

**Diamond Fork System
2002 Final Environmental Assessment for the
Proposed Action Modifications**

March 28, 2002

Prepared for

**Central Utah Water Conservancy District (Lead Agency)
Utah Reclamation Mitigation and Conservation Commission (Joint-Lead Agency)
U.S. Department of the Interior (Joint-Lead Agency)**

Prepared by

**Montgomery Watson Harza
Boise, Idaho**



**UTAH RECLAMATION
MITIGATION
AND CONSERVATION
COMMISSION**



FINDING OF NO SIGNIFICANT IMPACT

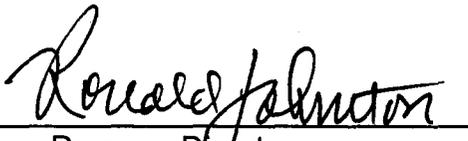
**Diamond Fork System
2002 Proposed Action Modifications**

United States Department of the Interior
Central Utah Project Completion Office
Provo, Utah

CUPCA-FONSI-02-001
March 2002

Recommended: 
Program Coordinator

March 29, 2002
Date

Approved: 
Program Director

March 29, 2002
Date

FINDING OF NO SIGNIFICANT IMPACT

Diamond Fork System – 2002 Proposed Action Modifications

FINDING

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, and the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Part 1500-1508), the Department of the Interior (Interior) has determined that implementing the modifications to the Proposed Action Alternative described in the Diamond Fork System 2002 Final Environmental Assessment for the Proposed Action Modifications, dated March 28, 2002 (2002 Modifications EA), would not have a significant impact on the quality of the human environment and that an environmental impact statement is not required. The Proposed Action Modifications described in the 2002 Modifications EA include some features from the July 1999 Diamond Fork System Final Supplement to the Final Environmental Impact Statement (FES 99-25) (FS-FEIS) and the June 2000 Final Environmental Assessment for the Diamond Fork System Proposed Action Modifications (2000 Modifications EA).

DECISION

Interior has decided to implement the Proposed Action Modifications as described in the March 2002 Modifications EA. The following features comprise the 2002 Proposed Action Modifications: 1) Sixth Water Connection to Tanner Ridge Tunnel; 2) Tanner Ridge Tunnel; 3) Upper Diamond Fork Pipeline; 4) Upper Diamond Fork Flow Control Structure; 5) Upper Diamond Fork Shaft; 6) Aeration Chamber and Connection to Upper Diamond Fork Tunnel; and 7) Upper Diamond Fork Road Reconstruction. These water conveyance features would be sized to convey the same flow volumes as described in the Diamond Fork System FS-FEIS.

The Proposed Action Modifications would be operated on an interim basis the same as described in Chapter 1, Section 1.6, Page 1-13 of the 2000 Modifications EA. The potential for generating hydroelectric power would remain the same as described in Chapter 1, Section 1.3.1, Page 1-13 of the FS-FEIS.

REASONS FOR THE DECISION

The construction on the Diamond Fork Tunnel, as described in 2000 Modifications EA/FONSI, was initiated in July 2000. Tunnel construction continued on schedule until October 2001 when large volumes of groundwater were encountered in clay seams at a fault zone. The groundwater contained high concentrations of hydrogen sulfide (H₂S),

which were released into the air, requiring tunnel workers to wear gas masks. The tunnel excavation continued slowly until early January 2002 when a major unforeseen cave-in suddenly occurred. As a result of the cave-in, the groundwater flows increased dramatically and H₂S gas levels increased to potentially lethal concentrations. Tunnel excavation was suspended and workers were evacuated until safe working conditions could be re-established.

As a result of these unforeseen conditions, it is no longer feasible to complete the Diamond Fork System as described in the 2000 Modifications EA/FONSI. Other tunneling concepts along the existing tunnel alignment have been investigated and are infeasible because of high costs, unknown conditions and unproven technology. However, it is feasible and cost effective to utilize the lower portion of the existing Diamond Fork Tunnel and connect it via a shaft to some of the features that were described and analyzed in the FS-FEIS. The features described in the 2002 Modifications EA would allow the Diamond Fork System to be completed in fall 2004 to meet contractual obligations for Bonneville Unit Municipal and Industrial water deliveries in 2005. The 2002 Proposed Action Modifications would meet the purposes and needs described in the FS-FEIS.

PUBLIC INVOLVEMENT

The Joint-Lead Agencies (Interior, Central Utah Water Conservancy District (District), and Utah Reclamation Mitigation and Conservation Commission) initiated public involvement activities on January 25, 2002 by meeting with the cooperating agencies and other resource management agencies to brief them on the status and problems with the Diamond Fork Tunnel construction, answer questions, and listen to and address their issues and concerns. A second meeting was held between the District, Interior, and the U.S. Forest Service on February 4, 2002 to review the tunnel construction problems and present proposed modifications necessary to complete the Diamond Fork System. Interior and the District met with the Office of the Assistant Secretary – Water and Science on February 6, 2002 to provide a briefing on the tunnel construction problems and proposed modifications. The Joint-Lead Agencies met with the cooperating agencies on February 21, 2002, for a field review of the 2002 Proposed Action Modifications.

The Joint-Lead Agencies have conducted an extensive public participation process for the Diamond Fork System. This process is documented in the 1998 SFN Draft EIS, 1999 FS-FEIS and ROD, 2000 Modifications EA/FONSI, and 2002 Modifications EA. This FONSI and the 2002 Modifications EA will be provided to all agencies and individuals that commented on the FS-FEIS, the 2000 Modifications EA/FONSI, and other interested or affected parties and the public. In addition, a Notice of Availability of the 2002 Modifications EA/FONSI will be published in the Federal Register.

SUMMARY OF ENVIRONMENTAL IMPACTS

The affected environment (baseline conditions) of resources of the human environment that would be impacted by construction and operation of the Proposed Action Modifications are described in the 2002 Modifications EA. It also documents the environmental impacts to the quality of the human environment.

The impact analysis in the 2002 Modifications EA focuses only on the impacts that would occur from construction and operation of the Proposed Action Modifications. It does not repeat any environmental conditions and impacts that remain unchanged from those described in the FS-FEIS or the 2000 Modifications EA. The impact analysis incorporates the Standard Operating Procedures described in Chapter 1, Section 1.7.8 and Section 1.7.9, and the Noxious Weed Control Plan (Appendix A), of the FS-FEIS. It also incorporates all of the Environmental Commitments included in the 1990 ROD, the 1995 ROD, the 1999 FS-FEIS and ROD, and the 2000 Modifications EA.

The environmental analyses indicate that the direct, indirect and cumulative impacts associated with the 2002 Proposed Action Modifications are less than those described in the FS-FEIS and are generally temporary, short-term, and insignificant.

MITIGATION MEASURES AND MONITORING

Implementation of the 2002 Proposed Action Modifications would require the following additional monitoring to what was described in Chapter 3, Section 3.20, Pages 3-207 through 3-218, of the FS-FEIS.

- In cooperation with the Forest Service, the District would monitor the Fifth Water Trail conditions during the project construction period and corrective actions would be taken to address impacts from increased use resulting from temporary closure of the Three Forks Trailhead.
- The Stinking Springs and other sulfur springs would be monitored to determine whether flows remain diminished or return to normal average flow rates.

The environmental commitments included in the 1990 ROD, the 1995 ROD, the 1999 FS-FEIS and ROD, and the 2000 Modifications EA have not changed, except to include the additional environmental commitments that have been added as a result of the 2002 Modifications EA (see Appendix A of the 2002 Modifications EA). The Joint-Lead Agencies in coordination with the cooperating agencies will identify, document, delete, and/or modify the previous environmental commitments that are no longer applicable to the 2002 Proposed Action Modifications. After appropriate public involvement, the changes in the environmental commitments will be documented in a memorandum of understanding among the Joint-Lead Agencies with the concurrence of the Fish and Wildlife Service and the Forest Service.

**Decision Notice and Finding of No Significant Impact
for the
Diamond Fork System
2002 Proposed Action Modifications**

I. Introduction and Background

This Finding of No Significant Impact (FONSI) documents the Utah Reclamation Mitigation and Conservation Commission's (Mitigation Commission's) decision to complete the Diamond Fork System of the Bonneville Unit of the Central Utah Project by constructing the tunnels, pipelines, shafts, and other facilities as described herein. The Proposed Action described in this FONSI is a composite of the features presented in: (1) the Final Environmental Assessment for the Diamond Fork System Proposed Action Modifications and the Finding of No Significant Impact (FONSI), dated June 15, 2000 (2000 Modifications EA/FONSI); (2) the Diamond Fork System 1999 Final Supplement to the 1984 Diamond Fork Power System Final Environmental Impact Statement, FEIS 99-25, (1999 FS-FEIS) filed with the Environmental Protection Agency on July 1, 1999, and the accompanying Record of Decision (1999 ROD); and (3) the 2002 Final Environmental Assessment for the Diamond Fork System Modifications, dated March 27, 2002 (2002 Modifications EA). The U.S. Department of the Interior (Interior), the Central Utah Water Conservancy District (the District), and the Mitigation Commission are the Joint-Lead Agencies responsible for NEPA compliance for the Diamond Fork System.

The Proposed Action includes the following features that are described in the 1999 FS-FEIS and 1999 ROD: 1) Tanner Ridge Tunnel; 2) Upper Diamond Fork Pipeline; 3) Access Road and Road Reconstruction; and 4) modifications to Spanish Fork River diversion dams.

The Proposed Action includes the following features that are described in the 2000 Modifications EA/FONSI: 1) Upper Diamond Fork Tunnel; 2) Monks Hollow Overflow Structure; 3) Diamond Fork Creek Outlet; 4) Diamond Fork Pipeline Extension; 5) Connection to the existing Diamond Fork Pipeline; and 6) Access Road and Road Reconstruction.

The Proposed Action includes the following features that are described in the 2002 Modifications EA: 1) the lower portion of the Upper Diamond Fork Pipeline; 2) Upper Diamond Fork Creek Road Reconstruction; 3) Upper Diamond Fork Flow Control Structure; 4) Upper Diamond Fork Shaft and the Connection to the Upper Diamond Fork Tunnel; and (5) Sixth Water Connection to the Tanner Ridge Tunnel.

The Mitigation Commission, through this FONSI, selects the Proposed Action as presented herein and approves its cooperation with the District and Interior in completion of the Diamond Fork System. This FONSI, which incorporates the 1999 FS-FEIS and ROD, June 2000 Modifications EA/FONSI, and the 2002 Modifications EA by reference, explains the basis for this decision, and establishes the parameters under which the Mitigation Commission will participate.

The Mitigation Commission's 1999 ROD approved the completion of the Diamond Fork System by constructing a series of tunnels and pipelines as described in the 1999 FS-FEIS. However, the 1999 ROD recognized that mandated value engineering studies could provide recommendations with significant environmental benefits and/or reductions in project costs, and indicated that the Joint-Lead Agencies could modify the project plan accordingly. This value engineering process is required by Section 4306 of Public Law 104-106, which amended the Federal Procurement Policy Act (41 U.S.C. 401). In addition, the Office

of Management and Budget Circular A-131 requires Federal departments and agencies to include value engineering on all projects using Federal funds exceeding \$500,000. As a result, a value engineering study was completed which identified several modifications that could potentially reduce the costs, reduce the environmental impacts, and improve the environmental benefits. Therefore, the Joint-Lead Agencies decided to implement the modifications as described in the June 2000 Modifications EA/FONSI.

Construction on the Diamond Fork Tunnel was initiated in July 2000 and continued on schedule. However, on October 24, 2001, large volumes of groundwater were encountered in clay seams at a fault zone as the tunnel excavation was proceeding. The groundwater contained hydrogen sulfide (H₂S) in solution, which raised the H₂S gas levels in the air to the point the workers were required to wear gas masks. Using the gas masks, the tunnel excavation continued slowly until January 3, 2002, when a cave-in occurred at the previously encountered fault zone. The groundwater flows increased dramatically and H₂S gas levels increased to potentially fatal levels. The workers were evacuated and tunnel excavation was suspended until safe working conditions could be reestablished.

Because of the problems associated with the groundwater and H₂S gas, it is no longer feasible to complete the project as originally planned. All of the tunneling concepts along the existing tunnel alignment are infeasible due to high costs or unproven technology. However, it is feasible to move the tunnel shaft to approximately where the existing tunnel crosses Diamond Fork Creek and complete the remainder of the project as described in the 1999 FS-FEIS and 1999 ROD. This would allow the Diamond Fork System to be completed on time, is the most cost effective, and is the most feasible.

II. Description of the Proposed Action

A portion of the Diamond Fork System has already been constructed. The constructed portion consists of the Syar Tunnel Inlet, Syar Tunnel, Sixth Water Aqueduct and the Diamond Fork Pipeline. Although the Diamond Fork Pipeline has been completed, it is nonfunctional and awaits completion of the remaining features of the Diamond Fork System. The Strawberry Tunnel, constructed in the early 1900's as part of the prior Strawberry Valley Project (SVP), delivered SVP water from Strawberry Reservoir and released it into the highest headwaters of Sixth Water Creek. The Syar Tunnel and Sixth Water Aqueduct now deliver most of the SVP and Central Utah Project (CUP) water from Strawberry Reservoir and conveys it to a point on Sixth Water Creek several miles downstream of the Strawberry Tunnel Outlet.

