stable enough to have been colonized by other herbaceous wetland vegetation, where woody vegetation (e.g., willows, cottonwoods) has yet to establish. Populations of Ute ladies'-tresses along the Wasatch Front are not specifically found near lake or stream habitats, but where the hydrology is sufficient to support wet meadow habitat from groundwater and spring sources. If suitable habitat is found to exist on the site, then surveys for Ute ladies'-tresses must be conducted (see number 2, below).

2. Surveys for Ute ladies'-tresses will be conducted in accordance with the U.S. Fish and Wildlife Service's (Service) Interim Survey Requirements. Surveys will be conducted during the blooming season, typically in early August through mid-September. The appropriate flowering time for Ute ladies'-tresses will be identified from coordination with the Service based upon a nearby reference population. Surveys within suitable habitat are recommended annually for three consecutive years by a qualified botanist to determine if the orchid is present within the habitat. If Ute ladies'-tresses surveys cannot be conducted annually for three consecutive years, all suitable habitat will be considered occupied[3] habitat for Ute ladies'-tresses.

3. A qualified botanist will flag areas of suitable habitat within each reach prior to construction activities, and assist the contractor with establishing ingress and egress areas to avoid and minimize impacts to suitable habitat.

4. The contractor or responsible representative will avoid and minimize impacts to suitable habitat from all construction activities associated with the project. When complete avoidance is not possible, the area of permanent, direct impact to Ute ladies'-tresses suitable habitat will be documented and calculated by a qualified botanist to help determine mitigation requirements.

5. When avoidance of suitable habitat is not possible, the upper part of the soil profile will be salvaged and relocated to another location within the same parcel where the hydrology is sufficient to support Ute ladies'-tresses. Because salvage efforts have a high failure rate, this activity is considered an impact minimization strategy, but the salvaged area would still be included in the mitigation calculation. However, if the re-establishment or creation of suitable habitat is successful and Ute ladies'-tresses remains on the site after construction, the protected habitat of Ute-ladies'-tresses from this project may be considered as a mitigation bank for future projects to offset impacts to the species.

6. No construction will occur during the flowering period of Ute ladies'-tresses if flowering Ute ladies'-tresses are present, July 31 – September 15.

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[3] *Occupied habitat* is defined as areas currently or historically known to support Ute ladies'-tresses; synonymous with "known habitat."

1.2.1.2 General Conservation Measures

During implementation of the proposed action, the Joint Lead Agencies will employ the conservation measures described below. These conservation measures are not specific to biological resources protected under the ESA, but are intended to avoid and minimize project impacts.

1. Minimizing soil erosion in wetland areas with the use of silt fences.
2. Minimizing soil disturbance by operating heavy equipment on top of temporary earth fills above geotextile mats.
3. No excavated fill material will be placed in wetland areas.
4. Relocating salvaged soils to an appropriately graded location.
5. Removal of invasive plant species along the Hobble Creek channel as part of stream restoration work.
6. Disturbed areas will be re-graded to their natural contours and re-vegetated with appropriate vegetation.
7. If bank stabilization and erosion control structures are necessary, they will be properly designed to maintain or enhance natural stream function (sinuosity, gradient, hydrology, and sediment transport).
8. Concrete, asphalt, steel or other human-made materials will not be used for bank stabilization or in the active stream channel. Boulders, root-wads and other natural materials found locally will be used to stabilize stream banks.
9. Equipment will be cleaned to remove noxious weeds/seeds and petroleum products prior to moving on site.
10. Fueling of machinery will occur off site or in a confined, designated area to prevent spillage into waterways and wetlands. Oil booms should be on site and placed downstream of the project site prior to beginning work if equipment will be operating in the low flow channel.
11. Materials will not be stockpiled in the riparian area or other sensitive areas (i.e., wetlands).
12. Fill materials will be free of fines, waste, pollutants, and noxious weeds/seeds.
13. Equipment will work from the top of the bank or from the channel to minimize disturbance to the riparian area and to protect the banks. Heavy equipment will avoid or minimize crossing and/or disturbing wetlands.
14. Ingress and egress access should be kept to a minimum.
15. Excavated soils will be sorted into mineral soils and top soils. When backfilling a disturbed site top soils should be placed on top to provide a seed bed for native plants.
16. Disturbed areas will be monitored for noxious and undesirable plant species during construction and control actions should be implemented if necessary by the construction contractor.
17. Disturbed areas (work site(s), ingress, egress, stockpile site(s), pit) will be revegetated when appropriate after construction with native plants or certified weed-free native seed. The planting should be monitored for success. If the planting fails it should be reseeded/planted.

