

Provo River Restoration Project



Final Environmental Impact Statement

SUMMARY

DECEMBER 1997

UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION

Utah Reclamation Mitigation and Conservation Commission (Lead Agency)
U.S. Department of the Interior (Joint Lead Agency)



Summary

S.1 Introduction

The Provo River Restoration Project (PRRP) is simple in its objective: to create a more naturally functioning river system for the middle Provo River between Jordanelle Dam and Deer Creek Reservoir. It is more complex in its execution. It is complex because the execution involves not only an understanding of the physical environment but also the social. This Final Environmental Impact Statement (FEIS) reflects an analysis of both.

S.1.1 A Brief Background in Why and How This FEIS was Prepared

The National Environmental Policy Act (NEPA) requires all federal agencies - with projects that may significantly affect the environment - to prepare an assessment of the proposed project's potential environmental effects. Once the federal agency develops a proposed action, the public is invited to comment on the proposed action and suggest ways to lessen any potential negative effects. The effects of the proposed action and any alternatives on the social and physical environment are then evaluated. This process is designed to lead to the ultimate goal of the NEPA process - which is to provide factual information, which has been reviewed by the public, to assist the decision maker in selecting the preferred alternative.

In the case of the PRRP, the complex history that led to the development of the proposed action and alternatives is briefly described in this summary (see Section S.2) and more completely in Chapters 1 and 4 of the FEIS. Modifications made to the Proposed Action as a result of comments on the DEIS are summarized in Section S.3 below. The effects are briefly

described in this summary (see Section S.5) and more completely in Chapter 3 of the FEIS.

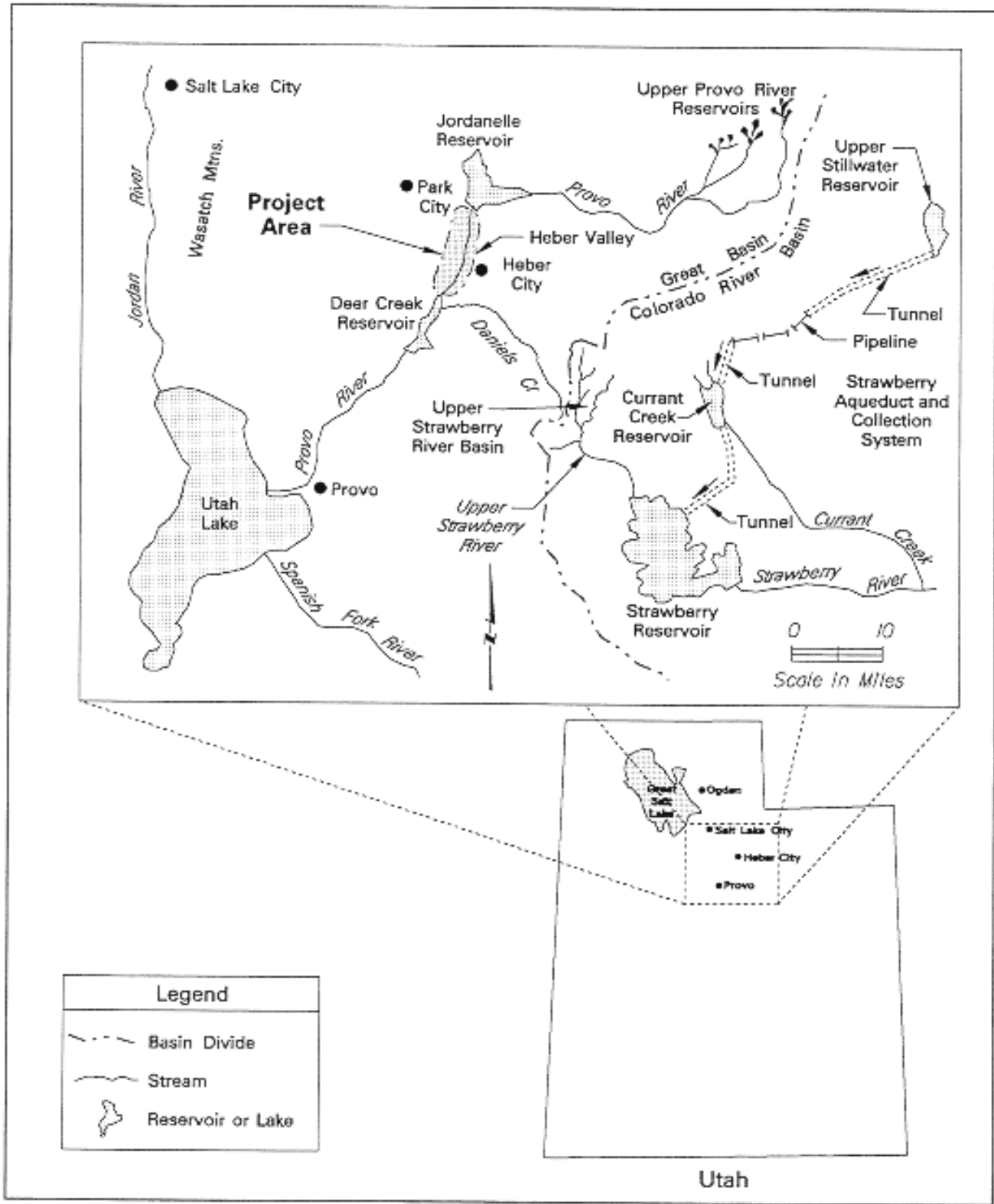
S.1.2 What to Expect in This Summary

The following sections summarize each chapter of the Provo River Restoration Project Final Environmental Impact Statement. The summary of Chapter 1 provides an overview of the Proposed Action and Alternatives evaluated in the FEIS. It includes a section that explains what changes were made to the Proposed Action to address major concerns expressed during review of the DEIS. The summary of FEIS Chapters 2 and 3 contains a short description of the impacts of the Alternatives on resources of interest, for example, wetlands and agricultural lands. The summary of Chapter 4 reviews the consultation and coordination that occurred with the public and federal, state and local governments to produce the FEIS. Map S-1 identifies the area where the PRRP is proposed.

S.2 Summary of Chapter 1 Description of The Proposed Action and Alternatives

S.2.1 The Development of The Proposed Action and Alternatives

The origin of the PRRP is closely tied to federal reclamation projects in Utah, especially the Central Utah Project (CUP) and the Provo River Project. The CUP is a large water development project that transfers water normally flowing to the Colorado River to the Bonneville Basin through a series of pipes, aqueducts and reservoirs. As a consequence of CUP construction, fish and wildlife habitat have been negatively affected. For example, water was



Map S-1
 Location of the Proposed Action and Alternatives

diverted out of streams on the south slope of Uintas for storage in Strawberry Reservoir which in some instances eliminated fish habitat. There exists an obligation on the part of the federal government to mitigate these impacts to fish and wildlife.

The PRRP is also being undertaken under the general authority of the Secretary of the Interior to manage and correct problems arising from federal reclamation projects. The Provo River Project was authorized in 1933 and constructed during the 1940s and 1950s. Specifically, the Provo River Channel Revision component of the project led to the diking and channelization of much of the Provo River in Heber Valley. Impacts to fish and wildlife habitats were not systematically evaluated or mitigated. Prior to 1992, mitigation measures included angler access and stream habitat improvement projects on numerous streams in the Bonneville Basin.