Construction on the remaining features of the Diamond Fork System, as described in the June 2000 Modifications EA/FONSI, was initiated in July 2000; however, in January 2002, a cave-in occurred in the Diamond Fork Tunnel at a previously encountered fault zone. Groundwater flows at the fault zone increased dramatically and H₂S gas levels increased to potentially fatal levels and tunnel excavation has been suspended. Therefore, the Diamond Fork System will be completed by constructing the following features: 1) Sixth Water Connection to Tanner Ridge Tunnel; 2) Tanner Ridge Tunnel which includes the inlet portal, tunnel, outlet portal, east temporary access road, helicopter pad, and spoil area at the outlet portal; 3) Upper Diamond Fork Pipeline including the construction staging area; 4) Upper Diamond Fork Road Reconstruction; 5) Upper Diamond Fork Flow Control Structure including the permanent access road; 6) Upper Diamond Fork Shaft and the Connection to the Upper Diamond Fork Tunnel; 7) Upper Diamond Fork Tunnel; 8) Monks Hollow Overflow Structure; 9) Diamond Fork Creek Outlet; 10) Diamond Fork Pipeline Extension; 11) Connection to the existing Diamond Fork Pipeline; 12) Upper Diamond Fork Tunnel Access Road and Diamond Fork Road Reconstruction; and 14) modifications to Spanish Fork River diversion dams.

The Diamond Fork System is an integral part of the Bonneville Unit (BU) and must ultimately be operated to function with the completed Bonneville Unit. Until the Bonneville Unit is completed, the Diamond Fork System will be operated as described in the 1999 FS-FEIS. Under this Proposed Action, the Diamond Fork System will be operated on an interim basis to convey an average annual diversion of 86,100 acre-feet of BU water until: 1) NEPA compliance is completed for future operations of the Diamond Fork System that may include different irrigation or M&I operations or additional environmental restoration objectives in Diamond Fork Creek; or 2) the proposed Utah Lake System is completed and NEPA compliance is met through an EIS and a ROD is issued; and/or 3) additional future actions are implemented with appropriate NEPA compliance. The average annual diversion of 86,100 acre-feet will vary from a maximum of 161,100 acre-feet to a minimum of 19,800 acre-feet. Under the proposed Utah Lake System, the average annual diversion will increase from 86,100 acre-feet to 101,900 acre-feet and additional NEPA compliance will be required as documented in the 1999 ROD, the 1999 FS-FEIS, and a Federal Register Notice published October 14, 1998 (FR Doc. 98-27484).

III. Decision

It is the decision of the Mitigation Commission to complete the Diamond Fork System by constructing the facilities presented herein and described in detail in the 1999 FS-FEIS, the 2000 Modifications EA/FONSI, and the 2002 Modifications EA. In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, and the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Part 1500-1508), the Mitigation Commission has determined that implementing the modifications to the Proposed Action Alternative described in the Diamond Fork System 2002 Final Environmental Assessment for the Proposed Action Modifications, dated March 27, 2002 (2002 Modifications EA), would not have a significant impact on the quality of the human environment and that an environmental impact statement is not required. The Mitigation Commission also approves its cooperation with the District and Interior to construct and operate the Diamond Fork System in accordance with statutory and environmental commitments. In making this decision, the Mitigation Commission has reviewed all the previous alternatives and their predicted environmental, economic, and social impacts, and considered the previous comments submitted by interested parties. The negative impacts are acceptable given the benefits expected, the mitigation and enhancement provided, and consequently, the Proposed Action is adopted.

In addition, the Mitigation Commission has previously made specific environmental commitments which, by agreement and statutory provision, are binding on the District, Interior, and the Mitigation Commission. These commitments were previously summarized and documented in the 1999 ROD. The Joint-Lead Agencies will implement these environmental commitments as required in the 1990, 1995, and 1999 ROD's and as expanded, quantified, and documented in the 2002 Modifications EA and this FONSI.

IV. Basis for Decision

The needs and purposes for the Proposed Action do not vary from the previous NEPA compliance documents. The Proposed Action still removes most of the CUP and SVP water diverted from Strawberry Reservoir and provides water for the mandatory minimum instream flows. As a result, the Proposed Action will immediately facilitate a measure of natural restoration within Sixth Water and Diamond Fork Creeks. This Proposed Action continues to fulfill the project needs to: 1) maintain the statutorily mandated minimum flows in Sixth Water Creek and Diamond Fork Creek; 2) implement the Mitigation Commission's

environmental commitments associated with the Diamond Fork Pipeline and the 1999 ROD, which includes but is not limited to removing high flows brought over from Strawberry Reservoir (both SVP and BU water) into the Sixth Water and Diamond Fork creek drainages; 3) meet the District's M&I water contractual commitments to Salt Lake, Utah and Wasatch Counties, by conveying Bonneville Unit water to Utah Lake for exchange to Jordanelle Reservoir and historical SVP irrigation water; and 4) provide the Mitigation Commission the opportunity and flexibility for future restoration of aquatic and riparian habitat in Sixth Water and Diamond Fork Creeks to protect water quality and threatened species in Diamond Fork Creek.

This Proposed Action also fulfills the project purposes established in the 1999 FS-FEIS: to provide conveyance of SVP historical diversions into their existing system; to minimize adverse impacts on aquatic, riparian and other environmental resources in the Sixth Water and Diamond Fork creek drainages; to minimize adverse impacts on threatened and endangered species, wetlands and floodplains; to minimize the cost of project features; to achieve full repayment by maximizing M&I water deliveries; and to fulfill outstanding environmental commitments.

The selection of this Proposed Action responds to the Mitigation Commission's previous environmental commitments in the Diamond Fork drainage which are summarized in the 1999 ROD, the 2000 Modifications EA/FONSI, the 2002 Modifications EA, and this FONSI. This Proposed Action continues to meet all of the "purposes and needs" for the project identified in the 1999 ROD.

V. Environmentally Preferable Alternative

This Proposed Action is the Environmentally Preferred Alternative. It provides the greatest environmental benefits and least impacts. The Proposed Action removes damaging high flows from the entire Sixth Water Creek and Diamond Fork Creek, provides for minimum instream flows, allows for the restoration of the riverine ecology in the whole reach of both creeks and improves water quality. Bonneville cutthroat trout, a special category of Utah native fish, will benefit greatly from this alternative. The Proposed Action greatly increases native trout production through improvement of flow conditions, water temperature, aquatic habitat and the restoration of a stream with pools and cover. There is little loss of riparian habitat and most of the land disturbance will be of short duration. Further, recreation will increase along with the restoration of habitat as more people fish, hike, camp, and recreate in the reestablished ecosystem. Travel will be easier and safer.

VI. Public Involvement

The public participation process for the Diamond Fork System has been extensive. This process is documented in great detail in the 1998 SFN DEIS, the 1999 FS-FEIS and ROD, the 2000 Modifications EA/FONSI, and the 2002 Modifications EA/FONSI. This ROD and the 2002 Modifications EA/FONSI will be provided to all agencies and individuals who commented on the draft 1999 FS-FEIS, the 2000 Modifications EA/FONSI, and other interested or affected parties and the public.

VII. Consultation

During preparation of the 2002 Modifications EA, the Joint-Lead Agencies consulted with the U.S. Forest Service, the U.S. Fish and Wildlife Service, the Utah Division of Wildlife Resources, the Utah Division of Water Resources, the Utah Department of Natural Resources, the Utah Division of Water Quality, the U.S. Environmental Protection Agency, and the Utah State Engineer. Consultation associated with the 1993 SFN DEIS, the 1999 FS-FEIS and ROD, the 2000 Modifications EA/FONSI are included and documented in those documents.

VIII. Finding of No Significant Impact

Based on information contained in the 2002 Modifications EA and supporting documentation, a Finding of No Significant Impact (FONSI) is made on this action in compliance with the provisions of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands). This action would also not significantly affect the quality of the human environment, within the meaning of Section 102(2)(C) of the National Environment Policy Act (NEPA), for the following reasons.

1. The environmental impacts of this action are not considered significant.
2. Public health and safety are minimally affected by this action.
3. Although a minor amount of riparian habitats will may be disturbed by implementation of the Proposed Action, construction activities will be conducted in a manner to avoid and reduce those impacts to the extent feasible and restoration of riparian areas along Diamond Fork Creek that will be made possible by implementing the Proposed Action will far surpass the minor amount that may be impacted. Unique resources are not threatened by this action.
4. None of the identified environmental effects are considered highly controversial.
5. None of the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
6. The action sets no precedent or decision in principle about other actions which could pose significant environmental effects.
7. This action is unrelated but may be affected by, or affect, other potential future actions, specifically the Utah Lake System which is undergoing separate NEPA compliance.
8. State and Federal historic preservation laws require consultation with historic preservation officials prior to an action which would affect the integrity of any structure that qualifies for listing in the National Register of Historic Places. No eligible sites are known to occur in the project area.
9. The action being implemented under this FONSI is undertaken in compliance with consultation with the U.S. Fish and Wildlife Service and a determination of "no effect" on threatened or endangered species (for purposes of the Endangered Species Act).
10. This action would not threaten any violations of applicable laws or requirements imposed for

protection of the environment.

IX. Implementation

The construction of the Proposed Action by the District will be pursuant to and in accordance with this FONSI, the 2002 Modifications EA, the 2000 Modifications EA/FONSI, the 1999 ROD, the 1999 FS-FEIS, the 1995 ROD, the August 11, 1993 Compliance and Cost Sharing Agreements, the D&MC funding contracts Nos. 99-07-40R-6180 and 99-07-40R-6190, the 1999 Fish and Wildlife Coordination Act Report, the Biological Opinion issued pursuant to the Endangered Species Act, licenses and permits enumerated in the 1999 FS-FEIS, and such written approvals as required by Interior and the Mitigation Commission. Implementation of the Proposed Action may occur immediately upon signing this FONSI.

X. Further Information

Please direct questions on the 2002 Modifications EA or FONSI to Mark Holden, Projects Manager, Utah Reclamation Mitigation and Conservation Commission; 102 West 500 South, #315, Salt Lake City, Utah 84101 (Phone (801) 524-3146)

XI. Signature

Approved:



Michael C. Weland, Executive Director
Utah Reclamation Mitigation and Conservation Commission

Date:



COVER SHEET

Diamond Fork System 2002 Final Environmental Assessment for the Proposed Action Modifications

Joint Lead Agencies

Central Utah Water Conservancy District (District)

U.S. Department of the Interior (DOI)

Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission)

Cooperating Agencies

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

U.S. Department of Agriculture, Forest Service

U.S. Corps of Engineers

Utah Division of Wildlife Resources

Utah Division of Water Rights

Counties that Could Be Affected

Utah County, Utah

Abstract

This Environmental Assessment (EA) covers the modifications made to the Proposed Action Modifications described in Chapter 1 of the Final Environmental Assessment for the Diamond Fork System Proposed Action Modifications (2000 Modifications EA) (CUWCD 2000) and the Final Supplement to the Final Environmental Impact Statement (FS-FEIS) (CUWCD 1999). The modifications would replace or modify the following Proposed Action Modification features:

- Sixth Water Connection to Upper Diamond Fork Shaft (change in number of shafts, but no change in overall size of the area)
- Upper Diamond Fork Shaft (relocated)
- Upper Diamond Fork Flow Control Structure (relocated)
- Upper portion of the Diamond Fork Tunnel (replaced with Tanner Ridge Tunnel)
- Diamond Fork Siphon (modified by the Upper Diamond Fork Pipeline)

The 2002 Proposed Action Modifications consist of the following features:

- Sixth Water Connection to Tanner Ridge Tunnel
- Tanner Ridge Tunnel
- Upper Diamond Fork Pipeline
- Upper Diamond Fork Road Reconstruction
- Upper Diamond Fork Flow Control Structure
- Diamond Fork Shafts
- Aeration Chamber and Connection to Upper Diamond Fork Tunnel

The EA is tiered to the FS-FEIS and the 2000 Modifications EA and only addresses the impacts of the 2002 Proposed Action Modifications. It does not repeat material from the FS-FEIS or 2000 Modifications EA, but references it where appropriate.

Other Requirements Served

This EA is intended to serve as the Biological Assessment under the provisions of Section 7 consultation requirements of the Endangered Species Act, 16 USC 1531-1544.

Date Final EA Made Available to the Public: March 29, 2002

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List of Preparers

Name	Degree(s)	Role
Central Utah Water Conservancy District		
Harold Sersland	B.S. – Forestry/Wildlife Management	Project Review
Lee Swenson	M.S. – Wildlife Management B.S. – Wildlife Biology	Technical Review, Wildlife Resources, Wildlife Special Status Species
Lee Wimmer	M.S. – Civil Engineering B.S. – Civil Engineering	Project Review
Utah Reclamation Mitigation and Conservation Commission		
Mark Holden	M.S. – Fisheries and Wildlife B.S. – Biology and Chemistry	Project Review
MWH Consultant Team		
Diana Barnes MWH	A.A. – Secretarial Science	Word Processing and Formatting
Stephen Cox MWH	M.S. – Environmental Biology B.A. – Biology	Wildlife, Special Status Species
Brian Liming MWH	M.S. – Civil and Environmental Engineering B.S. – Ecosystems Analysis	EA Team Leader, Chapter 1, Water Resources, Water Quality, Aquatic Resources, Overall Document Preparation
Tom Menzel Menzel-Higgins Communications	B.A. – Journalism	Editor
Paul Summers MWH	B.S. – Civil Engineering	Project Management
Dick Traylor NEPA Effects	M.S. – Forestry Management B.S. – Forestry	NEPA Compliance, Agriculture, Chapter 3, Overall Document Preparation
Christine Whittaker MWH	B.L.A. – Landscape Architecture	Wetland Resources, Visual Resources

Diamond Fork System

***2002 Final Environmental Assessment
for the Proposed Action Modifications***

Chapter 1

***Purpose and Need for Action and
Description of 2002 Proposed Action
Modifications***

Chapter 1

Purpose and Need for Action and Description of 2002 Proposed Action Modifications

1.1 Introduction and Reason for Modifications

This 2002 Final Environmental Assessment (2002 Final EA) presents and analyzes the impacts of modifications to the Proposed Action, which was described in the 2000 Diamond Fork System Final Environmental Assessment/Finding of No Significant Impact (FONSI) for the Proposed Action Modifications (2000 Final EA/FONSI)(CUWCD 2000). The Proposed Action Modifications described in this 2002 Final EA include features from the 2000 Final EA/FONSI and the Diamond Fork System Final Supplement to the Final Environmental Impact Statement (FS-FEIS) (CUWCD 1999).