1.2.1.3 Mitigation

1. Mitigation will be performed to compensate for direct, permanent impacts to suitable Ute ladies'-tresses habitat. Mitigation will not be performed for temporary impacts to Ute ladies'-tresses suitable habitat. Temporary impacts include activities that will temporarily disturb suitable habitat but will not render the habitat unsuitable for the species.
2. The area of permanent, direct impact to Ute ladies'-tresses suitable habitat will be documented and calculated by a qualified botanist.
3. Mitigation measures for direct, permanent impacts include offsetting these impacts at a 3:1 area ratio through land preservation or land conservation of unaffected, occupied habitat.

2. Status of the Species

2.1 Regulatory Status

We listed the Ute ladies'-tresses as threatened in its entire range under the Act on January 17, 1992 (USFWS 1992a). No critical habitat has been designated for the species. A draft recovery plan has been prepared, but not finalized (USFWS 1995). The descriptions that follow are derived from this draft recovery plan, a relatively recent rangewide status review (Fertig *et al.* 2005) and additional sources as cited below.

2.2 Species Description and Taxonomy

Ute ladies'-tresses was first described as a species in 1984 by Dr. Charles J. Sheviak from a population discovered near Golden, Colorado (Sheviak 1984). The species is a perennial orchid (member of the plant family Orchidaceae) that first emerges above ground as a rosette of thickened leaves that is very difficult to distinguish from other vegetation, especially given the dense herbaceous vegetation in which the species often grows. Its leaves are up to 1.5 cm (0.6 in.) wide and 28 cm (11 in.) long; the longest leaves are near the base. The usually solitary flowering stem is 20 to 50 cm (8 to 20 in.) tall, terminating in a spike of 3 to 15 white or ivory flowers. Flowering is generally from mid-July through August. However, in some locations it may bloom in early July or may still be in flower as late as early October.

Ute ladies'-tresses looks most similar to hooded ladies'-tresses (*Spiranthes romanzoffina*), but differs in the detailed characteristics of the individual flowers. In Hooded ladies'-tresses (which is more common), each individual flower has petals and sepals that are fused to form a covering, or "hood". In Ute ladies'-tresses, these floral parts are not fused, appearing instead to be widely spread, or "gaping" open.

2.3 Distribution and Status

When it was listed under the Act in 1992, Ute ladies'-tresses was known from 10 extant populations within portions of only 2 States (Colorado and Utah, USFWS 1992a). At

that time, these 10 populations were estimated to encompass approximately 170 acres of occupied habitat. At listing, the species was presumed extirpated in Nevada.

Since listing, Ute ladies'-tresses was rediscovered in Nevada, and new populations were discovered in southern Idaho, southwestern Montana, western Nebraska, central and northern Washington, and southeastern Wyoming (Fertig *et al.* 2005, Figure 1 of this Biological Opinion), and south central British Columbia (Bjork 2007). In 2005, 53 populations (encompassing 674-784 acres of habitat) were considered extant across the range of the species (Fertig *et al.* 2005); the British Columbia locations were discovered the following year (Bjork 2007). Utah has the most populations (23), the largest amount of occupied habitat (234-308) acres, and the highest number of reported plants (47,859 individuals) of any state (Fertig *et al.* 2005). The Spanish Fork watershed in Utah was assessed as having the highest recorded population estimate (28,825 plants), whereas the Upper Green-Flaming Gorge Reservoir population (which spans the Colorado-Utah border) spanned the most extensive area (117-126 acres). The majority of known populations (66 percent) occupied between 0.1 and 10 acres, whereas relatively few (4.9 percent) occupied more than 50 acres.