In 1992, Congress created the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission) to assure that mitigation for the CUP and other federal reclamation projects in Utah was accomplished. With the creation of the Mitigation Commission, new standards were imposed on mitigation projects that can be summarized as an “ecosystem restoration” standard. With this mandate the Mitigation Commission was directed to support mitigation projects that integrated multiple aspects of the environment. For example, rather than just putting water back into streams for fish, a project should also include the water necessary to support streamside vegetation that is a critical component of healthy fish habitat. For a complete description of the source of the mitigation obligations and the creation of the Mitigation Commission see Chapter 1, Section 1.1.1

S.2.2 Interest in The Provo River to Satisfy Mitigation Obligations

Prior to the 1950s the middle Provo River offered outstanding fish and wildlife habitat. This was due in part to the Provo River freely meandering through Heber Valley. These bends in the river provided deep holes for fish and a dense streamside forest for many species of birds. This productive habitat was altered in the 1940s and 1950s when the river was dammed, channelized and placed between dikes. These dikes were constructed by the U.S. Bureau of Reclamation to contain high flows that came from additional water added to the Provo River from transmountain diversions, as part of the Provo River Project. With the loss of the meandering channel came loss of fish and wildlife habitat. See Figure S-1 for an aerial view of the middle Provo River as much of it looks today because of channelization.



Figure S-1 The Middle Provo River Today

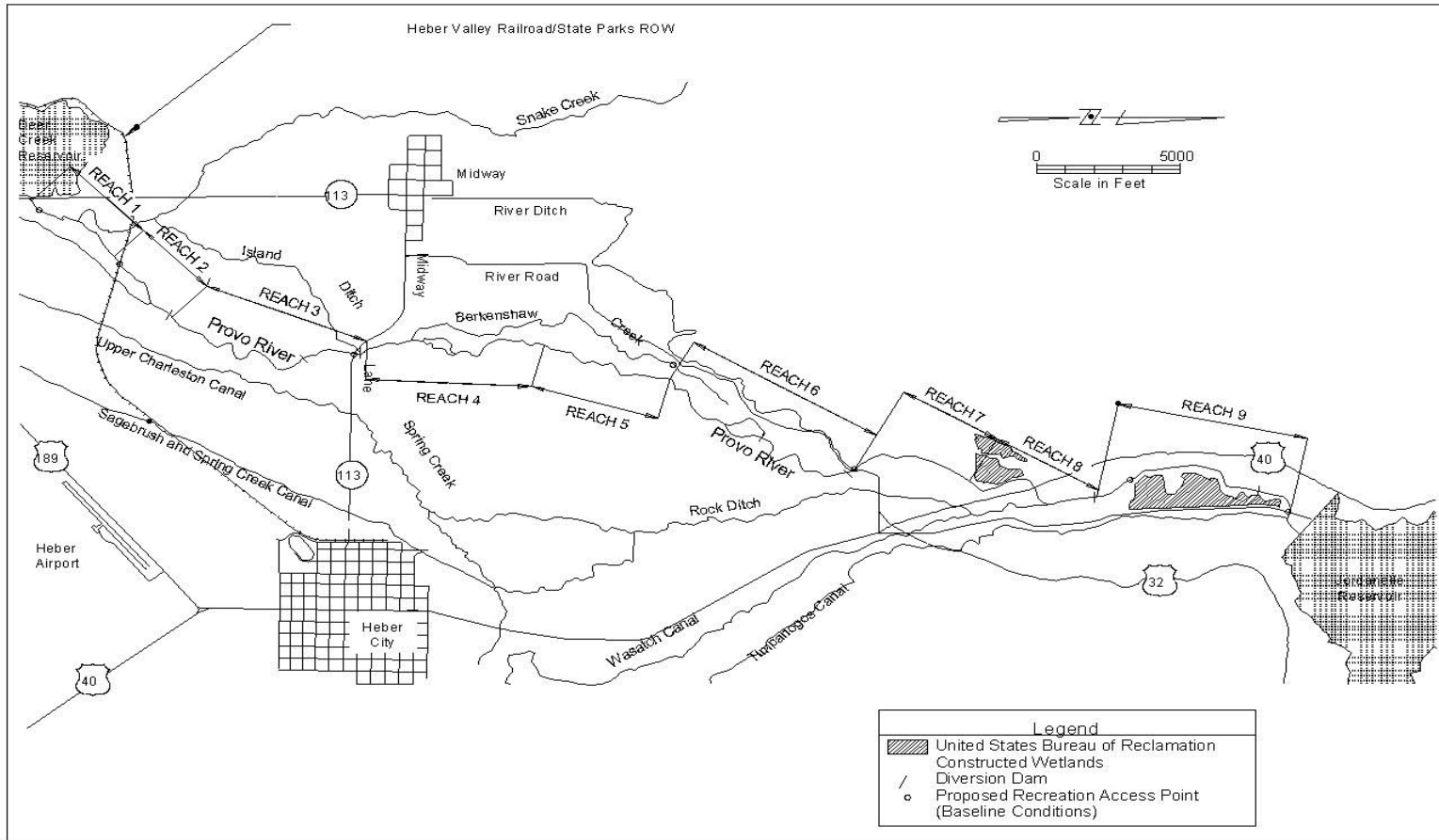
Knowing the past productivity of the middle Provo River for fish and wildlife habitat, interest turned to the middle Provo River as a site for CUP mitigation. Prior to 1992 it was suggested that structures be added to the Provo River to create pools and other habitat for fish as a mitigation measure. This resulted in one of the three alternatives: the Instream Structures Alternative. The Mitigation Commission expanded upon this obligation in order to meet its “ecosystem restoration” standard and developed the Proposed Action, which includes returning the middle Provo River to a more naturally functioning condition in order to support additional aquatic species and restoration of wildlife habitat, which more fully responds to the need for mitigating impacts on riparian habitats inundated by Jordanelle Reservoir. The Existing Channel Modification Alternative exists between the Proposed Action and Instream Structures alternatives in its ecosystem design.

S.2.3 A Summary Description of The Proposed Action and Alternatives

Map S-2 identifies the location of the Proposed Action and Alternatives.

S.2.3.1 The Proposed Action (Riverine Habitat Restoration)

- Reconstructs and realigns most of the existing river channel and floodplain system in a meandering riffle-pool sequence (where there are alternating shallow and fast and deeper and slower sections of water).
- Removes existing levees; however, 100-year flood protection would still be provided by the expanded floodplain or new setback levees. The new floodplain would be subject to flooding once every 2 years and once every 5 years with velocities capable of scouring surface soils - these conditions are necessary for natural regeneration of cottonwood trees and other riparian vegetation.
- Allows the river to flood onto the expanded floodplain and to alter its course (the river channel may widen or move across the floodplain in response to natural forces similarly to how it functioned before channelization).
- Revegetates disturbed areas along the new floodplain with indigenous plants.



Map S-2
 Location of the Proposed Action and Alternatives

- Constructs side channels and ponds on both sides of the new river alignment. These would create diverse habitat conditions for spawning and rearing of fishes, especially non-game fishes and other aquatic or amphibious species.

Note that Map A-1 (located in the map pocket at the back of the FEIS) displays the location of the major physical features of the Proposed Action.

S.2.3.2 Existing Channel Modification Alternative

- Reconstructs, within the present channel alignment, a “step-pool” or rapid-pool system. That is, the channel would becomprised of a series of alternating steps (nearly vertical drops in the channel bottom) and pools.
- Stabilizes the existing river channel by making channel modifications with multiple rock weirs and large boulders.
- Revegetates disturbed areas along the existing channel with indigenous plants.

Note that Map A-2 (located in the map pocket at the back of the FEIS) displays the location of the major physical features of the Existing Channel Modification Alternative.

S.2.3.3 Instream Structures Alternative

- Installs instream fish habitat structures at selected locations along the Provo River between Jordanelle Dam and Deer Creek Reservoir making no significant changes to the existing river channel shape or elevation.

S.2.3.4 No Action Alternative

- The No Action Alternative would not make any changes to the Provo River channel, its riparian corridor, or its fish and wildlife habitats.

Table 1-2 displays key characteristics of the Proposed Action and Alternatives.

S.2.4 Baseline Mitigation Requirements

Even if the No Action Alternative is not selected, there will still be mitigation activity along the middle Provo River as the result of prior commitments. These activities include the following measures.