The modifications described in this 2002 Final EA were necessitated by conditions encountered during construction of the Upper Diamond Fork Tunnel. High inflows of water containing extreme concentrations of hydrogen sulfide were encountered approximately 20,000 feet into the 22,701-foot tunnel (see Map A-1 in the map pocket at the back of this document). A partial collapse of the tunnel at a fault zone behind the tunnel boring machine (TBM) and test drilling ahead of the TBM indicated a major fault greater than 70 linear feet beyond the area of tunnel collapse. The Central Utah Water Conservancy District (District) and the U.S. Department of the Interior (DOI) concluded that further excavation of the tunnel was not feasible because of adverse geologic conditions, worker safety in a high concentration hydrogen sulfide environment, and corrosive effects of the water containing hydrogen sulfide on the tunnel lining and operation and maintenance equipment. It was decided to terminate tunnel-boring operations, seal the tunnel below the area of collapse and complete the Diamond Fork System by utilizing certain Proposed Action features from the FS-FEIS. These features would be connected to the stable portions of the completed Upper Diamond Fork Tunnel.

This chapter describes the following:

- Purpose of the Environmental Assessment
- Relationship of the 2002 Final EA to the Diamond Fork System FS-FEIS and 2000 Final EA/FONSI
- Purpose and Need of the 2002 Proposed Action Modifications
- Description of the 2002 Proposed Action Modifications
- Interim Operation of the Diamond Fork Project
- Summary of Other Characteristics of the 2002 Proposed Action Modifications

1.2 Purpose of the Environmental Assessment

The purpose of this Final EA is to examine the 2002 Proposed Action Modifications and briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a FONSI. A supplemental environmental impact statement (EIS) would be required if the EA determines that implementing the modifications would result in new significant impacts or an increase in magnitude of significant impacts from those disclosed in the FS-FEIS (CUWCD 1999). This EA also is intended to serve as the Biological Assessment under the provisions of Section 7 consultation requirements of the Endangered Species Act, 16 USC 1531-1544.

1.3 Relationship of the 2002 EA to the Diamond Fork System FS-FEIS and the 2000 Final EA/FONSI

The DOI manual 516 DM 4.5 C. states: "If, after a decision has been made based on a final EIS, a described proposal is further defined or modified and if its changed effects are minor or still within the scope of the earlier EIS, an EA and FONSI may be prepared for subsequent decisions rather than a supplement." This EA is tiered off of the 1999 Diamond Fork System FS-FEIS and 2000 Final EA/FONSI for the Diamond Fork System Proposed Action Modifications. This EA only documents and analyzes the impacts of the 2002 Proposed Action Modifications. It does not repeat any affected environment or analysis of impacts to resources that were presented in the FS-FEIS or the 2000 Final EA/FONSI. Unless otherwise stated, all the documentation and data contained in the FS-FEIS or 2000 Final EA/FONSI remains in effect and the reader should refer to the FS-FEIS or the 2000 Final EA/FONSI. The Authorizing Actions, Permits and Licenses in Chapter 1, Section 1.8, Page 1-81, in the FS-FEIS have not been modified except for addition of the requirement for a stream alteration permit from the State of Utah Engineer under the Utah Stream Alteration Act and as allowed under a General Permit 40 for compliance with Section 404 of the Clean Water Act. This permit would be required for three stream crossings.

1.4 Purpose and Need

The purposes and needs of this 2002 Proposed Action Modifications have not been changed from the FS-FEIS (CUWCD 1999), however they are presented here for the reader's convenience.

The Proposed Action would respond to the following needs:

1. To maintain the statutorily mandated minimum flows in Diamond Fork Creek and Sixth Water Creek (Sections 303(c)(1)(A) & (B) of Public Law 102-575).
2. To implement the DOI environmental commitments on the Diamond Fork Pipeline from the 1995 Record of Decision, which includes but is not limited to removing the high flows brought over from Strawberry Reservoir (both Strawberry Valley Project and Central Utah Project water) into the Sixth Water and Diamond Fork creek drainages.
3. To meet the District's municipal and industrial water contractual commitments to Salt Lake, Utah and Wasatch counties, by conveying Bonneville Unit water to Utah Lake (via new features) for exchange to Jordanelle Reservoir and historical Strawberry Valley Project irrigation water.
4. To provide the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission) the opportunity and flexibility for future restoration of aquatic and riparian habitat in Sixth Water and Diamond Fork creeks to protect water quality and threatened species in Diamond Fork Creek.

The purposes of the Proposed Action are:

1. To provide conveyance of Strawberry Valley Project historical diversions into their existing system
2. To minimize adverse impacts on aquatic, riparian and other environmental resources in the Sixth Water and Diamond Fork creek drainages
3. To minimize adverse impacts on threatened and endangered species, wetlands and floodplains
4. To minimize the cost of project features

5. To achieve full repayment by maximizing municipal and industrial water deliveries to fulfill outstanding commitments
6. To use existing Diamond Fork System facilities to their full hydraulic capacity
7. To evaluate an alternative to Monks Hollow Dam and Reservoir

1.5 Description of the 2002 Proposed Action Modifications

1.5.1 Introduction

This section describes features that would replace or modify the following Proposed Action features described in Chapter 1, Section 1.5.2, Page 1-4 of the 2000 Final EA/FONSI and Chapter 1, Section 1.3, Page 1-13 of the FS-FEIS:

- Sixth Water Connection to Upper Diamond Fork Shaft (change in number of shafts, but no change in overall size of the area)
- Upper Diamond Fork Shaft (relocated)
- Upper Diamond Fork Flow Control Structure (relocated)
- Upper Portion of the Diamond Fork Tunnel (replaced with Tanner Ridge Tunnel)
- Diamond Fork Siphon (modified by the Upper Diamond Fork Pipeline)

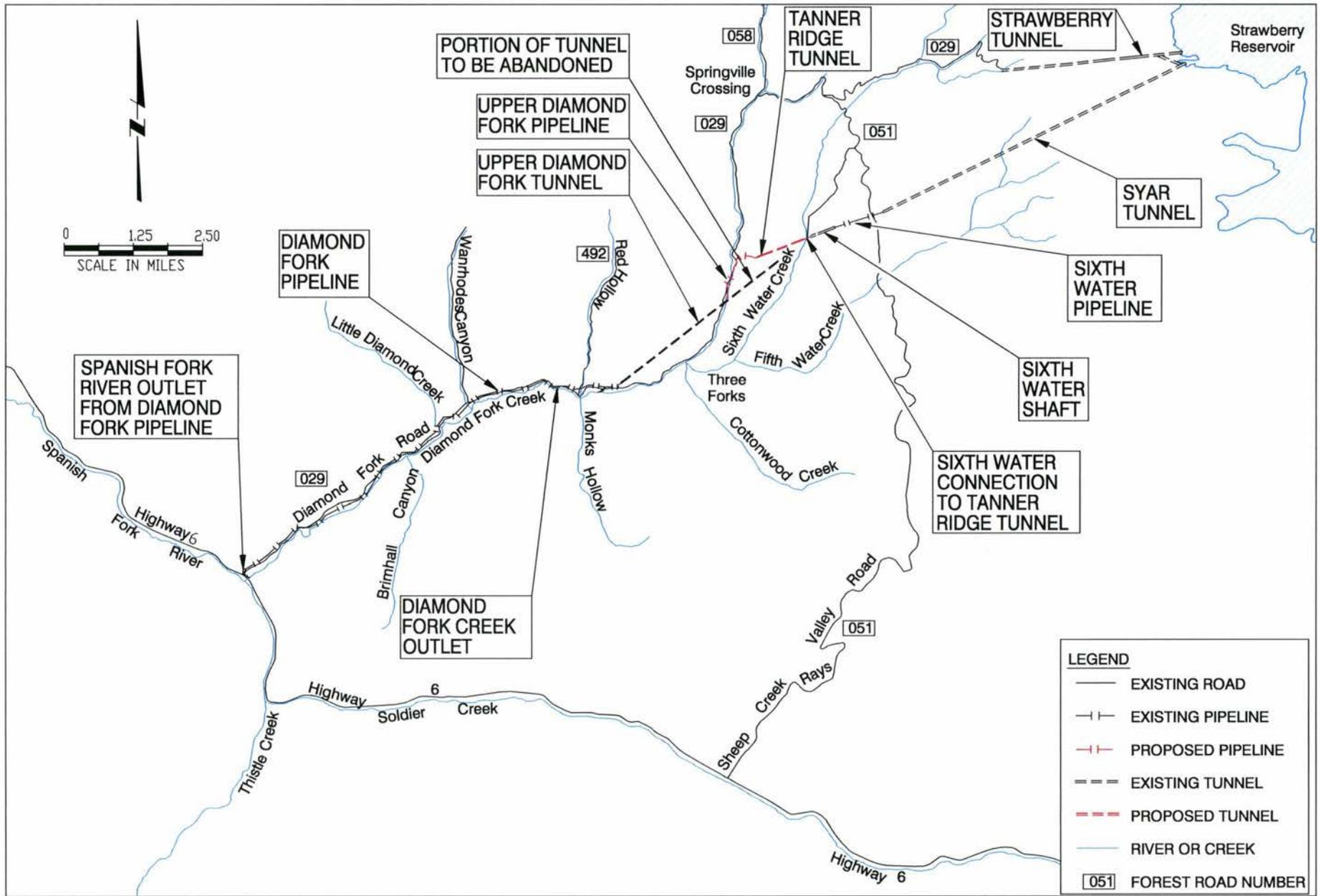
Proposed Action features that would remain the same as described in the FS-FEIS include the Tanner Ridge Tunnel (including temporary access roads and spoil areas), Diamond Fork Siphon down to 360 feet upstream from where it crossed Diamond Fork Creek, staging area two, Spanish Fork River Outlet from Diamond Fork Pipeline, and the Spanish Fork River Diversions. The features that would remain the same as described in the 2000 Final EA/FONSI include the Monks Hollow Overflow Structure, Diamond Fork Creek Outlet, Diamond Fork Pipeline Extension, Connection to Diamond Fork Pipeline, lower part of the Upper Diamond Fork Tunnel, Access Road and Diamond Fork Road reconstruction, and the location of fiber optic cables.

Map 1-1 shows features of the Diamond Fork System Proposed Action Modifications that are described in this 2002 Final EA. Map A-1, in the map pocket at the back of this document, shows more detailed information on the 2002 Proposed Action Modifications features.

Interim operation (including normal, maintenance and emergency) would remain the same as described in Chapter 1, Section 1.4, Page 1-35 through 1-46 of the FS-FEIS, and Chapter 1, Section 1.6, Page 1-13 through 1-19 of the 2000 Final EA/FONSI. The potential for generating hydroelectric power would remain the same as described in Chapter 1, Section 1.3.1, Page 1-13 of the FS-FEIS.

1.5.2 Proposed Action Modifications Features

The primary features of the 2002 Proposed Action Modifications are presented in the following subsections. Table 1-1 shows the feature name, length, diameter and capacity of Proposed Action Modifications and the Proposed Action features that they replaced. Map A-1 shows the location of these features and detailed insets of some features.



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Map 1-1

Features of the Diamond Fork System Proposed Action Modifications

**Table 1-1
Features of Diamond Fork 2002 Proposed Action Modifications
and Proposed Action Features They Replaced or Modified**

Proposed Action Modifications Feature Name/Map A-1 Location	Length (feet)	Diameter (inches)	Capacity (cubic feet/sec.)	Proposed Action Feature Replaced or Modified
Sixth Water Connection to Tanner Ridge Tunnel (See Map A-1, Insets 1 and 2)	100 (box culvert) 50 (shaft)	144 240	660	Sixth Water Connection to Upper Diamond Fork Shaft (2000 Final EA/FONSI)
Tanner Ridge Tunnel	5230	114	660	Replaces 9,383 feet of the upper part of the Upper Diamond Fork Tunnel (2000 Final EA/FONSI)
Upper Diamond Fork Pipeline (See Map A-1, Inset 3)	2840	96	660	Modifies Diamond Fork Siphon (FS-FEIS)
Upper Diamond Fork Road Reconstruction (See Map A-1, Inset 3)	2870	Not Applicable	Not Applicable	Not Applicable
Upper Diamond Fork Flow Control Structure	100	Two - 54	660	New
Diamond Fork Shafts (See Map A-1, Inset 4)	190	Three - 78	660	Upper Diamond Fork Shaft (2000 Final EA/FONSI)
Aeration Chamber and Connection to Upper Diamond Fork Tunnel	150	240 to 126	660	New

1.5.2.1 Sixth Water Connection to Tanner Ridge Tunnel

Sixth Water Connection would be a 100-foot long box culvert at the Sixth Water Aqueduct outlet and a 50-foot deep vertical shaft terminating at the upstream end of the previously approved Tanner Ridge Tunnel. This connection would convey water from the existing outlet structure at the end of Sixth Water Aqueduct to the Tanner Ridge Tunnel, which would be constructed in bedrock and cross 50 feet under Sixth Water Creek (see Insets 1 and 2, Map A-1). A diversion box would be constructed adjacent to the existing weir, which is part of the existing flow-control facility, with an overflow weir and a discharge chute that would allow a discharge of water from Sixth Water Aqueduct to Sixth Water Creek. Fiber optic cables would be installed in conduit incorporated into the shaft lining.