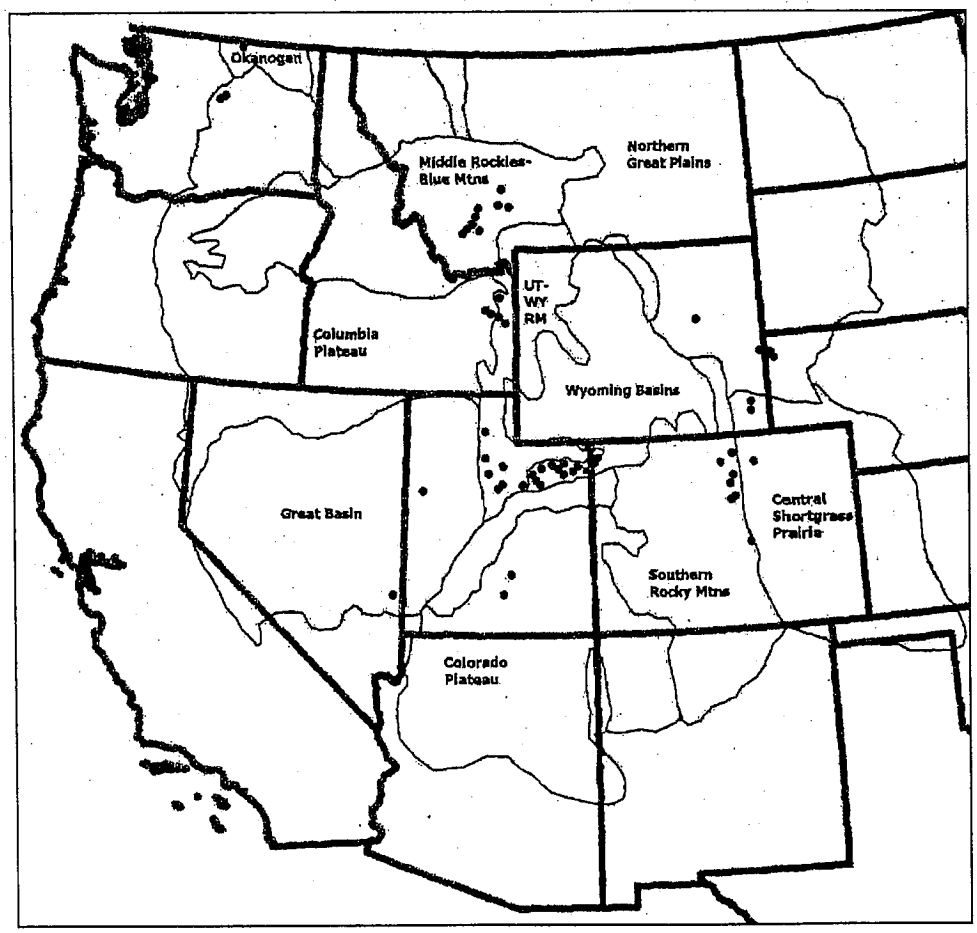

Figure 1. Ute ladies'-tresses in the Western United States. Source: Figure 5 (p.11) of Fertig *et al.* 2005.

2.4 Life History and Population Dynamics

Ute ladies'-tresses is a long-lived perennial herb that is thought to reproduce exclusively by seed (Fertig *et al.* 2005). Bees are the primary pollinators; however because Ute ladies'-tresses provides only nectar as a food reward, other pollen-providing plant species must be present to attract and maintain pollinators (Sipes and Tepedino 1995, Sipes *et al.* 1995, Pierson and Tepedino 2000).

The life cycle of Ute ladies'-tresses consists of four main stages--seedling, dormant, vegetative, and reproductive (flowering or fruiting) (Fertig *et al.* 2005). Based on studies on other terrestrial orchids (Wells 1981), it has been hypothesized that Ute ladies'-tresses seedlings may develop slowly into larger, dormant mycorrhizal roots or grow directly into above-ground vegetative shoots, but neither has been confirmed in the wild. The Cincinnati Zoo and Botanical Garden has grown plants from seed under laboratory and greenhouse conditions; germination took 6-8 months and development from a protocorm into a plant was slow (Pence 2009). Long-term demographic monitoring studies indicate that vegetative or reproductive Ute ladies'-tresses plants can revert to a below-ground existence for as many as four consecutive growing seasons before reemerging above ground (Arft 1995, Allison 2001, Heidel 2001).

Flowering individuals are necessary to reliably distinguish Ute ladies'-tresses from other similar-looking plant species (esp. other *Spiranthes* species), and surveys during flowering season also maximize the likelihood of detecting Ute ladies'-tresses among dense stands of other herbaceous plant species. However, surveys in which only flowering stems are tallied are of limited value for assessing population trends, given that individual Ute ladies'-tresses plants do not flower consistently from one year to the next, and the relative proportion of individual Ute ladies'-tresses plants in each of the four life stages (seedling, dormant, vegetative, reproductive) can vary widely within and among years and between different colonies (Arft 1995, Pierson and Tepedino 2000, Allison 2001, Heidel 2001, Fertig *et al.* 2005). Population trends are less variable when inferred from datasets in which all life stages are counted (Arft 1995, Heidel 2001). However, because non-reproductive individuals are inherently difficult and laborious to detect, most surveys tend to focus on the detection (and counting) of flowering individuals (Fertig *et al.* 2005). As a result, knowledge of Ute ladies'-tresses population trends is severely hindered; this also suggests that available population estimates (derived solely from flowering stem counts) are likely to represent conservative estimates of total population size.