- Providing seven new recreation access points along the Provo River between Jordanelle Dam and Deer Creek Reservoir including parking and restroom facilities;
- Providing pedestrian access for fishing and related or compatible uses along the Provo River between Jordanelle Dam and Deer Creek Reservoir;
- Fencing of the public access corridor to control trespass problems;
- Managing the acquired corridor and constructed access facilities through a management agreement with a state or local entity;
- Maintaining a minimum instream flow of 125 cfs in the Provo River below Jordanelle Dam.

**Table 1-2
Key Characteristics of the Proposed Action and PRRP Alternatives***

Characteristics	Proposed Action (Riverine Habitat Restoration)	Existing Channel Modification Alternative	Instream Structures Alternative
Main Channel Activities	<p>Construct 70-100 ft wide (typical) meandering riffle-pool channel.</p> <p>Remove or breach nearly all dikes; establish 400+ ft wide floodplain.</p> <p>Regrade channel profile to fit natural features.</p> <p>Restore 11.6 miles of river.</p> <p>Remove 47,800 ft of existing levee.</p> <p>Increase existing river length by 9,430 feet.</p>	<p>Reconstruct 65-80 ft wide rapid-pool and step-pool channel in existing channel alignment.</p> <p>Construct 140-180 ft wide floodplain, within existing dikes where possible, or within new setback dikes.</p> <p>Minimal adjustments to thalweg elevation, except where diversion dams are removed.</p> <p>Modify 9.6 miles of river.</p> <p>Remove or breach 21,500 ft of existing levee.</p> <p>No increase in river length.</p>	<p>Install over 200 habitat enhancement structures (logs, boulders, root wads) in 5.9 miles of river.</p> <p>Make no other changes to channel system.</p> <p>Enhance 5.9 miles of river.</p> <p>No increase in river length.</p>

**Table 1-2
Key Characteristics of the Proposed Action and PRRP Alternatives***

Characteristic	Proposed Action (Riverine Habitat Restoration)	Existing Channel Modification Alternative	Instream Structures Alternative
Floodplain Activities	Construct 50,070 ft of side channels (19,340 feet in Core Area, 30,730 feet in Expanded Restoration Area); Construct five to ten floodplain ponds (12.6 acres, including construction of eight Spotted Frog habitat ponds); Raise or lower 47 acres to develop needed channel-floodplain.	None	None
Channel Stability	Excellent dynamic stability conditions because of adherence to geomorphic design for riffle-pool channels. Riffles designed to hold grade. Additional bank protection used where necessary.	Good static stability conditions through armoring of riffles and bank revetment. Attention to riffle design to hold grades and prevent excessive sediment production.	Minor, localized, short-term improvement in vertical stability. Horizontal stability fixed by dikes. Geomorphic problems remain.
Flood Control	If only Core Area is acquired, construct 22,100 ft of 2 ft to 3 ft high setback dikes to control flooding. If Expanded Restoration Area is acquired, construct 17,400 ft of 2 ft to 3 ft high setback dikes to control flooding.	Construction of 17,800 ft of 2 ft to 3 ft setback dikes to control flooding.	No flood control changes.

**Table 1-2
Key Characteristics of the Proposed Action and PRRP Alternatives***

Characteristic	Proposed Action (Riverine Habitat Restoration)	Existing Channel Modification Alternative	Instream Structures Alternative
Revegetation	<p>Revegetation methods would be applied to new channel/floodplain corridor to assure stability.</p> <p>All disturbed areas would be revegetated, reseeded or enhanced by natural recruitment.</p>	<p>Revegetation methods would be applied to new channel/floodplain corridor to assure stability.</p> <p>All disturbed areas would be revegetated, reseeded or enhanced by natural recruitment.</p>	No revegetation activities would occur as part of project.
Irrigation Diversions	<p>Remove all diversion dams (10) to fit stable channel slope.</p> <p>Reconstruct all diversions and relocate four diversion points to match new channel grades.</p>	<p>Remove all diversion dams (10) to fit stable channel slope.</p> <p>Reconstruct all diversions to match new channel grades.</p> <p>Relocate Probst and Baum Diversion points.</p>	No modifications to irrigation diversions.
Property Acquisition	<p>Acquire all non-public parcels in Core Area along new river corridor (489.7 acres).</p> <p>Acquire non-public parcels in Expanded Restoration Area on a willing seller basis (198.2 acres).</p>	<p>Acquire 7.6 acres of land along river corridor. Acquire construction easement where needed.</p> <p>Minor increase in flood easement width (2 locations).</p>	None

**Table 1-2
Key Characteristics of the Proposed Action and PRRP Alternatives***

Characteristic	Proposed Action (Riverine Habitat Restoration)	Existing Channel Modification Alternative	Instream Structures Alternative
Floodplain Activities	Protect 7 existing bridges; rebuild 2 private bridges. No relocation/reconstruction of existing paved roads.	Protect 9 existing bridges (4 private). No relocation/reconstruction of existing paved roads.	Protect 9 existing bridges (4 private). No relocation/reconstruction of existing paved roads.
Utilities	Cross 7 utility facilities. Relocate 2 utility facilities.	Cross 7 utility facilities. No utility relocations.	Cross 7 utility facilities. No utility relocations.

Notes:

*The No Action Alternative would not change any characteristics of the Provo River. Baseline conditions would continue including seven recreation access points, contiguous access to the river corridor for recreational angling, and a minimum instream flow of 125 cfs.

These commitments constitute the baseline conditions for many resources that would be impacted by the Proposed Action and alternatives. Note also that if the No Action Alternative is selected, the Mitigation Commission is still required to develop and implement measures to meet the Project Need to which the Proposed Action and other alternatives respond. See Chapter 1, Section 1.2.1 for a description of the Project Need and Section 1.4 for a detailed description of the “baseline.”

S.2.5 A More Detailed Look at The Proposed Action and Alternatives

It is commonly stated that “a picture is worth a thousand words.” Figure S-2 on the following page provides a schematic picture of what a typical segment of stream channel would look like under the Proposed Action and each alternative.

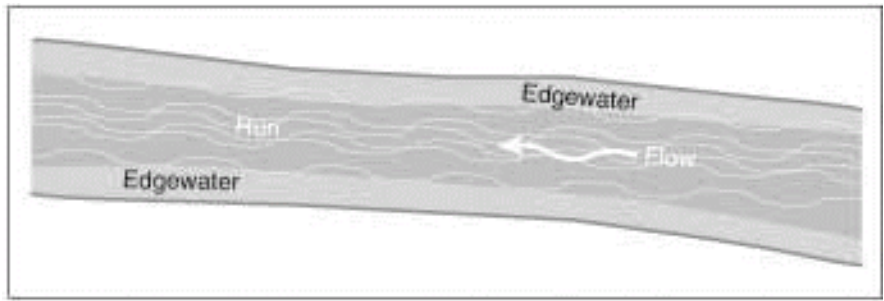
As illustrated in the figures, the Proposed Action and alternatives range from less to more complex. Under the No Action alternative no changes are made to the straightened stream channel. The Instream Structures Alternative adds a bit more complexity in the form of structures added to the river to create some fish habitat. The Existing Channel Modification Alternative develops more diversity within the channel by making vertical adjustments to the stream channel to create a step-pool river. The Proposed Action provides the most complexity in adding additional channel features as well as meanders, backwater areas and side channels and a broader floodplain.