The existing Sixth Water Aqueduct outlet bifurcation could accommodate hydroelectric generating facilities. The new connection inlet to Tanner Ridge Tunnel would not prevent the future development of hydroelectric generating facilities. The connection structure would have a capacity of 660 cfs and would include a discharge chute capable of discharging 60 to 80 cfs to Sixth Water Creek. This outlet would provide emergency release of the minimum streamflows if the Tanner Ridge or Upper Diamond Fork tunnels have to be shut down for maintenance. It also would provide flexibility for any future Sixth Water Creek restoration plans. A 50-foot-wide pad would be constructed for equipment access to maintain the connection and discharge chute.

1.5.2.2 Tanner Ridge Tunnel and Temporary Access Roads

The Tanner Ridge Tunnel and temporary access roads would be the same as described in Chapter 1, Section 1.3.2.2, page 1-18 and Section 1.3.6, page 1-32 in the FS-FEIS.

1.5.2.3 Upper Diamond Fork Pipeline

The Upper Diamond Fork Pipeline would start approximately 360 feet upstream (see Map A-1) from where the Diamond Fork Siphon (see Chapter 1, Section 1.3.2.3, page 1-18 in the FS-FEIS) would have crossed the Diamond Fork Road and Diamond Fork Creek. The remaining 3,700 feet of pipeline up to the Tanner Ridge Tunnel outlet portal were described as part of the Diamond Fork Siphon in the FS-FEIS and are not considered further in this EA. The pipeline would be constructed alongside of the Diamond Fork Road and the road would be reconstructed upon completion of the pipeline. Fiber optic cables would be installed in the pipeline trench and buried.

The 96-inch-diameter pipeline would be about 2,840 feet long, with a capacity of 660 cfs. Along the bottom of Diamond Fork Canyon (see Map A-1), the pipeline would be constructed within the road right-of-way and cross under the creek twice. The trench and fill method of pipeline construction would be used for the two stream crossings. The pipeline would connect to the Upper Diamond Fork Flow Control Structure. Pipeline construction would require a construction width of approximately 60 feet.

One air release and air vacuum valve and concrete vault incorporating a manway access would be located over the pipeline adjacent to the road immediately upstream of the replaced Diamond Fork Creek Bridge. The vent structure would be screened with vegetation, rocks and/or soil mounds and colors using appropriate earth-tone colors.

1.5.2.4 Diamond Fork Road Reconstruction

Approximately 2,870 feet of the Diamond Fork Road would be reconstructed upon completion of the pipeline. The road would be raised 6 to 10 feet, moving it away from the edge of Diamond Fork Creek (see Map A-1, Inset 3). The reconstructed road would have a 20-foot wide paved surface with 2-foot wide gravel shoulders on each side. Gravel turnouts visible from both directions would be incorporated as feasible along the reconstructed road. Permanent slopes would be cut above the road along some portions of the alignment to accommodate pipeline construction. The reconstructed road would be crossed at grade by an existing ephemeral drainage just south of the Diamond Fork Creek Bridge. A small rock riprap cutoff wall would be installed in the road ditch to direct the ephemeral drainage and sediment across the reconstructed road. Five retaining walls with attached guardrails, totaling 1,299 feet, would be constructed along the road adjacent to the creek to avoid filling over riparian vegetation and the stream (see Map A-1, Inset 3). These retaining walls would incorporate special drainage features and be constructed of tinted and textured concrete and embedded rocks to blend with the surrounding landscape. One of the retaining walls would be constructed to avoid filling a riparian wetland area west of the existing Diamond Fork Road about 600 feet north of the proposed Upper Diamond Fork Flow Control Structure. The surface and grade of Diamond Fork Road would be reconstructed from the upstream end of the pipeline to the Upper Diamond Fork Flow Control Structure (see Map A-1, Inset 3). Smaller trees and slash removed as part of the road reconstruction and other construction activities would be spread over disturbed and undisturbed areas. Replacement of the existing bridge across Diamond Fork Creek was covered in the FS-FEIS (see Chapter 1, Section 1.3.6, page 1-32) and is not repeated in this document. Guardrail would be installed along both sides of the replaced bridge. Rock riprap used for bank revetment around this bridge would be native rock matching surrounding rock colors. The guardrails along the retaining walls and replaced bridge would be a 15-percent gray, painted surface.

1.5.2.5 Upper Diamond Fork Flow Control Structure

The Upper Diamond Fork Flow Control Structure would consist of a 0.4 acre filled building pad, a buried pipeline bifurcation, a 45-foot wide by 80-foot underground vault housing sleeve valves with the roof slab at ground level, a 20-foot by 25-foot concrete-masonry control building, a vinyl-covered fence surrounding the building pad, a

concrete block retaining wall along the south and east sides of the building pad, and a 110-foot long access road and 20-foot long box culvert bridge across Diamond Fork Creek. The concrete masonry building and roof slab would be colored and textured to closely match the surrounding vegetation and rocks, and colored non-reflective materials would be used on the building roof, doors and ventilation equipment. A 6.5-foot diameter, 10-foot tall air vent would extend above the roof slab and would be colored and textured to match existing soil colors. Consultation would be conducted with the Forest Service related to specific color and texture selections for the building, roof slab, air vent and retaining wall. The vinyl-coated chain link fence would be colored to match the surrounding vegetation and rocks. Large native tree stock (thin-leaf alder, cottonwood and scrub oak) along with containerized shrubs (big sagebrush, rabbitbrush and snowberry) would be planted around the perimeter of the building pad and adjacent to Diamond Fork Creek to partially screen the facilities from view when traveling along Diamond Fork Road. A vegetation and rock screen would be installed where the access road joins the Diamond Fork Road to screen the flow control structure, access road and box-culvert bridge from view along the road.

The pipeline bifurcation would split the 660-cfs flow into two-54-inch diameter pipes that would convey the water to two sleeve valves, dissipating the pressure in the water before it enters the Diamond Fork Shaft.

1.5.2.6 Diamond Fork Shafts

The Diamond Fork Shafts would consist of three vertical shafts, including two vortex shafts for conveying water down to the aeration chamber and Upper Diamond Fork Tunnel, and one vent shaft (see Insets 3 and 4, Map A-1). The 78-inch diameter vortex shafts would be constructed to dissipate most of the energy as the water is forced through the shafts in a vortex motion. The 78-inch diameter vent shaft would connect to the aeration chamber at the bottom of the shafts and provide maintenance access. Each shaft would be about 190 feet deep.

The two vortex shafts would have a combined capacity of 660 cfs. Fiber optic cables would be installed in the vent shaft to provide communication lines to the Upper Diamond Fork Flow Control Structure.

1.5.2.7 Aeration Chamber and Connection to Upper Diamond Fork Tunnel

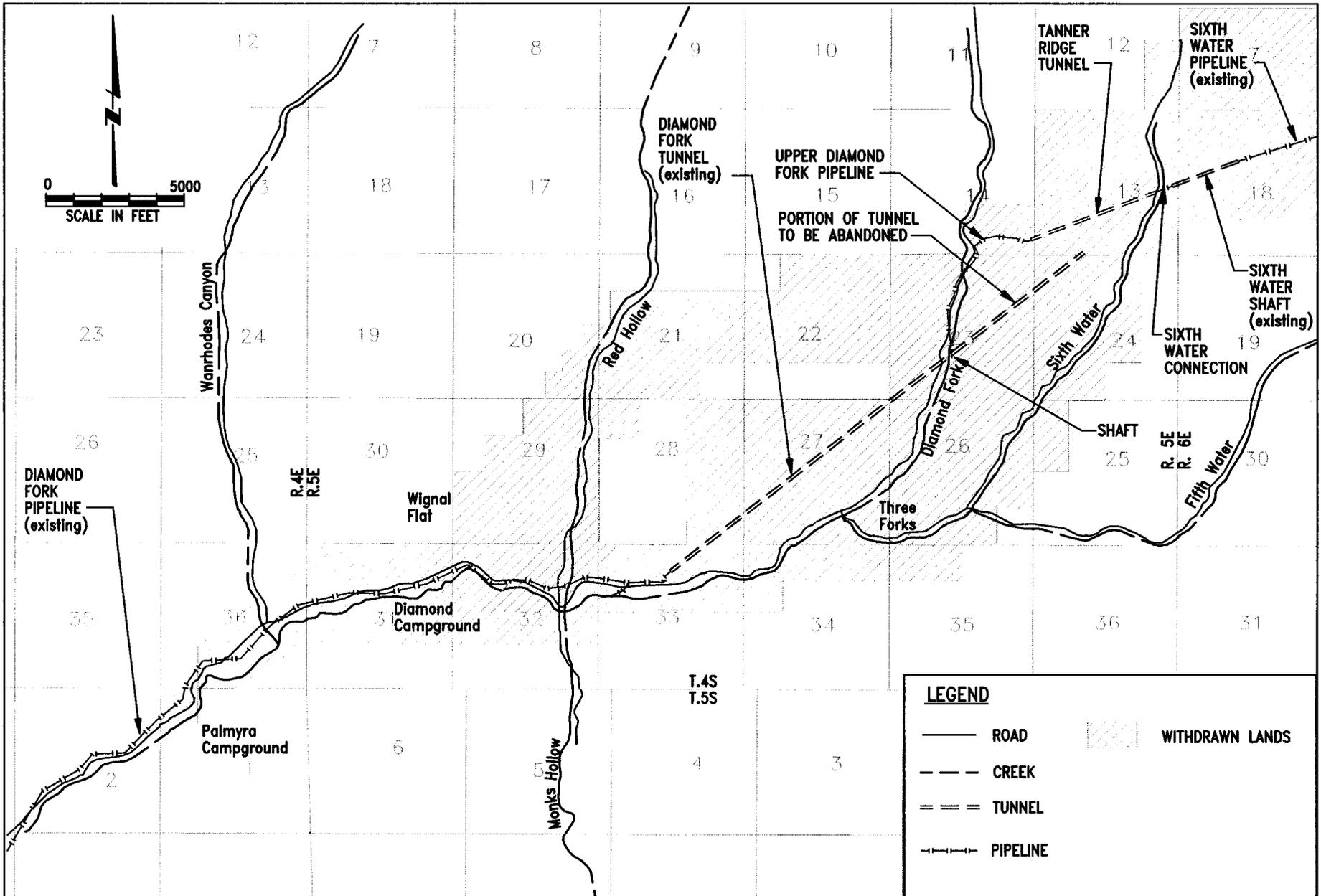
The aeration chamber and connection to Upper Diamond Fork Tunnel would be approximately 150 feet long from the bottom of the Diamond Fork Shafts to the existing Upper Diamond Fork Tunnel. The 20-foot diameter aeration chamber would be constructed in bedrock and lined with reinforced concrete. It would connect to the Upper Diamond Fork Tunnel via a 126-inch diameter curved tunnel segment also lined with reinforced concrete and steel. The bottom of the vent shaft would terminate at the aeration chamber.

The aeration chamber and connection structure would have capacity of 660 cfs. These features would have fiber optic cables installed to provide communication lines to operate the facilities.

1.5.3 Land Management Status and Right-of-Way Acquisition

National Forest System land would be needed to construct and operate the features of the 2002 Proposed Action Modifications. No Forest Service Special Use Permit would be required, since all National Forest System land that would be affected by construction or operation of the 2002 Proposed Action Modifications has been withdrawn by the DOI (see Map 1-2). Permanent rights-of-way would be required for the features and temporary rights-of-way during construction to provide space for equipment operation. The permanent right-of-way for the pipeline and road would be 100 feet wide.

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Map 1-2
Land Management Status

1.5.4 Tunnel and Shaft Construction Procedures

The shaft connecting the Sixth Water Flow Control Structure and the Tanner Ridge Tunnel would be constructed using the drill, blast and excavation method. The excavated material would be hauled to the existing Sixth Water shaft spoil disposal area where it would be covered with topsoil and revegetated.

The Diamond Fork Shafts would be constructed using the raise-bore method. The shafts would be connected to the completed portion of the Diamond Fork Tunnel via a short tunnel (see Map A-1, Insets 3 and 4). The short tunnel would be constructed using the drill and blast method. Muck from the raise-bore shaft and the short tunnel would be transported through the completed Diamond Fork Tunnel and disposed of in the existing waste disposal area (see Chapter 1, Section 1.5.4.2, page 1-11 of the 2000 Final EA/FONSI). Any water contacted during this construction would drain down to the completed Upper Diamond Fork Tunnel and flow out the tunnel to the water treatment and disposal facilities developed for the construction of the tunnel.