With these and other caveats (discussed further in Fertig *et al.* 2005) in mind, the following statements can be made regarding rangewide abundance and trends in Ute ladies'-tresses: when the species was listed under the Act in 1992, the rangewide population was estimated to contain fewer than 6,000 individuals (USFWS 1992). In 1995, the draft recovery plan increased this estimate to 20,500 individuals, primarily the result of 21 new populations discovered over the previous 3 years (USFWS 1995). As of 2005, 53 populations were estimated to collectively contain more than 80,000 (83,316) individuals (Fertig *et al.* 2005). For these populations, available population estimates ranged in size from 1 to more than 28,000 plants. More than 80 percent of these

populations contained fewer than 1,000 individuals; 38 percent contained fewer than 100 individuals.

2.5 Habitat

Ute ladies'-tresses occurs in a variety of human-modified and natural habitats, including, seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels and meadows, and lakeshores (Jennings 1989, USFWS 1992a, Fertig *et al.* 2005). Numerous populations also occur along irrigation canals, behind berms, within abandoned roadside borrow pits, along reservoir edges, and other human created or modified wetlands. Streamside populations of Ute ladies'-tresses typically occur on shallow alluvial soils overlying permeable cobbles, gravels, and sediments, and the species may occur in groundwater fed springs or subirrigated meadows that are disconnected to perennial waterways. Across the range of the species, populations occur at elevations ranging from 220 to 558 m (720 to 1,830 ft) in Washington and British Columbia to 2,134 m (7,000 ft) in northern Utah.

Most Ute ladies'-tresses sites have mid-successional vegetation (well-established grasses and forbs) communities that are maintained by human disturbances such as livestock grazing, mowing, ditch and irrigation maintenance, prescribed fire (Allison 2001, Fertig *et al.* 2005). Ute ladies'-tresses may persist for some time in the grassy understory of woody riparian shrublands, but does not appear to thrive under these conditions (Ward and Naumann 1998).

Nearly all streambank, floodplain, and abandoned ox-bow sites occupied by Ute ladies'-tresses have a high water table (usually within 12.5 to 45 centimeters (5 to 18 inches) of the surface) augmented by seasonal flooding, snowmelt, runoff, and often irrigation (Jennings 1989, Arft 1995, Black *et al.* 1999, Riedel 2002). Soils must be sufficiently stable and moist in the summer flowering season to support the species (Ward and Naumann 1998). Sites located in springs or sub-irrigated meadows appear to be fed by groundwater rather than surface flows; less is known about the average depths to groundwater in these locations, but it is reasonable to assume that (as with locations where groundwater depths have been quantified) groundwater must remain relatively close to the surface in order to sustain the moist soils consistently associated with Ute ladies'-tresses.

2.6 Threats to the Species

At the time of listing, we identified habitat loss and modification as the primary threat to the species, but also noted that small population sizes and low reproductive rates rendered Ute ladies'-tresses vulnerable to other threats (USFWS 1992a). Our listing rule identified several specific forms of habitat loss and modification as threats to Ute ladies'-tresses, including: urbanization, water development and conversion of lands to agriculture, excessive livestock grazing, excessive or inappropriate use of herbicides or other chemicals, and the proliferation of invasive exotic plant species. In addition, we concluded that the species may be subject to over-collection, given its status as an orchid and inquiries from orchid enthusiasts and wildflower collectors. We characterized

existing regulatory mechanisms as inadequate to ensure the long-term persistence of Ute ladies'-tresses, given these threats.

Today, many of these same threats affect Ute ladies'-tresses at least at the site-specific level (Figure 2; Fertig *et al.* 2005), and some newer threats have emerged. For example, whereas over-collection had not materialized as a specific threat to Ute ladies'-tresses, vegetation succession and losses or reductions in pollinators appeared to be new threats (although they characterize pollinator availability as more of a potential threat). The most pervasive current threats include competition from invasive species, vegetative succession, road and infrastructure construction, and changes in hydrology.