To further illustrate the differences, it is useful to view the possibilities from an aerial point of

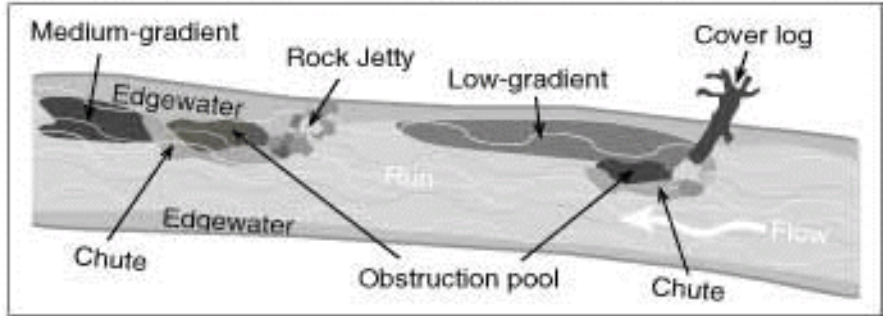
view. The computer-enhanced image (Figure S-3) helps to visualize the meandering river with a wide riparian corridor that is expected to occur under the Proposed Action as it connects the river to the floodplain. As the two action alternatives limit river enhancements to the existing river channel, the corridor would resemble that represented in Figure S-1.



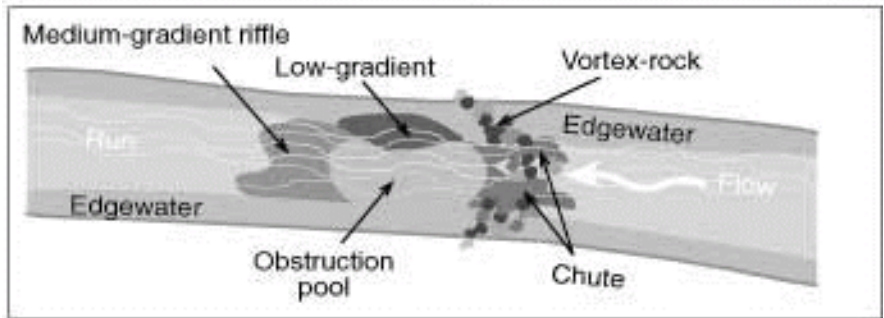
Figure S-3 A Computer-Enhanced Image that Represents What the Middle Provo River is Projected to Look Like with Implementation of the Proposed Action (Riverine Habitat Restoration)



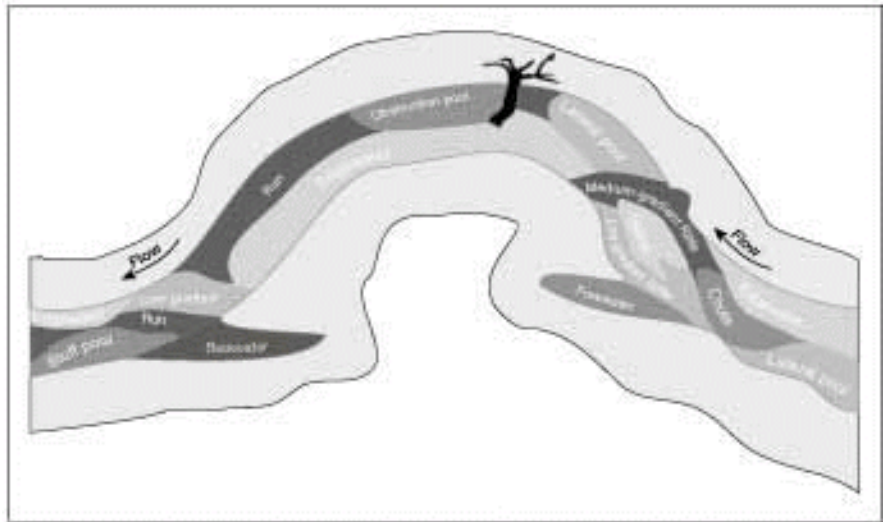
The No Action Alternative



The Instream Structures Alternative



The Existing Channel Modification Alternative



The Riverine Habitat Restoration Alternative -- The Proposed Action

Figure S-2 Schematic Illustrations of a segment of Stream Channel Under Each Alternative and the Proposed Action

S.2.6 A Final Key Difference Between The Proposed Action and Alternatives Related to Time

The differences presented above relate to how the Proposed Action and alternatives will physically alter the river channel and/or corridor from its present condition. The functional differences were also presented; for example, the Proposed Action connects the river to the floodplain, whereas the Instream Structures Alternative does not. This will affect the degree to which the riparian corridor is sustained. An equally important difference is that the Proposed Action is designed to maintain a river system over time that will provide wildlife habitat without the need for extensive human intervention. The Existing Channel Modification Alternative and Instream Structures Alternative will both need human inputs to maintain the structures.

This summary only presents the rationale behind the creation of the Proposed Action and alternatives and the concept. See Chapter 1, Section 1.3 for a more detailed summary of the Proposed Action and alternatives and Chapter 1, Sections 1.4, 1.5, 1.6 and 1.7 for detailed descriptions of them.

S.3 Public Concerns

The Proposed Action and the two action alternatives represent a change from the existing condition and baseline within the Project Area. Concerns were expressed about the proposed changes through public meetings and comments. Questions were raised about what would happen to resources of interest if the Proposed Action and alternatives were implemented. For example, what would be the impacts to wetlands or agriculture if the Proposed Action were implemented? Several changes were made to the Proposed Action and analysis to address those concerns. The most substantial changes

that respond to the major concerns on the Draft EIS are summarized below. Additional concerns are addressed in Section S.5.

S.3.1 Acquisition of Private Property

S.3.1.1 Issue

The concern was expressed that acquisition of narrow corridors, particularly associated with side channels in the floodplain, would create unusable "islands" of private property within government ownerships. Also, there were concerns that acquisition of parcels from private landowners along the river corridor would create "uneconomical remainder" parcels; and concerns that eminent domain not be used to acquire property.

S.3.1.2 Response

Two new concepts were added to the FEIS to address these concerns: the identification of a *Core Area* and an *Expanded Restoration Area*. The Core Area is composed of lands required to implement and manage the alternative. The Expanded Restoration Area consists of additional lands with potential for additional riparian or wetland developments, or for protection of wildlife habitats. All alternatives have a Core Area but only the Proposed Action includes an Expanded Restoration Area. The Expanded Restoration Area was identified in those areas where there are concerns over unusable islands or "uneconomical remainders" as a way of offering to acquire additional lands, on a willing-seller basis only, to accomplish additional ecosystem restoration or wildlife habitat protection objectives beyond the Core Area requirements. Eminent domain would be used to acquire the Core Area, but only as a last resort.

S.3.2 Modifications to the Proposed Action Through Reaches 8 and 9 to Reduce Impacts to Wetlands and The Spotted Frog

S.3.2.1 Issue

Concerns were expressed that the Proposed Action alignment through Reach 8 would negatively affect wetlands (both USBR-constructed mitigation wetlands and other existing wetlands) as well as spotted frog populations, both of which would require extensive mitigation.

S.3.2.2 Response

Based on these concerns changes were made to the Proposed Action to retain the main Provo River channel in Reach 8 in approximately its existing alignment, but to reconstruct it in a meandering pattern. This will avoid the impacts to wetlands and particularly reduce potential impacts on spotted frog populations. This channel alignment shift will reduce the required wetland mitigation for the Proposed Action substantially, which in turn will reduce the amount of additional private property that would have been needed in order to complete wetland mitigation.

S.3.3 Modifications to The Proposed Action Through Reach 4 to Allow the Channel to Self-Correct

S.3.3.1 Issue

There was a concern that Reach 4, which had never been channelized, was in a relatively natural condition and the channel work identified under the Proposed Action in the DEIS might not be necessary.

S.3.3.2 Response

Based on this concern and information gathered in 1997, a reduced amount of reconstructed main channel is included under the Proposed Action in Reach 4. Reach 4 monitoring in 1997 revealed that substantial improvements in channel stability, riparian growth and geomorphological trends have occurred in the past few years. The existing channel in Reach 4 appears headed towards the goals established for the Proposed Action. Therefore only several short stretches of channel are proposed for reconstruction. Acquisition of the flood-prone area, already under existing government easements, will provide protection for the channel and allow constructed improvements to persist.

S.3.4 Management and Recreational Use of The Corridor

S.3.4.1 Issue

Interest was expressed in knowing who would manage and how the river corridor would be managed for recreational uses.