The existing Upper Diamond Fork Tunnel would be plugged northeast of where the tunnel crosses under Diamond Fork Creek (see Map A-1). Two 50-foot long concrete plugs would be installed in the tunnel, keyed into the bedrock and grouted to prevent leakage of the water containing hydrogen sulfide. The plugs would seal the portion of the tunnel that would be abandoned, effectively reducing the hydrogen sulfide levels to make conditions safe for construction, operation and maintenance workers, reducing the flow of water out of the tunnel during construction, and eliminating conditions that would corrode the tunnel lining materials. The sealed portion of the tunnel would be allowed to fill with water and sediment from the fault zone. One additional concrete plug would be constructed where the existing Upper Diamond Fork Tunnel would turn north and connect with the aeration chamber. This short plug would be keyed into the bedrock and prevent water from backing up into the unused portion of the tunnel northeast of where it crosses under Diamond Fork Creek.

1.5.5 Pipeline Construction Procedures

Pipeline construction procedures would be the same as described in Chapter 1, Section 1.3.5, Pages 1-26 through 1-30 in the FS-FEIS.

1.5.6 Road Reconstruction Procedures

Detailed road reconstruction procedures would be the same as described in Chapter 1, Section 1.5.2.9, Pages 1-8 and 1-9, in the 2000 Final EA/FONSI. In addition, a temporary construction bridge would be installed across Diamond Fork Creek at the south end of the Upper Diamond Fork Flow Control Structure site, and a vehicle turn-around would be constructed at Sawmill Hollow where a construction access-only gate would be maintained for public safety. The temporary construction bridge would be installed between existing mature cottonwood trees and would not involve permanent removal of riparian vegetation.

Diamond Fork Road would be closed to the public from the Red Ledges area downstream from Monks Hollow to Sawmill Hollow north of where the Upper Diamond Fork Pipeline crosses the road (see Map A-1) until construction is completed in late 2004.

1.5.7 Construction Staging Areas

In addition to the construction staging areas currently in use, staging area 2 would be used as described in Chapter 1, Section 1.3.8, Page 1-34, in the FS-FEIS.

1.6 Interim Operation of the 2002 Proposed Action Modifications

The Diamond Fork Project would be operated on an interim basis the same as described in Chapter 1, Section 1.4, Pages 1-35 to 1-45 in the FS-FEIS, and Chapter 1, Section 1.6, Page 1-13 in the 2000 Final EA/FONSI. Operations and maintenance (O&M) access to the Upper Diamond Fork Flow Control Structure would involve use of existing Forest Route 029 by vehicle during the spring, summer and fall months, and by snowmobile during the winter months. O&M access to the Tanner Ridge Tunnel would be primarily from a helicopter pad constructed at the outlet portal.

1.7 Summary of Other Characteristics

Construction of the 2002 Proposed Action Modifications would begin in spring 2002 upon completion of the NEPA compliance. Table 1-2 shows a construction summary and schedule.

**Table 1-2
Construction Summary and Schedule for the Proposed Action Modifications**

Diamond Fork System Proposed Action Modification Feature	Segment Length (feet)	Average Production (feet/day)	Construction Duration (work days)	Construction Schedule	Average Personnel (persons/month)
Sixth Water Connection to Tanner Ridge Tunnel	100 50	NA ¹	140	October 2003 to May 2004	8
Tanner Ridge Tunnel	5230	80	330	October 2002 to May 2004	10
Upper Diamond Fork Pipeline	2840	100	120	August 2003 to December 2003	15
Upper Diamond Fork Road Reconstruction	2870	50	100	May 2004 to September 2004	10
Upper Diamond Fork Flow Control Structure	100	NA	330	October 2002 to September 2004	15
Diamond Fork Shafts	190	NA	90	April 2002 to October 2002	8
Aeration Chamber and Connection to Upper Diamond Fork Tunnel	150	NA	90	April 2002 to October 2002	8

Note:

¹NA means length and production rate not applicable

Construction transportation requirements of the 2002 Proposed Action Modifications include a maximum of 55 trips per day for 420 workdays, starting in April 2002 and ending in September 2004.

Table 1-3 lists estimated construction material requirements for the 2002 Proposed Action Modifications.

Table 1-3 Estimated Construction Material Requirements for the 2002 Proposed Action Modifications		
Type of Material	Use of Material	Quantity
Concrete (cubic yards)	Tunnel Lining	21,000
	Pipe Lining, Coating and Bedding	8,000
	Pipeline Structures	100
	Flow Control and Overflow Structures	3,000
	Total	32,100
Steel (pounds)	Concrete Reinforcing	300,000
	Pipe Cylinder	3,200,000
	Valves	300,000
	Total	3,800,000

Table 1-4 shows land disturbance that would result from construction and operation of the 2002 Proposed Action Modifications.

Table 1-4 Land Disturbance Resulting From the 2002 Proposed Action Modifications (acres)				
Project Feature	Land Area Disturbed During Construction	Land Area to be Revegetated	Vegetated Land Area Permanently Disturbed	Existing Disturbed Areas Returned to Previous Use
Upper Diamond Fork Pipeline ¹	3.3	3.2	0.1	0.0
Upper Diamond Fork Road Reconstruction ¹	1.2	0.0	0.4	0.8
Upper Diamond Fork Flow Control Structure and Shafts ²	0.9	0.1	0.8	0.0
Total	5.4	3.3	1.3	0.8

Notes:
1. This excludes staging area 2, which was analyzed in the 1999 FS-FEIS
2. This includes the new and temporary bridges across Diamond Fork Creek

1.8 Standard Operating Procedures (SOPs) During Construction

This section defines standard operating procedures (SOPs) for the Proposed Action Modifications. These SOPs have been extracted from the 1999 FS-FEIS and 2000 Final EA/FONSI because they are applicable to the 2002 Proposed Action Modifications. SOPs will be followed (not withstanding unforeseen conditions that would require modifications) during construction, operation and maintenance of the project to avoid or minimize adverse impacts on people and natural resources.

1.8.1 Erosion Control

Erosion control procedures will be implemented in areas disturbed during construction of project components, including temporary access roads and access roads that are upgraded to construction traffic standards. The contractor will be required to contour and revegetate all disturbed surfaces not covered by project facilities and avoid and minimize erosion.

Temporary slope breakers would be used to reduce runoff velocity and divert waste from the construction right-of-way. They will be constructed with materials such as soil, silt fence, staked hay or straw bales, or sandbags, using the written recommendations of local land managing agencies and soil conservation authorities. In the absence of these recommendations, temporary slope breakers will be installed at the following spacing:

Slope	Spacing
5 percent to 15 percent	300 feet
More than 15 percent to 30 percent	200 feet
More than 30 percent	100 feet

Slope breakers will be constructed with a 2 to 8 percent outslope to divert surface flow to stable, well-vegetated areas. Slope breakers would comply with all applicable survey requirements if they extend beyond the edge of the construction right-of-way. Appropriate energy-dissipating devices would be built in the absence of a stable area, or at the end of the slope breaker, if necessary.

Sediment barriers will be installed to keep wetlands and water bodies free of possible sedimentation resulting from construction. The barriers will be constructed of materials such as silt fence, staked hay or straw bales, or sandbags. They will be installed as necessary and maintained at the base of slopes adjacent to road crossings and at construction locations near water bodies or wetlands where siltation could occur.

Mulch will be used on sites with low annual precipitation or high erosion potential, on slopes exceeding 15 percent, or on windy sites. Mulch can consist of noxious weed-free straw or hay, erosion control fabric or a functional equivalent. It will be applied before seeding if final cleanup (including final grading and installation of permanent erosion control measures) is not completed in an area within 10 days after the trench has been backfilled or if construction or restoration activity is delayed for extended periods, such as a seeding period restriction.

Straw mulch will be applied at the following rates: 1 ton per acre on level ground; two tons per acre over at least 75 percent of the ground surface on all dry, sandy sites and sites with slopes greater than 8 percent; and three tons per acre if slopes are within 100 feet of water bodies and wetlands. When wood chips are used as a mulch, a maximum of 1 ton per acre along with 11 pounds per acre of available nitrogen (at least 50 percent of the nitrogen should be slow-release).

Mulch will be anchored to help stabilize erodible soils by using a mulch crimper or disk with notched coulters to crimp the mulch to a depth of 2 to 3 inches. If a blower is used, mulching materials should be at least 8 inches long to allow anchoring. Liquid mulch binders would be used at recommended manufacturer rates and would not be used within 100 feet of wetlands or water bodies.

Erosion control fabric such as jute thatching or bonded fiber blankets will be used on water body banks during final recontouring or on extremely steep slopes. The fabric will be anchored with staples or other anchoring devices.

Silt fences will be used to temporarily control erosion and sedimentation during construction. Silt fence material will be the least contrasting color to minimize visual impacts. All silt fence will be removed following completion of construction and revegetation activities.

1.8.2 Restoration

Existing topsoil will be carefully removed and stored during trenching operations and replaced after trenches are backfilled. Where drainage occurs, gaps will be left between topsoil piles to prevent increased water saturation. Topsoil stripping activities would cease during excessively wet weather, and topsoil will not be stockpiled for longer than 2 years. Additional topsoil will be added, if needed, to allow vegetation growth.

Final cleanup of an area (including replacement of topsoil, final grading, and installation of permanent erosion-control structures) will be completed within 10 days after backfilling. If unavoidable delays occur, final cleanup will be completed as soon as possible and always before the end of the next recommended seeding season.

If necessary, a travel lane could be left open to allow access by construction traffic. When access is no longer required, the lane will be removed and the right-of-way restored.

After construction, soil will be replaced and worked with a disc, chisel plow, or other appropriate implement as practical to reduce compaction and leave soil in proper revegetation condition. Topsoil will be replaced with a minimum of handling.

Permanent trench breakers will be built to stop the flow of subsurface water along trenches. These would be constructed of such materials as concrete, sandbags or polyurethane foam. Trench breakers will also be installed at the base of slopes adjacent to water bodies and wetlands. When necessary, an engineer or similarly qualified professional will determine the need for and spacing of trench breakers. Topsoil would not be used in trench breakers.

Seedbeds will be prepared in disturbed areas to a depth of 3 to 4 inches using appropriate equipment. If hydroseeding is used, the seedbed will be scarified to facilitate lodging and germination of seed. Seeding will be done in consultation with the Forest Service.

To maximize the success of revegetation, planting will occur during appropriate climatic periods in properly prepared soil. Planting and fertilizer application techniques will be chosen for specific conditions at each site and the needs of selected plant species. Temporary erosion control measures will be used at any site where seeding has been delayed.

Where possible, seed mixes of local origin will be used along with mulching. The criteria for selecting species to plant in disturbed areas will include hardiness, compatibility with wildlife, capacity to self-perpetuate, and rooting characteristics that help stabilize soil.

Noxious weeds will be controlled as described in the Noxious Weed Control Plan presented in Appendix A of the FS-FEIS.

Slash and woody debris removed during construction would be crushed and scattered throughout riparian zones in and adjacent to the construction areas.

Temporary traffic barriers will be placed as necessary to keep vehicles from traveling over areas that have been revegetated. Traffic barriers may include temporary fencing, concrete jersey barriers, berms and boulders.

1.8.3 Wetlands and Riparian Areas

Direct and indirect impacts on wetlands will be avoided, unless there are no other practical alternatives (as defined in 40 CFR 230.3). Procedures to avoid impacts will include protecting wetlands with silt fencing during construction and avoiding quantity and quality impacts on surface water and groundwater resources that serve as a source of water for wetlands.

The contractor will be required to prepare a road modification plan for approval by the District before starting any modifications on the Diamond Fork Road. The plan will document methods to protect wetlands adjacent to the road from construction and operational impacts.

Where impacts on wetlands cannot be avoided, they will be minimized to the extent possible. All mitigation approaches to minimize impacts on wetlands will be reviewed with the U.S. Army Corps of Engineers. Heavy equipment in wetland areas will be operated on temporary earth fills placed on geotextile mats (or other appropriate measures) to minimize soil disturbance. Construction barriers will be installed to prevent unnecessary damage to adjacent wetlands.

Materials excavated from the pipeline trench will be placed on the adjacent roadway or in other upland areas. No excavated material will be placed in any wetlands. Wetland soils will be removed, segregated and stockpiled in upland areas. Wetland topsoil will be replaced in the top 6 to 12 inches of the pipeline trench, and the disturbed area will be graded to match previous contour elevations and revegetated with a mixture of desirable wetland plant species.

Pipelines will be installed using construction measures such as cutoff walls if a bedding material is used that could otherwise cause wetlands to be drained.

Trees will be planted within the riparian area to replace those removed or severely damaged during construction. Trees will not be planted over the top of the pipeline alignment.

Trees removed during construction will be left on nearby undisturbed riparian areas as down woody material to provide cover and nesting opportunities for wildlife, trap sediment, and stabilize stream banks, and provide fisheries habitat.

1.8.4 Aquatic Resources

To the extent feasible, heavy equipment use in streambeds and riparian areas during construction at stream crossings will be minimized.

Impacts on aquatic resources can be avoided and minimized by following hazardous materials procedures included under the health and safety SOPs, the restoration and erosion control SOPs, and wetlands SOPs.

1.8.5 Wildlife Resources

Impacts on wildlife resources also can be avoided and minimized by following hazardous materials procedures included under the health and safety SOPs, the restoration and erosion control SOPs, and wetlands SOPs.

Contractor personnel will not be allowed to have any firearms while on the construction site.

Trenches would be covered or backfilled at the completion of each day and no more than 600 feet of trench would be open at any one time.

1.8.6 Agricultural Resources

To minimize conflicts between pipeline construction and other land activities, the following will be done before construction begins: Owners, tenants, lessees and managers of public lands will be informed of the construction schedule; grazing permittees would be consulted and informed of fence openings, disturbances to range improvements and other range-related activities; and utilities will be contacted if their facilities would be crossed by features of the Proposed Action Modifications.