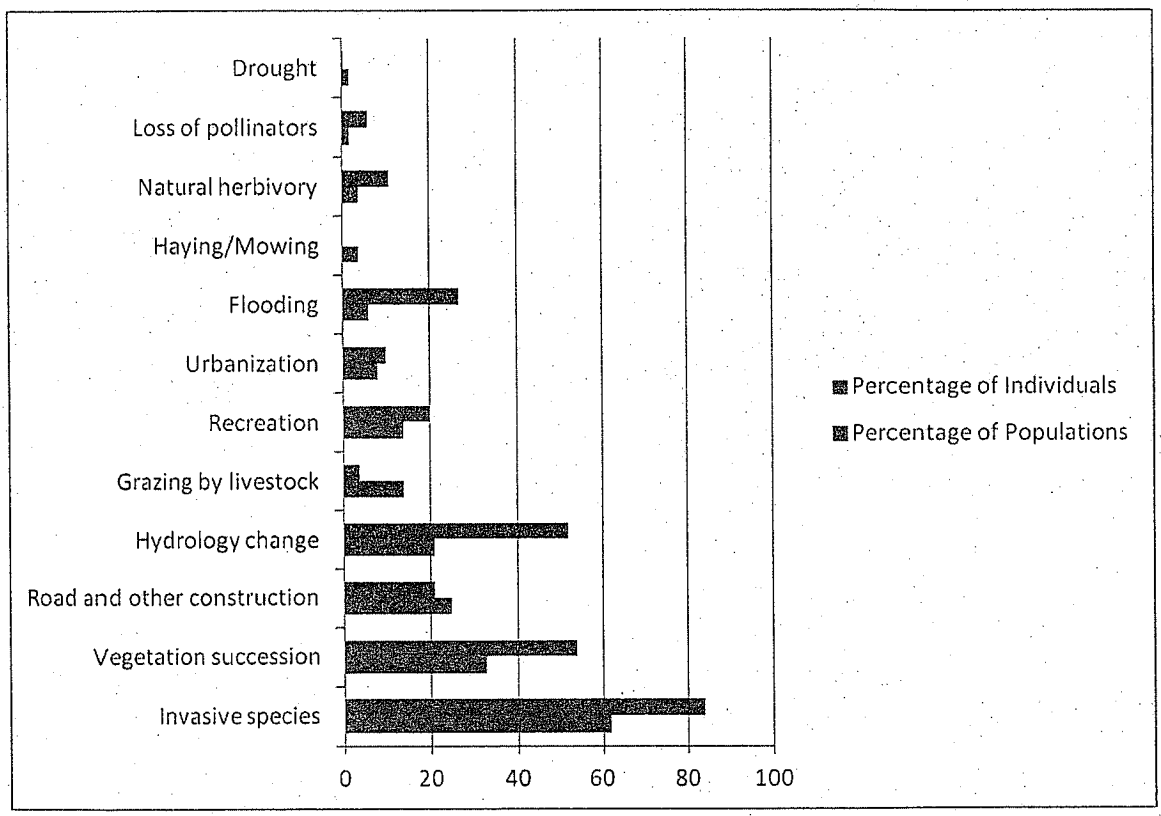

Figure 2. Threats to Ute ladies'-tresses quantified as a percentage of known populations and known individuals (based upon the maximum count ever reported for all subpopulations comprising a given population). Adapted from Table 15 (p.81) of Fertig *et al.* (2005).

Given the nature of the proposed action that is the subject of this consultation, the specific threats identified for the known Ute ladies'-tresses occurrence within the project area are urbanization and changes in hydrology. Urbanization is a threat to the species along the Wasatch Front as agricultural land and previously undeveloped floodplain is converted to residential and commercial development. Conversion of irrigation water to municipal use, flood control (includes riverbank stabilization), water development or redevelopment, and restoration projects targeting stream and riparian corridors (includes in-stream and habitat alteration) contribute to altered hydrologic regimes across the species' range.

However, Ute ladies'-tresses has proliferated in areas with greatly altered, but stable and predictable hydrology (Fertig *et al.* 2005). Prominent examples include the Green River along the Colorado-Utah border (Ward and Naumann 1998); Diamond Fork Creek in the Spanish Fork watershed of Utah (Black and Gruwell 2004); the Columbia River in Washington (Cordell-Stine and Pope 2008); and the South Fork Snake River in Idaho (Idaho Conservation Data Center 2007). The species is also frequently encountered along streams and canals and in wet hay pastures in the Uinta Basin of eastern Utah, even though an extensive irrigation canal system was constructed in the early 1900s and natural streams are nearly dry all summer (Fertig *et al.* 2005, Kendrick 1989). Ute ladies'-tresses has colonized wetlands left behind when peat was mined, and also occurs in drainage ditches alongside roads and railroad tracks (Fertig *et al.* 2005). In the summer of 2012, the species was rediscovered in Salt Lake County, Utah, after decades of unsuccessful attempts to relocate an historical collection of the species in this county dating from 1953. The county property on which the orchid was recently found has been managed as a flood control basin with permitted horse grazing for the past 50 years.