S.3.4.2 Response

Section 1.4.2 in Chapter 1 describes who would manage and how the river corridor would be managed. That section indicates that the Mitigation Commission proposes to develop an operating agreement(s) with Wasatch County, the Utah Division of Wildlife Resources and possibly other appropriate entities for management of the corridor. The Operating Agreement will identify who is responsible for the following tasks:

Regular Trash Collection at Parking Areas
Litter Control Along the River Corridor
Routine Maintenance of Fences, Trails, Signs,
Rest Rooms and Parking Lots

Enforcement of Parking Limits
Fish and Wildlife Law Enforcement
Enforcement of Traffic Laws
Peace Keeping
Trespass on Private Lands
Search and Rescue
Fee Collection and Administration
Information and Education
Volunteer Management
Biological/Resource Management

The Operating Agreement will also specify costs of management, and commit funding sources to support ongoing development, operation and maintenance, and management of the project. Funding sources and assistance with management and operation and maintenance may include one or more of the following: user fees; volunteer efforts (Riverkeeper program); Mitigation Commission funds; state or local funds; private donations.

S.3.5 Recreational Angling Use of The Corridor

S.3.5.1 Issue

Concern was expressed that the number of anglers projected to use the river corridor was underestimated, and that the impact of those users was also underestimated.

S.3.5.2 Response

Based on this comment the FEIS contains a re-analysis of recreational angling use under baseline conditions and under the Proposed Action and each alternative (Section 3.16). The impacts of the increased recreation use has been addressed in appropriate sections of Chapter 3, including Section 3.12 Socioeconomics.

S.4 Summary of Chapter 2 Comparative Analysis of The Proposed Action and Alternatives

Chapter 2 in the FEIS summarizes the major differences among the impacts of the Proposed Action and Existing Channel Modification and Instream Structures Alternatives. Table 2-1 provides quick summary of the impacts to water resources, water quality, wetlands, aquatic resources, wildlife resources, air quality, agriculture, socioeconomics, recreation and transportation that could occur under the Proposed Action and alternatives.

The No Action Alternative would not involve any changes to the current river alignment or other baseline conditions. Restoration of the Provo River between Jordanelle Dam and Deer Creek Reservoir would not occur. None of the positive impacts associated with the Proposed Action or any of the alternatives would occur if the No Action Alternative was implemented.

**Table 2-1
Summary of Impacts of Proposed Action, Existing Channel Modification Alternative
and Instream Structures Alternative**

Resource Topics	Proposed Action (Riverine Habitat Restoration)	Existing Channel Modification Alternative	Instream Structures Alternative
<p align="center">Water Resources</p> <ul style="list-style-type: none"> ● Change in Heber Valley Groundwater Levels (feet) 	<p>+1 to +3 along Provo River in northern portion of Heber Valley</p> <p>-1 along Provo River in south-central portion of Heber Valley</p>	0	0
<p align="center">Water Quality</p> <ul style="list-style-type: none"> ● Change in Temperature During Summer Until New Vegetation is Established (degrees Fahrenheit) 	from +1.2 in Reach 5 (+2%) to +6.2 in Reach 8 (+11%)	from 0 in Reach 4 to +5.4 in Reach 8 (+10%)	0
<p align="center">Wetlands</p> <ul style="list-style-type: none"> ● Net Change in Wetland Acres 	+207.6	+78.8	+0
<p align="center">Aquatic Resources</p> <ul style="list-style-type: none"> ● Change in Pounds of Trout in Provo River 	+25,212 (+481%)	+7,904 (+151%)	+3,076 (+59%)
<p align="center">Wildlife Resources</p> <ul style="list-style-type: none"> ● Net Change in Acres Wetland Wildlife Habitat 	+207.6	+78.8	+0
<ul style="list-style-type: none"> ● Average Number of Birds Gained 	+2,640 (+94%)	+1,328 (+47%)	0
<p align="center">Air Quality</p> <ul style="list-style-type: none"> ● Max. Vehicle Emissions During Any 12-Month Period of Construction (tons) 	Nitrogen oxides: 80 Sulfur oxides: 17 Particulates: 5	Nitrogen oxides: 78 Sulfur oxides: 7 Particulates: 6	Nitrogen oxides: 23 Sulfur oxides: 2 Particulates: 2

**Table 2-1
Summary of Impacts of Proposed Action, Existing Channel Modification Alternative
and Instream Structures Alternative**

Resource Topics	Proposed Action (Riverine Habitat Restoration)	Existing Channel Modification Alternative	Instream Structures Alternative
Agriculture ● Annual Production Loss (AUM* of grazing/pasture)	-1,916	-52	0
Socioeconomics ● Change in Gross Agricultural Revenue (total \$) ● Change in Total Gross Revenue in Wasatch County During Construction (peak annual \$) ● Change in Total Income in Wasatch County During Construction (peak annual \$) ● Change in Total Gross Revenue in Wasatch County After Construction (\$ per/yr)	-\$13,419 +\$2,435,566 (1.92%) +\$1,500,243 (1.2%) +\$914,722 (+<1%)	-\$364 +\$1,671,936 (1.32%) +\$1,438,980 (+1.2%) +\$399,420 (+<1%)	0 +\$109,887 (<1%) +\$99,410 (+<1%) +\$377,691 (+<1%)
Recreation ● Change in Recreation Use Along Provo River (angler days/yr)	+96,020 (+481%)	+30,102 (+151%)	+11,715 (+59%)

**Table 2-1
Comparison of Impacts of Proposed Action, Existing Channel Modification Alternative
and Instream Structures Alternative**

Resource Topics	Proposed Action (Riverine Habitat Restoration)	Existing Channel Modification Alternative	Instream Structures Alternative
Transportation <ul style="list-style-type: none"> ● Peak Increase in Traffic During Construction (daily trips) 	39 on Hwy. 189 (+1%) 78 on Hwy. 40 (+1%) 78 on River Road (+6%) 78 on Hwy. 113 (+2%)	42 on Hwy. 189 (+1%) 78 on Hwy. 40 (+1%) 78 on River Road (+6%) 78 on Hwy. 113 (+2%)	12 on Hwy. 189 (<1%) 26 on Hwy. 40 (<1%) 26 on River Road (+2%) 26 on Hwy. 113 (+1%)

Note:

Impacts in this table are defined by comparing conditions with the Proposed Action and alternatives to baseline conditions (the same way impacts are defined in Chapter 3). Percent change is the change from baseline conditions.

TSS = Total Suspended Solids; NO₃ - Nitrates; and TP - Total Phosphorus

*AUM is Animal Unit Month, the amount of forage (800 pounds dry matter) required to feed one cow and calf for one month.

3.5 Summary of Chapter 3 Affected Environment and Environmental Consequences

This section of the summary identifies the major issues of concern identified by the public or agencies during scoping, or by the EIS team during the analysis. These are presented as questions that the public, agencies or team had about what would happen if the Alternatives were implemented and are answered in the “impact analysis”. Questions were raised about what would happen to water resources, wetlands, aquatic resources, wildlife resources, threatened and endangered species, agriculture, socioeconomics and recreation resources under each Alternative. Chapter 3 contains detailed answers to those questions. This summary contains the major conclusions.

S.5.1 Water Resources

Question: What impacts would the PRRP have on reducing peak flow rates from Jordanelle Reservoir during the summer months?

Impact Analysis: The Proposed Action or none of the alternatives would affect delivery of water contracts or water rights from or through Jordanelle Reservoir. The Proposed Action would increase surface water travel time by an average of 1 hour for flows from Jordanelle to Deer Creek Reservoir because of the longer channel and slower flow velocities. The Existing Channel Modification and Instream Structures alternatives would increase water travel time by an average of about 12 minutes. The Proposed Action could increase groundwater levels by about 1 to 3 feet in the

northern portion of the valley adjacent to the river depending on the final design elevation of the river channel. These groundwater level increases would be associated with changes in the grade and length of the river channel, which affects the surface area and seepage interaction between the river and groundwater basin.