Fences along the right-of-way will be braced before they are opened. Access and livestock will be controlled with temporary fencing and gates during construction to reduce impacts on other land uses. If damaged, barriers (such as cattle guards) for livestock control would be replaced by measures that are equally effective. Construction will not inhibit existing livestock access to water and adjacent grazing areas unless agreed to by the owner and/or permittee in advance. Fences, gates and cattle guards will be restored to their original condition or replaced when construction is completed.

The construction contractor would work with the owner, Forest Service representative and livestock permittees to minimize conflicts with the annual entry and removal of livestock on the public lands.

1.8.7 Water Quality

Construction activities for the Proposed Action Modifications will be performed according to the Final Draft Nonpoint Source Water Pollution Control Plan of Hydrologic Modifications in Utah (Robinson 1994). The measures identified in this plan specify construction practices where there is potential for disturbing stream channels, riparian areas and floodplains. These practices are designated as Utah's Best Management Practices for nonpoint source water pollution control.

The possibility of accidental releases of materials into surface waters will be managed according to spill containment and countermeasure requirements of the District's construction specifications. Such specifications include worker education, incident reporting and remediation provisions in the event of a spill. The hazardous materials procedures included under the health and safety and erosion control SOPs also will help avoid and minimize adverse water quality impacts.

Construction workers will be careful to avoid the escapement of wet concrete into waterways and other sensitive fish and wildlife habitat.

Concrete trucks and equipment will be washed only in areas approved by the Contracting Officer that will not impact streams or sensitive fish and wildlife habitat.

Appropriate Utah water quality permits will be obtained prior to construction in or near water resources.

1.8.8 Cultural Resources

The District will have a Class III cultural resources survey conducted of the Area of Potential Effect (APE) to identify historic properties in a manner consistent with the *Secretary of the Interior's Standards and Guidelines for Identification* (48 CFR 44720-23) and taking into account NPS publication, *The Archeological Survey: Methods and Uses* (1978 GPO stock #04-016-00091) and guided by *National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties*. Because the areas in the Proposed Action are currently covered by snow, an archaeologist will be present to survey construction sites before they are disturbed to identify potential cultural resources as they may be uncovered by the contractor. If cultural resources are

discovered, construction would be halted until proper surveys and documentation could be completed and State Historic Preservation Office clearance is completed.

The District, in consultation with the Utah SHPO, will evaluate properties identified in the survey in accordance with 36 CFR 800.4. If properties included in or eligible for the National Register of Historic Places or meeting the National Register Criteria (36 CFR 60.4) are identified, the District will comply with 36 CFR 800.5.

1.8.9 Visual Resources

In addition to restoration SOPs, the following visual resources SOPs will be implemented to minimize visual impacts.

Disturbed areas will be landscaped to match existing and characteristic landforms. When feasible, they will be recontoured and slopes rounded along maintenance roads, pipeline alignments and streambanks to blend with surrounding natural contours.

New plantings will be blended with natural vegetation at the edges, configured to match existing vegetation patterns, and will provide horizontal and vertical diversity.

Existing vegetation that screens pipeline alignments, flow-control facilities, parking lots and other features from key viewing areas will be retained to the extent feasible. Indigenous trees will be planted to screen disturbed areas at gaps in existing vegetation where pipeline corridors, flow control facilities, parking lots and other features may be visible from key viewing areas.

Disturbed soils will be restored to match soil colors and textures of adjoining areas as closely as possible to reduce contrast in the landscape. Boulders may be placed in some areas to replicate the landscape character.

Interpretive signs will be updated as appropriate to inform the public about the construction activities.

1.8.10 Health and Safety

The Utah Occupational Safety and Health Act and Federal Occupational Safety and Health Standards will be followed during construction. Copies of these publications and the health and safety SOPs will be provided to project workers at construction sites.

Warning signs and temporary barriers will be provided in areas used by permittees and other public land users where construction activities are underway.

Onsite and offsite construction activities will fully conform to standards in the USBR safety and health standards manual (USBR 1993).

1.8.11 Transportation Networks

Roads damaged by project construction activities will be restored to at least preconstruction levels.

Reconstructed roads will be outsloped to drain toward the stream. Where ephemeral drainages intersect the road, the outsloped road grade will meet the ephemeral drainage. Riprap cutoff walls will be installed to prevent drainage and debris from collecting in ditches. Cuts and fills along the reconstructed road will be minimized to the extent possible.

After construction, the District will install appropriate signage at the upstream end of the Upper Diamond Fork Tunnel Outlet construction area warning users of where the road narrows from two lanes to one and one half lanes and also warning of the change in surface conditions (i.e., rough road ahead).

Salt will not be used in snow removal efforts.

Additional signing in Hobble Creek, at Sawmill Hollow, and on the Sheep Creek Road would be installed at appropriate locations to inform the public of the extent and impacts of the proposed road closure.

Snow, ice and debris will be removed from currently functioning culverts to keep the drainage system functioning efficiently. Ditches will be kept functional.

All debris, except snow and ice, which is removed from the road surface and ditches, shall be deposited away from stream channels in areas identified by the Forest Service.

During snow removal operations, banks shall not be undercut and every effort will be made not to blade off gravel or other selected surfacing off roadways.

Snow berms shall not be left on the road surface. Berms left on the shoulder of the road shall be removed and/or drainage holes shall be opened and maintained. Drainage holes shall be spaced as required to obtain satisfactory surface drainage without discharge on erodible fills.

Any damage resulting from snow removal will be repaired to at least the preconstruction condition.

1.8.12 Air Quality

To the extent feasible, the contractor will follow the U.S. Environmental Protection Agency's recommended control methods for aggregate storage pile emissions to minimize dust generation, including periodic watering of equipment staging areas, dirt and gravel roads, and wind speed reduction. Chemical stabilization will not be allowed.

Construction machinery will be routinely maintained to ensure that engines remain tuned and emission-control equipment is properly functioning as required by law.

The contractor would follow Utah air quality regulations.

1.8.13 Noise

Mufflers on construction equipment will be checked regularly to minimize noise.

The District's contractor will follow noise exposure and hearing conservation standards and practices in the USBR safety and health standards manual to protect workers and the public from potential harmful noise.

1.8.14 Energy Conservation

Standard energy conservation measures will be used during construction, operation and maintenance (e.g., avoiding unnecessary idling and keeping vehicles and equipment tuned and maintained).

The shortest possible transportation routes will be used during construction to conserve fuel.

1.8.15 Recreation Resources

The District will coordinate with the Forest Service in developing an improved parking area off the Rays Valley road for the Fifth Water Trailhead to the Hot Pots..

Dispersed camping sites that occur along reconstructed roads and would be disturbed will be restored to pre-construction conditions.

Diamond Fork System

*2002 Final Environmental Assessment
for the Proposed Action Modifications*

Chapter 2

*Affected Environment and
Environmental Consequences*

Chapter 2

Affected Environment and Environmental Consequences

2.1 Introduction

This chapter describes the affected environment (baseline conditions) of resources of the human environment that would be impacted by construction and operation of the proposed modifications to the Diamond Fork Proposed Action as described in Chapter 1. It also documents the environmental consequences (impacts) on the quality of the human environment.

Baseline conditions are the physical conditions of the impacted resources, currently existing in the impact area of influence. The human environment is defined in this study as all of the environmental resources, including the social and economic conditions, occurring in the impact area of influence.

The impact analysis presented in this chapter focuses only on the impacts that would occur from construction of the 2002 Proposed Action Modifications. It does not present any impacts of operation because interim operation (including streamflows, amounts, timing, normal, maintenance and emergency) of the Diamond Fork Project would remain the same as described in Chapter 1, Section 1.4, Page 1-35 through 1-46 of the Final Supplement to the Final Environmental Impact Statement (FS-FEIS) (CUWCD 1999), and Chapter 1, Section 1.6, Page 1-13 through 1-19 of the 2000 Proposed Action Modifications Final Environmental Assessment/Finding of No Significant Impact (FONSI) (2000 Final EA/FONSI). It does not repeat any environmental conditions and impacts that remain unchanged from those described in the FS-FEIS or the 2000 Final EA/FONSI. Where appropriate, sections in these documents where information has not changed or still applies are referenced.

The impact analysis incorporates only those Standard Operating Procedures (SOPs) described in Chapter 1, Section 1.8 of this EA and the Noxious Weed Control Plan (Appendix A), of the FS-FEIS (CUWCD 1999) that are applicable to the 2002 Proposed Action Modifications. The reader of this EA also should refer to the FS-FEIS for the glossary (page G-1), and abbreviations and acronyms (page A&A-1). The impact area of influence (immediate and adjacent area of where the construction would occur) would be the same for all the resources covered in detail in the following sections.

2.2 Resources Not Specifically Covered

A number of resources are not specifically covered in this chapter. Construction of the 2002 Proposed Action Modifications would generally not change the conditions of these resources or impacts on them from what was described in the FS-FEIS or the 2000 Final EA/FONSI. The impact on these resources would be similar (would not exceed the type of impact or range of magnitude) to those described in these documents. These resources are:

- Soils (see Chapter 3, Section 3.8.6.4.1, pages 3-128 through 3-129 of the FS-FEIS)
- Public Health and Safety, Noise Impacts (see Chapter 3, Section 3.11.6.4.1, pages 3-155 through 3-156 of the FS-FEIS)
- Socioeconomics (see Chapter 3, Section 3.12.6.4.1, pages 3-164 through 3-165 of the FS-FEIS)
- Mineral and Energy Resources (see Chapter 3, Section 3.17.6.4, page 3-197 of the FS-FEIS)
- Land Use Plans and Conflicts (see Chapter 3, Section 3.18.6.4.1, page 3-202 of the FS-FEIS)
- Indian Trust Assets and Environmental Justice (see Chapter 3, Section 3.19.1 and 3.19.2, page 3-205 of the FS-FEIS)

- Recreation Resources and Special Status Areas (see Chapter 3, Section 3.10.1.6.4.1 pages 3-138 through 3-139, and Section 3.10.2.6.4.1, pages 3-148 through 3-150 of the FS-FEIS)
- Transportation (see Chapter 3, Section 3.15.6.4.1, pages 3-182 through 3-185 of the FS-FEIS)
- Cultural Resources (see Chapter 3, Section 3.13.6.4.1, page 3-170 of the FS-FEIS)
- Air Quality (see Chapter 3, Section 3.16.6.4, pages 3-192 through 3-194 of the FS-FEIS)

2.3 Surface Water and GroundWater Resources

Baseline conditions for surface water and groundwater resources reflect four years of drought resulting from lack of precipitation as snow and general rainstorms. These types of precipitation create the conditions for runoff, groundwater recharge, and storage of surface water and groundwater within the Diamond Fork Creek watershed. Surface water base flow conditions in Diamond Fork Creek result from groundwater discharge where the water table meets the ground surface and also from springs flowing out of the ground. Streamflows in upper Diamond Fork Creek within the impact area of influence have persisted during the drought, however, natural streamflows have appeared to be low, especially during the summer months.

Groundwater-fed springs have continued to discharge along upper Diamond Fork Creek during the drought. The sulfur springs north of the impact area of influence, commonly known as Stinking Springs (see Map A-1), located immediately adjacent to Diamond Fork Road, appear to have been recently affected by the Upper Diamond Fork Tunnel construction that intercepted a fault zone containing water with high concentrations of hydrogen sulfide. Most of the tunnel construction encountered dry conditions in the bedrock, except for minor quantities of water where the tunnel intercepted isolated fractures and voids filled with water. When the tunnel partially collapsed at the fault zone in early January 2002, up to 3,500 gallons per minute of water with high concentrations of hydrogen sulfide discharged into the tunnel and flowed down to the treatment plant outside the tunnel portal. Discharges of groundwater from this fault zone into the tunnel have continued for over two months, and the discharge from the Stinking Springs has ceased during this same period. Furthermore, the fault zone that was intercepted by the tunnel appears to intercept the ground surface at the Stinking Springs and appears to be the same fault zone that meets the ground surface at the Hot Pots sulfur springs on Fifth Water Creek. Therefore, it is likely that the fault zone: 1) contains significant sulfide mineralization; 2) has relatively high hydraulic conductivity; and 3) interception by the tunnel had the same effect as pulling the drain plug on a tub of water. The water that was discharging from the Stinking Springs appears to be directly connected to the fault zone intercepted by the tunnel, and the discharge into the tunnel lowered the water level in the fault zone, resulting in an interruption of discharge from these sulfur springs. Based on recent monitoring, the Hot Pots sulfur springs do not appear to have been affected.

The 2002 Proposed Action Modifications would include placing two-50-foot long concrete plugs in the tunnel northeast of its crossing 190 feet under Diamond Fork Creek. These plugs would back the hydrogen sulfide water up into the abandoned part of the tunnel including where it intercepts the fault zone and eliminate the flow of this water into the tunnel. The fault zone aquifer is expected to recover over the period of time that it takes to recharge the fault zone with groundwater from the surrounding rock formations and geothermal sources deep within the earth's crust. As the geothermal pressure builds up, the sulfur spring flows are expected to resume. The effects of this aquifer recovery through recharge appear to be limited to temporarily reduced or interrupted flows from one or more of the sulfur springs in the upper Diamond Fork Creek drainage basin. The impacts of the stream not receiving these flows temporarily would be minimal, not measurable, and would not cause significant impacts on groundwater levels or surface water flows.