In summary, Ute ladies'-tresses occurs in more than 50 populations distributed across 8 U.S. states and 1 Canadian province; these populations collectively contain some 80,000 individuals. Approximately 80 percent of known populations are associated with lands managed for agriculture or recreation, rivers regulated by dams, or other human-modified habitats (Fertig *et al.* 2005). Research, monitoring and management activities have demonstrated that ongoing patterns of land use across the range of the species are capable of mimicking or providing the conditions required for the species' persistence.

3. Environmental Baseline

Regulations implementing the Act (50 CFR §402.02) define the environmental baseline as the past and present impacts of all Federal, state, or private actions and other human activities in the action area. The environmental baseline also includes the anticipated impacts of all proposed Federal projects in the action area that have already undergone section 7 consultations and the impacts of state and private actions that are contemporaneous with the consultations in progress.

3.1 Status of the Species within the Action Area

The Project action area supports the only documented population of Ute ladies'-tresses along Hobble Creek. The population occurs within wet meadow habitat near Hobble Creek that appears to be flood- irrigated pastureland for livestock. This population is on private property but one colony is readily observed from the road and flowering Ute ladies'-tresses were observed for multiple years (Kass 2013). One colony of eight flowering individuals was counted in 2004, and there are likely more colonies on the same property (Kass 2013). Extensive surveys for the species along Hobble Creek are hindered by lack of access onto private property, but there is the potential for the Ute ladies'-tresses to occur at other locations along Hobble Creek (Kass 2013).

In the State of Utah, there are 28 documented Ute ladies'-tresses populations (Fertig *et al.* 2005). The Hobble Creek population is 1 of 11 Ute ladies'-tresses populations found in the State, and 1 of 8 populations found along the Wasatch Front, that occur in groundwater-fed spring or subirrigated meadow habitat. These population totals include current and historic records of the species (Fertig *et al.* 2005).

3.2 Factors affecting the species within the Action Area

As noted above, Ute ladies'-tresses is currently known to exist within the action area and has a reasonable potential to occur at other locations within the action area.

Specific threats identified for the Hobble Creek Ute ladies'-tresses population include habitat loss and modification from urbanization, and changes in hydrology through water diversion, flood control and dewatering activities that can render the habitat unsuitable to the species (Fertig *et al.* 2005). During the irrigation season, most of the water in Hobble Creek is diverted for agricultural use. Invasive species and vegetative succession are the two most common threats throughout the range of Ute ladies'-tresses (see Figure 2) and are also likely to affect the species within the action area. Weeds in the project area include Russian olive (*Elaeagnus angustifolia*), bull thistle (*Cirsium vulgare*) and giant ragweed (*Ambrosia trifida*) (CUPCA *et al.* 2013). The small population size of the Hobble Creek population in and of itself is not considered a threat; however, it may increase the species' vulnerability to other natural and human-caused stresses. Population size is likely the best predictor of extinction rate for isolated populations (Pimm *et al.* 1988; Fischer and Stöcklin 1997). Small plant populations are at an increased risk of extinction due to the potential for inbreeding depression, loss of genetic diversity, and lower sexual reproduction rates (Ellstrand and Elam 1993; Wilcock and Neiland 2002), and are more likely to succumb to natural catastrophes (e.g., drought and fire) and environmental stochasticity.

4. Effects of the Action

Regulations pursuant to section 7 of the Act define effects of the action as "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR § 402.02). Direct effects are defined as the direct or immediate effects of the action on the species or its habitat. Indirect effects are defined as those effects that are caused by or result from the proposed action, are later in time, and are reasonably certain to occur.

Ground-disturbing activities associated with construction staging areas, ingress and egress areas, stream channel excavation and enhancement, removal or modification of diversion structures, the installation of riprap, and temporary diversions of the river have the potential to adversely affect Ute ladies'-tresses in both the short and long term in suitable habitat for the species. Short-term, direct effects would be those directly associated with construction activities, and include compaction of soil and vegetation, soil disturbance, destruction of vegetation, and temporary flooding of suitable habitat with the creek diversion. These activities may destroy or reduce the vigor of individual

Ute ladies'-tresses plants. Ute ladies'-tresses can survive or recolonize areas that have been disturbed by tracked vehicles; however, it is unknown whether trenched or backfilled areas will recolonize if plants are present. One permanent, direct effect would be the loss of suitable habitat if the routing of the creek channel or side channels cannot avoid suitable habitat. Suitable habitat will be salvaged and relocated to another location on the same reach segment, but salvage efforts have a high failure rate so it is unlikely that the species will re-establish on the salvaged material. The direct, permanent loss of suitable habitat will also occur at the riprapped sections of the Creek. It is unlikely that riprapped sections of suitable habitat will be recolonized by Ute ladies'-tresses. Another permanent, direct effect would be the loss of suitable habitat from a large amount of fill or sediment deposited overtop of the vegetation which would effectively bury and kill the underlying vegetation.