S.5.2 Wetlands

Question: How would construction of the PRRP impact wetlands?

Impact Analysis: The Proposed Action and Existing Channel Modification Alternative would increase riparian woodland, wet meadow, emergent marsh and shrub wetlands along the Provo River. Construction procedures under the Proposed Action would directly impact 28.2 acres of wet meadow, emergent marsh and shrub wetlands, but all would be restored under Standard Operating Procedures (SOPs; see Section 1.9.6.1 of Chapter 1 for a complete listing of SOPs). Construction of the Proposed Action would permanently remove 80.0 acres of wetlands. About 287.6 acres of wetland and riparian habitat would be developed under the Proposed Action, for a net increase of 207.6 acres. The Existing Channel Modification Alternative would permanently remove a total of 63.1 acres of wetlands, and would create 141.9 acres of riparian and wetlands habitat, for a net increase of 78.8 acres. The Instream Structures Alternative would have no measurable impacts on wetlands.

Question: How would changes in the groundwater table impact wetlands?

Impact Analysis: The Proposed Action or any of the alternatives would not have measurable effects on groundwater levels on a regional basis. The Proposed Action could increase groundwater levels by about 1 to 3 feet in the northern portion of the valley adjacent to the river depending on the final design elevation of the river channel, which could affect some wetlands on a localized basis. Under the Proposed Action, floodplain features such as wetlands and ponds would be constructed to take advantage of high groundwater tables near the Provo River corridor, creating diverse wetlands and wildlife habitats.

S.5.3 Aquatic Resources

Question: What opportunities would the Proposed Action and Alternatives have for developing side channels to benefit fish spawning and rearing?

Impact Analysis: Only the Proposed Action would include construction of side channels, which would benefit both game and non-game species, including the leatherside chub (a species of special concern that may benefit from these habitats). As much as 50,070 feet of side channels could be developed under the Proposed Action, although locations and design parameters will depend on land acquisition and final designs.

Question: What would be the impacts on fish, fish habitat and other aquatic resources from the PRRP?

Impact Assessment: The Proposed Action and Existing Channel Modification and Instream Structures alternatives would increase trout

biomass in the Provo River between Jordanelle Dam and Deer Creek Reservoir and also benefit non-game fish and other aquatic resources. In each case, it would take about 5 to 20 years to reach the predicted level of trout standing crop described below. The Proposed Action would increase trout biomass by about 25,212 pounds a year, or 481 percent. It also would increase aquatic habitat surface area by 13.8 acres, or 15 percent, compared to baseline conditions because of the longer channel length. The Existing Channel Modification Alternative would increase trout biomass by about 7,904 pounds per year, or 151 percent, but would decrease aquatic habitat surface area by 17.9 acres, or 20 percent, compared to baseline conditions. The Instream Structures Alternative would increase trout biomass by about 3,076 pounds per year, or 59 percent, and would not change aquatic habitat surface area from baseline conditions. Nongame fish species and other aquatic resources are expected to have similar impacts as described for trout species. These changes will occur over a period of two to 20 years as the Project Area responds to changes made to the river and floodplain under the Alternatives.

S.5.4 Wildlife Resources

Question: What would be the potential impacts of construction on wildlife and their habitat?

Impact Analysis: Construction of the Proposed Action and Existing Channel Modification and Instream Structures alternatives would temporarily disturb game and non-game wildlife species, but significant adverse impacts would be avoided. The Proposed Action would cause a net increase of 207.6 acres of riparian and

wetland wildlife habitat, which would develop over 2 to 30 years depending on habitat type. Abundance and diversity of breeding birds would increase significantly under the Proposed Action. Riparian-dependent bird species would especially increase. About 310 acres of existing wildlife habitats would be improved and protected within the Project Area under the Proposed Action. The Existing Channel Modification Alternative would cause a net increase of 78.8 acres of riparian and wetland wildlife habitat, which would develop over 2 to 30 years depending on habitat type. Increases in breeding bird diversity and abundance would also occur under the Existing Channel Modification Alternative. The Instream Structures Alternative would not change the area or quality of wildlife habitat.

Approximately 13.3 acres (4.2 percent) of Riparian Woodland habitat type would be removed during construction of the Proposed Action compared to 251 acres created by the Proposed Action resulting in a net increase of 237.7 acres (increase of 75 percent). Construction of the Existing Channel Enhancement Alternative would remove 37.6 acres (11.9 percent) of Riparian Woodland but would create 142 acres, for a net increase of 104 acres (33 percent). New cottonwoods would be planted, and natural cottonwood regeneration would occur on the floodplain. These trees would take about 15 to 30 years to reach a height and size comparable to those removed. However, cottonwood recruitment would occur incrementally over a number of overbank flood cycles, resulting in a riparian zone of greater abundance and diversity of various heights and stages of development rather than a strip of vegetation that is similar in age and

development as currently exists. Creation of a successional riparian zone would produce a complex riparian zone with diverse wildlife habitats almost immediately upon completion of construction.

Migratory birds would be affected by the PRRP. Under the Proposed Action, it is estimated that 121 birds would be removed from the population habitat losses during construction, a reduction in population of about four percent. Following construction, the Proposed Action would lead to an increase of 2,640 birds as habitat develops, an increase of 94 percent over baseline. Under the Existing Channel Alternative, construction would cause a loss of habitat for 232 birds (8 percent loss). Following construction, an increase of 1,328 birds (an increase of 47 percent over baseline) is expected to occur. The Instream Structures Alternative would not have a major effect on bird habitat or populations.

S.5.5 Threatened and Endangered Species

Question: What impacts would the Proposed Action and alternatives have on spotted frogs, Ute ladies'-tresses and bald eagles?

Impact Analysis: None of the PRRP Alternatives will have significant adverse impacts on any threatened, endangered or candidate species. The Proposed Action would temporarily disturb 24.3 acres of spotted frog habitat during construction, which would be restored by Standard Operating Procedures. It would permanently remove 62.3 acres of spotted frog habitat, which would be offset by creation and enhancement of 90.4 acres of open water,

emergent marsh and wet meadow by restoring natural functions to the riparian corridor. Ponds would be constructed in Reaches 7 and 9 to replace and expand potential overwintering habitats that would be impacted by the Proposed Action. The Existing Channel Modification Alternative would temporarily disturb 100.9 acres of spotted frog habitat, which would be restored by Standard Operating Procedures. This alternative would permanently remove 22.9 acres of spotted frog habitat. Conservation measures would be used to avoid taking of this species during construction. A long-term monitoring plan is proposed to monitor potential indirect impacts of the Proposed Action.

The Proposed Action and Existing Channel Modification Alternative would fully replace potential Ute ladies'-tresses habitat that would be removed during construction. The Proposed Action and Existing Channel Modification Alternative would have long-term beneficial effects on Ute ladies'-tresses habitat because of the development of a floodplain with periodic scouring and sediment deposition.

The Proposed Action would increase the habitat for peregrine falcon prey, and bald eagles would benefit from increased trout populations and more roosting habitat.

The U.S. Fish and Wildlife Service has determined that the Proposed Action is not likely to adversely affect any threatened or endangered species.

S.5.6 Agriculture

Issues: What are the impacts on livestock grazing and production and crop production?

Response: The Proposed Action and Existing Channel Modification Alternative would decrease grazing land and irrigated pasture animal unit months (AUM). The Proposed Action would cause a loss of 1,916 AUMs annually. The Existing Channel Modification Alternative would cause a loss of 52 AUMs annually. While related impacts on farm revenue would be minor from a local perspective, the economic impacts on individual operations could be more significant.