2.4 Water Quality

Baseline water quality in Sixth Water and Diamond Fork creeks is considered to be high and supports the beneficial uses designated for these streams (see Chapter 3, Section 3.3.5, pages 3-16 through 3-22 of the FS-FEIS).

Construction of the Upper Diamond Fork Pipeline and stream crossings would require short-term diversion of streamflows in Diamond Fork Creek. The pipeline and a permanent new bridge and a temporary bridge would be constructed across Diamond Fork Creek. These construction activities would produce a short-term increase in turbidity when the diverted flow is returned to the channel. With implementation of the SOPs (Chapter 1, Section 1.8.1, 1.8.3, 1.8.4, and 1.8.7), construction activities would not cause significant impacts on water quality.

There is a slight potential for some contaminants such as selenium to be found in waste rock removed from the Sixth Water Connection to the Tanner Ridge Tunnel, Diamond Fork shafts, and connection to the Upper Diamond Fork Tunnel. As described in Chapter 1, Section 1.5.4.2 of the 2000 Final EA/FONSI, the waste material would be periodically tested for the presence of selenium and other contaminants and any contaminated material would be segregated in the waste disposal area. Appropriate measures (such as encapsulation and sufficient soil depth to prevent water infiltration) would be taken to prevent any water from coming into contact with this waste material and entering Diamond Fork Creek. These measures would prevent any significant water quality impacts from occurring in Diamond Fork Creek.

2.5 Wetlands

The impact on wetlands from construction of the Sixth Water Connection and Tanner Ridge Tunnel was covered in Chapter 3, Sections 3.4.6.4.1.1, and 3.4.6.4.1.2, page 3-45 of the FS-FEIS.

Riparian forest and creek bed/riverine wetland types would be affected by construction of the 2002 Proposed Action Modifications. These wetland types occur within the right-of-way where the Upper Diamond Fork Pipeline, Upper Diamond Fork Road Reconstruction, Upper Diamond Fork Flow Control Structure and Diamond Fork Shafts would be constructed.

The riparian forest community is divided into two sub-classes: low tree-dominated communities and cottonwood-dominated communities. One low, tree-dominated community is composed of box elder (*Acer negundo*) in the overstory with thin-leaf alder (*Alnus incana*), red-osier dogwood (*Cornus sericea*) and mixed willow (*Salix sp.*) species comprising the shrub stratum. The other low, tree-dominated community is composed of thin-leaf alder with a dense shrub layer of mixed willows and red-osier dogwood.

The most prevalent cottonwood-dominated riparian forest communities are composed of mature narrowleaf cottonwood (*Populus angustifolia*) with a dense, multi-layered understory of red-osier dogwood and coyote willow (*Salix exigua*), and a mixture of grasses and forbs. A second cottonwood-dominated community consists of mature to decadent narrowleaf cottonwood with an understory dominated by skunkbush (*Rhus aromatica*), but with an increasing establishment of upland species. A third cottonwood-dominated community consists of a gravel bar community with 50 percent or more cover by narrowleaf cottonwood ranging in height from 12 to 25 feet. The soil in this community consists of 5 to 12 inches of silty sand over cobble deposits (Trihey & Associates 1997).

Construction of the Upper Diamond Fork Pipeline and road reconstruction would impact 1.9 acres of riparian forest. These impacts would occur within the right-of-way (see Map A-1, Inset 3) and would result from placing fill material to raise the existing road grade and trench excavation to install the pipeline.

Construction of the Upper Diamond Fork Flow Control Structure would directly impact an estimated 0.5-acre of riparian forest. Impacts would result from placing 3 to 4 feet of fill material over the existing floodplain and construction of the flow control building and associated features. Filling over the roots of mature cottonwood trees adjacent to Diamond Fork Creek at the Upper Diamond Fork Flow Control Structure would indirectly impact approximately 0.1 acre of riparian forest. Map 2-1 shows the layout and configuration of the Upper Diamond Fork Flow Control Structure.

Approximately 0.015 acres of creek bed/riverine habitat would be permanently lost by placement of the 2 box culverts and associated riprap in Diamond Fork Creek. Permanent removal of this habitat would be less than one percent of the creek bed/riverine habitat in Diamond Fork Creek.

Two pipeline crossings would be constructed under Diamond Fork Creek. The upper pipeline crossing would involve temporary impacts on 0.01 acre and the lower is 0.004 acre of creek bed/riverine habitat. Any disturbance of riparian habitat from construction and placement of the box culverts and pipeline crossings would be restored under the SOPs listed in Chapter 1 of this EA.

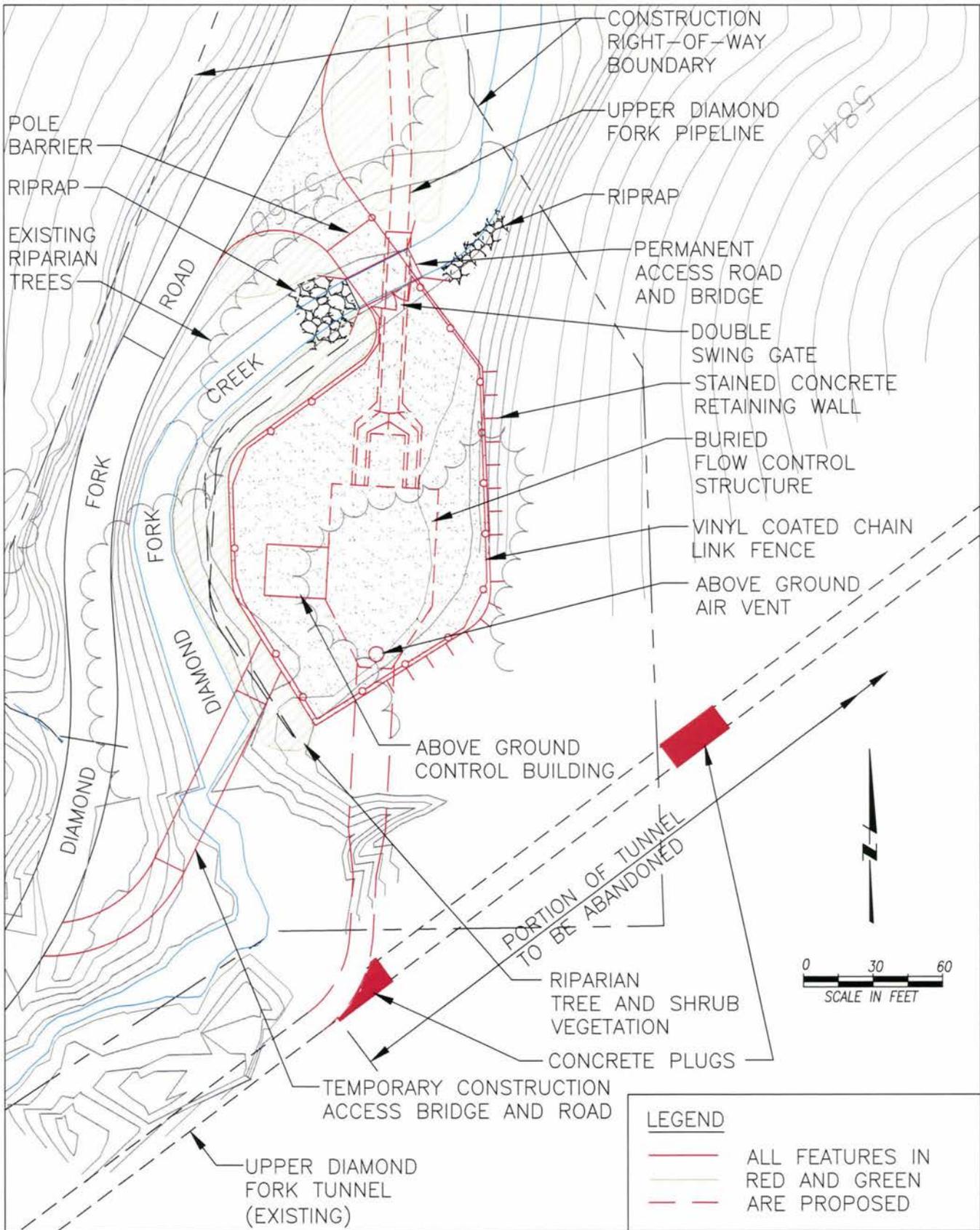
Mitigation and monitoring for wetland impacts on the Diamond Fork System are addressed in Section 3.20.3.1, page 3-207 of the FS-FEIS. A total of 109.7 acres of land containing wetlands and riparian habitat was acquired and federally protected by the Mitigation Commission with the intent to compensate for all wetland/riparian impacts on the Diamond Fork System. The impacts of the 2002 Proposed Action Modifications on wetlands would not be significant because the previous compensation more than offsets the wetland community type disturbances.

2.6 Aquatic Resources

The Diamond Fork Road reconstruction would involve installation of two box culverts in Diamond Fork Creek. One box culvert would be installed to replace the existing bridge on Upper Diamond Fork Road, the second box culvert would be installed for the access road to the Upper Diamond Fork Flow Control Structure. Approximately 0.015 acres of aquatic habitat would be temporarily disturbed, primarily affecting aquatic macroinvertebrate habitat. Fish occupying these construction sites would move upstream or downstream to avoid the temporary disturbance. The bottom of the box culverts would fill in with sand, gravel, and cobble as streamflows move bedload materials through the construction areas. This would re-establish the substrate on the bottom of the box culverts and allow the aquatic macroinvertebrates to re-colonize these areas of the streambed, resulting in no permanent impacts or significant impacts on aquatic resources.

Two pipeline crossings would be constructed under Diamond Fork Creek. The upper pipeline crossing would have temporary impacts on 0.01 acre and the lower pipeline crossing would impact 0.004 acre of aquatic macroinvertebrate habitat. Fish that may occupy the pipeline crossing areas would move upstream or downstream to avoid the temporary disturbance. This habitat disturbance would be restored under the SOPs listed in Chapter 1 of this EA. Aquatic macroinvertebrates would re-colonize the restored areas quickly after the substrates are restored. There would be no significant impacts on aquatic habitat or aquatic resources from constructing the pipeline crossings.

Aquatic species found to occupy the Stinking Springs include black flies (Simuliidae family). Black fly larvae attach to the surface of rocks in flowing water, including springs, and feed on micro-organisms (protozoa, crustaceans, bacteria, etc.) and plants such as algae. Black fly adults feed on flower nectar; females require a blood meal for ovarian development and they bite animals to obtain the blood. The temporary interruption of flow from the Stinking Springs and other nearby springs that might be affected by the apparent draining of groundwater from the fault zone effectively removes this habitat for black fly larvae until the spring begins to flow again. The impact of lost black fly habitat at the spring is considered temporary and not significant.



Map 2-1
 Upper Diamond Fork Flow Control Structure
 Site Plan
 2-5

2.7 Wildlife Resources

No critical habitat range would be affected by construction of the 2002 Proposed Action Modifications. Three primary plant communities and three sub-types that provide wildlife habitat were identified during field studies within the impact area of influence:

- Oak Woodland
- Wetlands
 - Riparian Forest
 - Creek Bed/Riverine
 - Wet Meadow
- Previously Disturbed Areas

Detailed descriptions of these plant communities are contained in Chapter 3, Section 3.5.5.1, Page 3-57 of the FS-FEIS (CUWCD 1999) and are not repeated in this section.

The 2002 Proposed Action Modifications would disturb a total of 5.4 acres of wildlife habitat during construction. Of this area, 1.3 acres would be permanently disturbed and the remainder would be revegetated in accordance with the SOPs described in Chapter 1, Section 1.8). This disturbance would be temporary lasting up to 2.5 years.

The permanent loss of 1.3 acres of wildlife habitat would not be a substantial acreage loss compared to available habitat in the impact area of influence. All of the permanent habitat loss would be immediately adjacent to Diamond Fork Road and currently provides low-value habitat because of vehicle traffic along the road corridor.

The impacts on mammalian predators and reptiles, raptors, upland game birds, passerine birds and related species would be the same as described in Chapter 3, Section 3.5.6.4.1.2, Pages 3-62 to 3-63 of the FS-FEIS, but at a lesser magnitude because of the reduction in disturbed acreage.

Clearing, grading and trenching for the Upper Diamond Fork Pipeline would result in direct mortality to certain amphibians and small mammals that are unable to quickly disperse from construction areas. Other animals would escape construction areas and be displaced into surrounding habitats, where available. Disturbed areas that are revegetated following construction would be re-colonized through immigration of new animals from adjacent habitats within 1 to 3 years.

Open trenches would create a temporary hazard to amphibians and small mammals and a barrier to their movement. However, several strategies would be used to reduce this impact, including limiting the length of open trench to no more than 600 feet at any time. Trenches would also be covered at the end of each day and inspected for trapped animals prior to backfilling.

2.8 Special-Status Species

With two exceptions, the documentation presented in Chapter 3, Section 3.7, Pages 3-99 through 3-125 of the FS-FEIS and Chapter 2, Section 2.8, pages 2-14 through 2-17 of the 2000 Final EA/FONSI remains applicable for the 2002 Proposed Action Modifications. The exceptions involve the Canada lynx (*Lynx canadensis*) and the yellow-billed cuckoo (*Coccyzus americanus*).

After the FS-FEIS was prepared, the Canada lynx (*Lynx canadensis*) was listed as a threatened species. In the western U.S., lynx habitat occurs in spruce/fir forests at higher elevations. Downed logs and windfalls provide

cover for denning sites, escape, and protection from severe weather. The lynx range in the contiguous United States includes 16 states-Oregon, Idaho, Washington, Montana, Wyoming, Utah, Colorado, Maine, New Hampshire, Vermont, New York, Michigan, Wisconsin, and Minnesota. Lynx infrequently dispersed into Nevada, North Dakota, South Dakota, Iowa, Indiana, Ohio, and Virginia (USFWS March 2000). Lynx are believed to currently remain in small populations in only three states-Montana, Washington, and Maine (ENN 1999).