An example of an indirect effect would be a change in the geomorphology of the creek channel from the re-contoured creek and side channels. These new channels will alter the hydrology of the riparian area which in turn will alter the vegetation community. Another indirect effect would be the additional release of water through the creek. The additional water flow and velocity may increase erosion rates and reduce the total surface area of suitable habitat features if they occur within the creek channel over time. The Ute ladies'-tresses subpopulations on these features may decline if the total area of suitable habitat is reduced over time or if the hydrology within the suitable habitat is altered sufficiently to render the habitat less suitable or unsuitable for Ute ladies'-tresses. However, the release of water into Hobble Creek from the Project is deemed beneficial to the species because the altered stream flows will mimic the natural hydrology of the stream and may provide a net gain of suitable habitat as well as a reduction of woody plant encroachment into suitable habitat in the long-term. Construction activities will not occur during the flowering period of Ute ladies'-tresses if the species is present to ensure the Project will avoid impacting seed production for that season and future recruitment of the species within the action area.

To avoid impacts to Ute ladies'-tresses to the greatest extent possible, CUPCA has committed to minimizing soil erosion in wetland areas with the use of silt fences, and minimizing soil disturbance in the action area by operating heavy equipment on top of temporary earth fills above geotextile mats. No excavated fill material would be placed in wetland areas. For unavoidable impacts, CUPCA is minimizing the impacts by performing much of the work when the plants are not flowering, and relocating salvaged soils to an appropriately graded location. Finally, for all impacts that cannot be avoided or minimized, CUPCA has committed to offset the direct, permanent impacts to Ute ladies'-tresses suitable habitat from this Project through land preservation or land conservation of unaffected, occupied habitat at a 3:1 ratio. As a result of the complete package of conservation measures of this Project to Ute ladies'-tresses, we conclude the impacts to the species will be short-term in duration and mitigation measures will improve the stability of local populations in the long-term.

5. Cumulative Effects

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Utah Lake and its tributaries have changed dramatically over the past 100 years, due to increased urbanization and changes in agricultural impacts. Past actions that have affected Hobble Creek include:

- **Irrigation Diversions:** the construction of the Island Dam, Swenson Dam, Sage Creek Dam, Packard Dam, and the 1000 North Dam to divert water from the Creek for irrigation. Often, these diversions leave little to no water in Hobble Creek during dry years in the late summer months.
- **Mapleton-Springville Lateral Construction:** the Mapleton-Springville Lateral (MSL) was constructed in 1918 as part of the Strawberry Valley Project. The MSL is seven miles long and extends from the mouth of Spanish Fork Canyon to Hobble Creek and provides irrigation water to agricultural fields in Mapleton and Springville. The MSL was converted to a 54-inch diameter HDPE pipe in 2008.
- **Habitat Restoration on Hobble Creek:** habitat restoration work along Hobble Creek west of I-15 which was completed in 2008. The restoration work included the acquisition of a 21-acre parcel adjacent to Hobble Creek between I-15 and Utah Lake. The project provides spawning and rearing habitat for the June sucker and also connected Hobble Creek spawning habitat to rearing habitat available in Provo Bay.

The area continues to see additional urban growth and development. Some of this growth has resulted in the conversion of agricultural land to subdivisions and housing developments and the concomitant development of roads and infrastructure in and around the project area. Some impacts related to this growth have been detrimental, including increased nutrient loading to Utah Lake, loss of wildlife, riparian and aquatic habitats along Hobble Creek, increased soil compaction, and loss of habitats around Utah Lake due to urbanization and increased recreational use. Water development within the watershed has also resulted in changes in water quality and supply, and has altered the normal Hobble Creek flows and Utah Lake levels.

The reasonable, future activities within the action area include:

- **Land Development**: The conversion of agricultural land to residential and commercial use is anticipated to continue into the foreseeable future.
- **Transportation**: The Utah Transit Authority (UTA) is currently constructing a commuter-rail line from Salt Lake to Provo (FrontRunner) which began operation in December 2012. This commuter-rail line is planned to extend south to Payson by 2030 along the Union Pacific Rail Road tracks. A train station is planned at 400 South in Springville. In addition, a Bus Rapid Transit line between Provo

and Spanish Fork is planned along US-89 (State Street) through Springville City by 2030.