The Proposed Action and Existing Channel Modification Alternative would cause temporary and permanent impacts on agricultural land along the Provo River. The amount of land affected by the Proposed Action would be much larger, and thus the production losses during and after construction would be higher. Pasture and grazing land production along the river corridor would be reduced by 79.7 percent under the Proposed Action. This reduction represents only 1 percent of the total irrigated acreage in Heber Valley. The corresponding reduction in production along the river corridor for the Existing Channel Modification Alternative would be 2.2 percent. The Instream Structures Alternative would cause a very small reduction in production during construction (0.2 percent) and no impacts after construction.

Question: Would land reclaimed by filling the old river channel under the Proposed Action be covered with sufficient topsoil to conduct farming activities? Could this reclaimed land be used by farmers and ranchers with adjacent property?

Impact Analysis: Under the Proposed Action, the old river channel will be retained in fee title ownership by the federal government.

Abandoned channel segments may be filled and recontoured to floodplain elevations, but most segments would be retained as side channel or wetland features in the Core Area. The other alternatives would not result in segments of abandoned river channels.

Question: What impacts would the PRRP have on farming operations that would be divided by the Proposed Action? How would irrigation water be provided to both sides of the river where a farm is presently on one side of the river? What impacts would the PRRP have on land owner access to farms divided by the Proposed Action? Would river crossings be provided to access divided farmlands?

Impact Analysis: Even without implementation of PRRP, impacts to farming operations would occur under baseline conditions as a result of the acquisition and establishment of a fee-title public access corridor required under previous Federal actions. The Proposed Action would increase the number and extent of farming operations divided by the realigned river. Crossings of the river corridor such as bridges generally would not be provided. However, where no feasible alternate access exists or could not reasonably be developed, landowners would be provided alternate access to divided properties via bridge-type facilities or else landowners would be compensated for the loss or disruption of access. The impacts to farming operations under the Proposed Action by virtue of increased or altered travel routes to access the properties would be negotiated on a case-by-

case basis as part of the compensation due to the landowners. No additional impacts of dividing farms beyond those expected to occur under baseline conditions would occur under the Existing Channel Modification Alternative or the Instream Structures Alternative. Irrigation facilities such as canals and diversions would be restored or replaced as part of the Proposed Action or the Existing Channel Modification Alternative. Water deliveries would be assured in quantity and reliability as previously existed.

Question: What impacts would occur on livestock crossing and watering on private land under the PRRP?

Impact Analysis: Impacts on agricultural operations such as livestock watering and river crossings would occur under baseline conditions even without implementation of the PRRP. However, the Proposed Action would increase the frequency and magnitude of those impacts more than the alternatives. Crossings of the river corridor by livestock would generally not be allowed except through or over existing bridges. Bridge-type crossings may be provided if no practicable alternate access exists or can be developed, or the lack of access would be compensated for during the negotiations for property acquisition with landowners on a case-by-case basis. Presently, few livestock operations exist that require crossing the Provo River on a frequent basis. Access to the Provo River for watering or development of alternative off-stream watering sources would be provided as negotiated with landowners on a case-by-case basis according to individual circumstances and needs.

Question: What would be the impacts of restrictions on motorized equipment crossing the river, and how would these impacts be mitigated to accommodate existing access by farmers and ranchers?

Impact Analysis: This is also an impact that will occur under baseline. The Proposed Action would increase the area within which motorized equipment generally would not be allowed. As previously discussed, exceptions may be negotiated on a case-by-case basis, and could involve either existing bridges or bridge-type facilities.

Question: How would increased public access along the river affect farming activities?

Impact Analysis: The public access to the river corridor would be provided under baseline conditions, even without implementation of the PRRP project. Increased use of the Project Area would occur under each of the alternatives. Impacts of the increased recreation use would be reduced by management actions to provide parking, trash pick-up and sanitary facilities. Access will be pedestrian only, and fencing of the Project Area will limit trespassing onto adjacent property.

Question: What impacts would improvement of threatened and endangered species habitats along the river have on future agricultural uses?

Impact Analysis: No impact on agricultural uses is expected, because Ute ladies' tresses habitat occurs within the active floodplain of the Provo River which will be acquired under baseline or the action alternatives, and is in areas where agricultural uses currently do not

occur. The bald eagle is a winter resident and/or migrant in the Project Area. Implement of habitat for Ute ladies' tresses and bald eagle would occur under the Proposed Action and the Existing Channel Modification Alternative. Increase in bald eagle roosting habitat would occur through expansion of the riparian cottonwood forest and increases in the fish food base. Because bald eagles will be in the Project Area at a time when agriculture use is at a minimum, the increases in roosting habitat would not impact agricultural uses beyond what may have occurred without the project. The Proposed Action would increase potential foraging habitat for peregrine falcon; however the peregrine has not been recorded in Heber Valley or in the Project Area in the recent past.

S.5.7 Socioeconomics

Question: What social, emotional and economic impacts would occur to property owners along the river from people trespassing, potential loss of private land by acquisition, providing public access, and an influx of people pursuing recreational activities?

Impact Analysis: Fencing of the public access corridor will occur under baseline conditions and should limit the amount of trespass. Additionally the Mitigation Commission is proposing to develop an operating agreement with Wasatch County and the Division of Wildlife Resources that would identify the entity responsible for handling trespass matters. The concern over the potential loss of private land by acquisition has been addressed by modifying the Proposed Action to distinguish between land essential to the Proposed Action (Core Area) and the land that would enhance the Proposed Action (Expanded Restoration Area).

Lands that fall into the Expanded Restoration Area (only applicable to the Proposed Action) would be acquired on a willing seller basis only. While the impacts from trespass and selling of private land can be reduced they will not be eliminated. The impact will depend on the attitude of the individual property owner. Unwilling sellers will resent imposition and control by others on their property rights and their sense of independence. Other property owners may benefit from increased property values and be willing sellers.

Question: How would the county tax base be affected by converting agricultural lands to a more sinuous river channel?

Impact Analysis: Construction of the Proposed Action, Existing Channel Modification or Instream Structures Alternatives would all result in an overall increase in tax revenues collected by the Wasatch County. Sales tax revenues would increase by about \$30,341 annually after construction of the Proposed Action as anglers spend money on food, gasoline and other retail goods. Under the Proposed Action, there would be a small decrease in property tax revenues collected by Wasatch County. The lands to be acquired are eligible for valuation under the Farmland Assessment Act (Green Belt Taxes) and the estimated property tax revenues that would not be collected as a result of land acquisition is approximately \$1,615. Wasatch County would be eligible for Federal Payments-In-Lieu-of-Taxes (PILT) for lands acquired of approximately \$756 per year. Therefore, the net decrease in property tax revenue would be about \$878. A separate and minor increase in property tax revenues could occur if the amenities of the

Proposed Action increase property values along the Provo River.

The net increase in taxes collected by the County under the Proposed Action is estimated to be \$29,482.

Similar changes in property tax and sales tax collections would occur under the Existing Channel Modification Alternative but to smaller magnitude. The net increase in taxes collected by the County under the Existing Channel Modification Alternative would be \$9,658. Under the Instream Structures Alternative there would be no change in property taxes collected. Sales tax revenues would increase by \$3,899.

Question: What economic impacts would be incurred by private land owners along the river from acquisition of land for the Proposed Action and alternatives?

Impact Analysis: Private landowners will be compensated at current fair market value for the lands acquired. The acquisition of lands could change production costs for some farmers if irrigation systems need to be modified, transportation routes changed or cultivation practices need to be modified. The specific impacts on individual farm enterprises would vary, are difficult to measure and were not defined in this analysis. The Standard Operating Procedures (SOPs) described in Section 1.9.6.1 of Chapter 1 would help avoid adverse production cost impacts on individual farmers and land owners. Most modifications and repairs would be completed by the project during construction, or landowners would be compensated for impacts caused by the project.

Question: What probable economic impacts would new recreation and resources users have on Heber Valley?

Impact Analysis: Construction of the Proposed Action, Existing Channel Modification or Instream Structures Alternatives would increase gross revenue, income and employment in Wasatch County. During construction, the Proposed Action would cause an annual decrease of about \$13,419 in agriculture revenue. This loss would be offset by an annual increase in revenue of about \$2,435,566 in other sectors of the local economy as construction equipment, materials, supplies and lands are purchased for the construction project. After construction, revenue in all sectors of the Wasatch County economy would increase by about \$914,722 a year as anglers spend money in the valley on food, gasoline and other retail goods. Earnings would increase by approximately \$241,962 per year supporting about 19 new jobs (these after-construction increases are less than one percent over baseline conditions). The Existing Channel Modification Alternative would increase total Wasatch County revenue by about \$1,671,936 per year during construction. After construction, revenue in all sectors of the Wasatch County economy would increase by about \$399,420. Earnings would increase by approximately \$109,449 per year supporting about 8 new jobs (these after-construction increases are less than one percent over baseline conditions). The Instream Structures Alternative would increase total Wasatch County revenue by about \$109,887 per year during construction. After construction, revenue in all sectors of the Wasatch County economy would increase by about \$377,691. Earnings would increase by approximately

\$110,718 per year supporting about 9 new jobs (these increases are less than one percent over baseline conditions).

S.5.8 Recreation Resources

Question: What would be the recreational capacity of the river under the PRRP?

Impact Analysis: Recreational opportunities would increase significantly over baseline conditions along the Provo River under the Proposed Action and Existing Channel Modification and Instream Structures Alternatives because of the increases in trout production. The baseline facilities and acquisition of public access would be used by more anglers than under baseline. The Proposed Action would increase recreational fishing by 96,020 angler days a year, or 481 percent. The Existing Channel Modification Alternative would increase recreational fishing by 30,102 angler days a year, or 151 percent. The Instream Structures Alternative would increase recreational fishing by 11,715 angler days per year, or 59 percent.

Question: What impacts would increased recreational use by fishermen, hikers, bikers, joggers and others have on highly sensitive areas along the river?

Impact Analysis: Increased use of the public access corridor as a result of improved fish and wildlife populations could impact some resources. However, the corridor will be managed for pedestrian and some wheelchair access only. Motorized vehicles and other wheeled vehicles (e.g. bicycles and skateboards) and horseback riding will not be allowed. The

Mitigation Commission proposes to develop an operating agreement(s) with Wasatch County and the Utah Division of Wildlife Resources and possibly other appropriate entities for management of the corridor in order to assure that recreation in the corridor is managed to protect highly sensitive areas along the river. Other measures to reduce impacts such as parking areas and trash pickup are described in Section 1.4.2 of the FEIS. These management actions would occur under baseline, and would be adjusted or increased as needed under the Proposed Action or Alternatives.

S.6 Issues to be Resolved

This section defines issues that need to be resolved.

S.6.1 Wetlands

Wetlands temporarily impacted by the Proposed Action and Alternatives would be restored by Standard Operating Procedures. The Wetlands analysis also concluded that the amount and quality of riparian wetlands created by the Proposed Action and Existing Channel Modification Alternative would be greater than those affected along the Provo River. Therefore, mitigation has not been proposed for these impacts. Mitigation has been proposed for impacts on USBR mitigation wetlands and wet meadow wetlands. The conclusions of the wetlands analysis need to be reviewed and approved by the reviewing agencies, especially the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency.

Following a Record of Decision on the PRRP and following final design of the selected action, a 404 Permit application will be developed and filed with the U.S. Army Corps of Engineers and, if required, similar applications will be filed with the State of Utah for stream channel alterations.

S.7 Summary of Chapter 4 Consultation and Coordination

The Mitigation Commission and, prior to its formation, the Central Utah Water Conservancy District conducted extensive consultation and coordination while preparing this EIS and performed related environmental and planning studies. Pre-scoping and scoping consultations were held with the public, agencies and organizations. Less formal consultations with agencies, organizations and technical experts took place throughout the preparation of the EIS.

S.7.1 Development of The Draft EIS

The EIS scoping process included consultations with 29 agencies and organizations as well as 260 members of the general public. The concerns voiced by people at district workshops were incorporated into the Preliminary Planning Report in February 1993. Additional comments received at scoping meetings in February 1993 and in March 1994 and others received in writing after the meetings were analyzed and used to finalize the alternatives and scope of the EIS. A Scoping Summary Report (CUWCD 1995) identified the following resource topics as the most important to the public, agencies and organizations that participated in scoping: agriculture, surface water, socioeconomics,

wildlife resources, aquatic resources, wetlands and recreation. Resource topics identified as moderately important included threatened and endangered species, water quality, groundwater and health and safety.

Additional technical consultation and coordination occurred during the preparation of the EIS, and early planning studies. The following committees provided valuable input and helped reach important decisions:

- Provo River Restoration Project Technical Advisory Committee (composed of 26 agencies, organizations and invited technical experts)
- Provo/Wasatch Planning Coordination Committee (composed of 18 agencies and organizations)
- Fishery Technical Committee (composed of 16 agencies and organizations)
- Wetlands Technical Committee (composed of 19 agencies and organizations)
- Water Quality Technical Committee (composed of 9 agencies and organizations)
- Spotted Frog Advisory Team (composed of 3 agencies and 5 other specialists)

A Design Criteria Workshop was held in July 1993. A key component of this workshop was a tour of the Project Area with landowners. All affected landowners were invited to attend portions of the workshop and were given the

opportunity to discuss their concerns directly with the project design team and the PRRP Technical Advisory Committee.

Draft work plans prepared for each resource topic addressed in the EIS were reviewed by 11 agencies and organizations and their comments incorporated into final work plans distributed in July and August 1994. Chapter 1 of the Preliminary Draft Environmental Impact Statement was distributed to 14 agencies and organizations in July 1995 for early review and comment so they and their representatives would better understand the Proposed Action and alternatives as they reviewed the EIS technical reports. Draft EIS technical reports were distributed to 11 agencies and organizations for comments, and meetings were held to receive verbal comments. These meetings were held in October, November and December 1995 and additional comments were received in writing after the meetings.

S.7.2 Review of the Draft EIS

The Fish and Wildlife Service has been involved in continuous consultation regarding the PRRP in accordance with the Fish and Wildlife Coordination Act. Comments on the Draft EIS resulted in some changes to the Proposed Action and Alternatives in the FEIS. The PRRP will incorporate all applicable recommendations of the Fish and Wildlife Service as Environmental Commitments (listed in Appendix D) The Fish and Wildlife Service has issued a Draft Biological Opinion on the PRRP based on the Draft Biological Assessment submitted for review and comment. A Final Biological Opinion is expected following review of the FEIS.

Approximately 500 copies of the Draft EIS were distributed by mail to various individuals, organizations and governmental agencies. During the 60-day public comment period (June 10, 1996 to August 13, 1996) the Mitigation Commission conducted two formal public hearings in Salt Lake and Heber City to solicit public comment on the DEIS. In addition to the testimony received at the public hearings, the Mitigation Commission received a total of 26 letters. Chapter 4 of the FEIS contains responses to both written comments, and verbal comments received at the public hearings. See Section 4.5.2 for responses to the written comments and Section 4.5.3 for responses to the verbal comments.

S.8 Implementation Program

This FEIS represents a critical point in the development and implementation of the PRRP. Steps leading up to this FEIS were summarized in Section S.7. Following review of the Final

EIS Record of Decision to select which of the Alternatives to implement. Several other steps then will be initiated to bring the PRRP to fruition, including:

- Final Design
- Permitting (Section 404 (wetlands), Section 401 (water quality))
- Finalize and Implement Operating Agreement/Management Plan
- Land Acquisition
- Construction
- Monitoring and Maintenance

Table 1-18 in Chapter 1 of the FEIS describes the various permits, approvals or agreements that may be needed prior to implementation of the PRRP, depending on which Alternative is selected through the Record of Decision process.