- **Springville City Community Park:** Springville City recently constructed a portion of their Community Park located north of Hobble Creek and west of 950 West. The city plans to construct baseball diamonds, basketball courts, tennis courts and other amenities at this location.

Cumulatively these past and future actions will contribute to the ongoing urbanization and development of the Hobble Creek action area. These actions will contribute to the continued loss and fragmentation of small, isolated Ute ladies'-tresses populations. Invasive species, particularly Russian olive (*Elaeagnus angustifolia*) and bull thistle (*Cirsium vulgare*), are a concern in the action area. These species and other weed species can be introduced to construction sites from off-site soil and rock material, and their encroachment into suitable habitat will render the habitat less suitable for Ute ladies'-tresses. The Project is designed to improve habitat conditions and mimic natural stream flows for June sucker within Hobble Creek, and may improve and provide additional habitat for Ute ladies'-tresses.

6. Conclusion

After reviewing the current status of the Ute ladies'-tresses, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of Ute ladies'-tresses. No critical habitat is designated for this species and therefore none would be affected.

We base our conclusion on the following reasons:

- The total range wide population of Ute ladies'-tresses is approximately 80,000 individuals. The known population of Ute ladies'-tresses within the Project action area along Hobble Creek comprises approximately 2 – 10 flowering individuals and represents less than 1% of the total population for the species. Surveys for Ute ladies'-tresses have not been performed within the remaining suitable habitat of the action area and the actual population size may be larger than what is reported. Since 80.8% of known Ute ladies'-tresses populations contain less than 1,000 individuals (Fertig *et al.* 2005), we estimate the action area at most contains 1,000 plants and represents 1.25% of the total population for the species.
- The Project will improve the hydrologic function of Hobble Creek to mimic natural stream flows. This component of the Project is deemed beneficial to Ute ladies'-tresses because it will alleviate a main threat to the species (altered or reduced hydrology). This component of the Project may provide a net gain of suitable habitat as well as a reduction of woody plant encroachment into suitable habitat of the species in the long-term.
- The applicant's commitment to avoid and minimize impacts to suitable habitat for Ute ladies'-tresses will reduce the amount of overall loss to individual plants and habitat that may occur.

- The applicant's commitment to mitigate direct, permanent impacts to Ute ladies'-tresses suitable habitat.

7. Incidental Take Statement

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR § 17.3). Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering (50 CFR § 17.3). Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Amount or Extent of Take Anticipated

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

Reporting Requirements

If listed plants are crushed or injured during construction activities, immediate notification must be made to our Salt Lake City Field Office at (801) 975-3330. Pertinent information including the date, time, and location shall be recorded and provided to us.

8. Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

We recommend periodic surveys for Ute ladies'-tresses within the action area are performed after the Project is complete to monitor the known population, and document

new occurrences. We also recommend the removal of noxious weeds for at least two years post-construction, so as not to negatively affect Ute ladies'-tresses suitable habitat and the riparian corridor in the future.

9. Re-initiation Notice – Closing Statement

This concludes formal consultation on the proposed Duchesne County EWP bank stabilization Project in Duchesne County, Utah. As provided in 50 CFR §402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action is retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may impact listed species in a manner or to an extent not considered in this opinion, 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion, or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded or if the terms and conditions of this Biological Opinion are not fully implemented, any operations causing such take must cease immediately pending re-initiation.

Thank you for your coordination in preparing the biological assessment and your interest in conserving threatened and endangered species. If you have any questions about this BO or impacts to Ute ladies'-tresses please contact Jennifer Lewinsohn at 801-975-3330 ext. 138.

Sincerely,

Larry Crist
Utah Field Supervisor

cc: Mrs. Sarah Johnson, Environmental Programs Manager, Central Utah Water Conservancy District, 355 W. University Parkway, Orem, Utah 84058

Mr. Michael Mills, JSRIP Local Coordinator, Central Utah Water Conservancy District, 355 W. University Parkway, Orem, Utah 84058

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Mr. Henry Maddux, JSRIP Program Director, Utah Department of Natural Resources, 1594 West North Temple, Box 146301, Salt Lake City, Utah 84114

Mr. Tim Witman, Regulatory Project Manager, U.S. Army Corps of Engineers, 533 West 2600 South, Suite 150, Bountiful, Utah 84010-7714

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