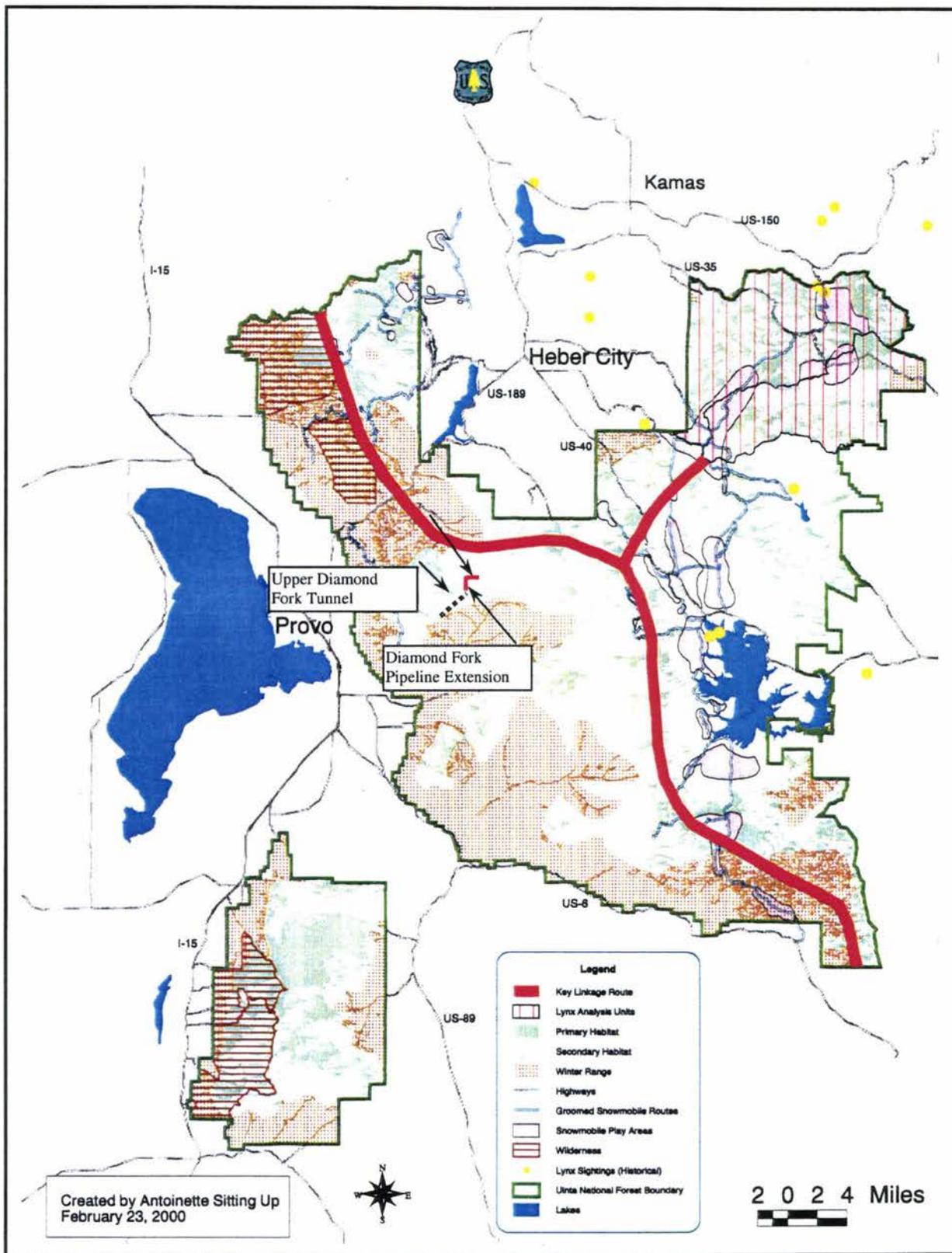
Mid-successional forest stages provide habitat for the lynx's primary prey, the snowshoe hare (*Lepus americanus*). Snowshoe hare are known to be sedentary animals, living in a limited home range. The area where they live depends on the availability of food. This limited range, normally less than 25 acres, allows hare to become well acquainted with the habitat characteristics. They prefer a habitat of mid-successional forest (20-40 years old) dispersed among dense brushy cover. Snowshoe hare remain in thickets during the day; at night, they forage around the thickets and forest edges. During summer months, snowshoe hare consume mostly green succulent vegetation such as grasses, ferns, clovers and forbs; dozens of different herbs; and tender twigs. During winter, snowshoe hare usually eat bark, twigs, buds and evergreen leaves of woody plants (Kolbe, Watson). Palatable deciduous species include maple, birch, rose, hazel and willow, whereas jack pine, white pine, larch, and cedar are favored conifers (Canadian Wildlife Service). These plant community types do not occur in the project impact area of influence.

The U.S. Fish and Wildlife Service (USFWS) has inadequate information to determine whether resident lynx populations occurred historically or currently within New York, Vermont, Michigan, Wisconsin, Idaho, Utah, and Oregon (USFWS March 2000). It has been 68 years since a lynx was last officially spotted in Utah (ENN 1999). The official State status of the lynx in Utah is Sensitive; information is inadequate to determine whether a resident population existed historically or currently (USFWS March 2000). There are records of lynx occurrence in the Uinta Mountain Range. A few records also exist from the Wasatch Range and the Manti La Sal. The last verified records of lynx from Utah were in 1977 for physical remains and 1982 for tracks. The lynx has been protected from harvest in Utah since 1974 (Forest Service et. al. January 2000).

The 2002 Proposed Action Modifications would be constructed and operated in an area that ranges from 4 to 5 miles west of the Canada lynx key linkage route. Map 2-2 shows the proximity of the 2002 Proposed Action Modifications to the lynx key linkage route and historical sightings of lynx on the Uinta National Forest. Construction of the 2002 Proposed Action Modifications would have no effect on the key linkage route, lynx habitat, or lynx since there is no documented historical use of the area by lynx and there are no known lynx populations or individuals in the effect area of influence.

The impact area of influence contains no primary or secondary snowshoe hare habitat. The plant community types preferred by snowshoe hare for cover, reproduction, and food do not occur in the vegetation types that would be disturbed by the project construction. The project elevations are lower than those described for snowshoe hare and lynx habitat in Utah. The project construction would not affect snowshoe hare habitat.

After the 1999 FS-FEIS and 2000 Final EA/FONSI were prepared, the yellow-billed cuckoo was listed as a candidate species. Yellow-billed cuckoos are considered a riparian obligate species and are usually found in large, undisturbed tracts (25 – 200 acres) of cottonwood/willow habitats with dense sub-canopies. Current range of yellow-billed cuckoos in Utah is limited to disjunct fragments of riparian habitats in northern Utah (Utah DNR 2002). The nearest recorded sighting to the impact area of influence was a pair found on Spanish Fork River near the BYU dairy in 2001; nesting was not confirmed (personal communication USFWS March 2002). Breeding bird surveys conducted in the Diamond Fork Creek drainage in 1996 and 1997 did not result in any observations or occurrences of yellow-billed cuckoo. The 1997 point-count survey extended upstream of Three Forks along Diamond Fork Creek through the narrow canyon riparian zone (personal communication Ammon 2002). Other recent sightings and occurrences of yellow-billed cuckoo have been recorded in Heber Valley along the Provo River and at the mouth of Provo River near Utah Lake (personal communication Ammon 2002). Generally,



Map 2-2
Lynx Analysis Units and
Key Linkage Routes on the Uinta National Forest

yellow-billed cuckoo arrives in Utah in late May to early June and breed in late June through August. Eggs are incubated for approximately 10 days and young are able to fly at about three weeks of age.

The 2002 Proposed Action Modifications would temporarily disturb 4.1 acres of potential yellow-billed cuckoo marginal nesting habitat, and would permanently disturb 1.3 acres of potential marginal nesting habitat. These areas are a minute fraction of the large potential nesting area for yellow-billed cuckoo in the Uinta Range. The potential nesting habitat in the impact area of influence is considered marginal because of the narrow canyon and riparian zone, which contains a well-traveled road. Yellow-billed cuckoo prefer to nest in broad riparian floodplains with mature cottonwood trees and willow understory that provides the dense cover this elusive species tends to seek, far from human development (personal communication Ammon 2002). There is adequate nesting and rearing habitat adjacent to and outside of the impact area of influence. Construction of 2002 Proposed Action Modifications would have no effect on yellow-billed cuckoo or its nesting habitat since there is no documented historical use of the area by yellow-billed cuckoo and there are no known populations or individuals in the effect area of influence.

2.9 Agriculture

Land that is currently used for livestock grazing would be affected by the 2002 Proposed Action Modifications. The primary concern related to grazing in the area is access through the construction sites for cattle to be moved to and from designated grazing allotments.

Construction impacts of the 2002 Proposed Action Modifications would be the same type as described in Chapter 3, Section 3.9.6.4.1, Page 3-132 of the FS-FEIS, except they would be less extensive. Construction of the 2002 Proposed Action Modifications would temporarily disturb 5.4 acres. Only 1.3 acres would be permanently removed. This impact would be less than 1 percent of the total area used for livestock grazing.

Grazing permittees would need to coordinate livestock movement with construction activities (see. SOPs in Chapter 1, Section 1.8). The key SOPs are listed in Section 1.8.6, Agricultural Resources. Impacts on livestock operations would be limited to increased human activity in the pastures to be grazed each year and restricted access during the 2.5-year construction period. The impacts are unquantifiable, but any conflicts would be minimized to the extent possible under the SOPs. These grazing impacts would not be significant.

2.10 Visual Resources

The 2002 Proposed Action Modifications would be constructed in areas with only one Forest Service Visual Quality Objective (VQO) rating, Partial Retention. Table 2-1 shows the VQO and Visual Absorption Capability (VAC) ratings of the affected areas within the Uinta National Forest. VQO and VAC ratings are described in detail in Chapter 3, Section 3.14.5, Pages 3-171 and 3-172 of the FS-FEIS.

**Table 2-1
Visual Quality Objective and Visual Absorption Capability Ratings
For Affected Uinta National Forest Areas**

Diamond Fork Creek Corridor Area	VQO Rating	2002 Proposed Action Modification Features	Visual Absorption Capability Ranking of Affected Area
Diamond Fork Creek Road	Partial Retention	Upper Diamond Fork Pipeline, Upper Diamond Fork Road Reconstruction, Upper Diamond Fork Flow Control Structure	Low to Moderate

The general viewsheds were described in Chapter 3, Section 3.14.5.1, Page 3-174, of the FS-FEIS. Only additional information specific to the proposed 2002 Proposed Action Modifications is presented in this section.

Most of the construction area is viewed at the foreground and middle-ground distance zones when traveling the Diamond Fork Road or when hiking or fishing along Diamond Fork Creek. The side-hills, while extremely steep in places, are generally vegetated with brush and scrub oak without cliffs or massive rock outcrops. Man-made features are limited to the narrow (mostly one-lane) paved road along Diamond Fork Creek. Flatter areas mostly included in the Diamond Fork Creek floodplain and are vegetated with cottonwood, box elder, alder, willows and herbaceous grasses and forbs.

The impact on visual resources from Sixth Water Connection to Tanner Ridge Tunnel is documented in Chapter 3, Section 3.14.6.4.1, pages 3-175 through 3-176 of the FS-FEIS.

2.10.1 Upper Diamond Fork Pipeline

Short-term visual impacts would result from constructing the Upper Diamond Fork Pipeline in the form of temporary changes in vegetation, line, soil colors and textures. The construction corridor would be restored under the SOPs listed in Chapter 1. Slash and woody debris removed during construction would be crushed and scattered to appear as naturally occurring in areas viewed at the foreground distance zone. No long-term visual impacts would result from construction of the pipeline extension through this area.

2.10.2 Upper Diamond Fork Flow Control Structure

Construction of the Upper Diamond Fork Flow Control Structure and associated features would not be in compliance with the USDA Forest Service Partial Retention VQO which provides for management activities that remain visually subordinate to the characteristic landscape. [Under the Partial Retention VQO, middleground Partial Retention activities may repeat form, line, color, and texture that are frequently found in the characteristic landscape. For foreground-Partial Retention, activities may repeat form, line, color, or texture common to the characteristic landscape, but when viewed as foreground changes must remain visually subordinate to the characteristic landscape. Under Partial Retention, reduction of the visual impact should be accomplished as soon after project completion as possible or at a minimum within the first year (USFS 1975).]

The flow control structure site has a low Visual Absorption Capability (VAC) because it is viewed at very close distance, 100 to 200 feet from Diamond Fork Road. The likelihood that the structure would be visible from the road is very high. The flow control structure, retaining wall, access road and security fencing would dominate the view from the adjacent Diamond Fork Road (see Map 2-1).

Non-reflective materials would be used for doors, roofing and ventilation equipment. The flow control building would be constructed of stained and textured concrete masonry. The concrete color would be chosen to blend with site soil colors and dominant background vegetation to reduce visual contrast. Consultation would be conducted with the Forest Service related to specific color and texture selections. Vinyl coated chain link fence fabric would be used for fencing to reduce glare and visual contrast. The area surrounding the flow control building fence would be graded to match surrounding landforms to the extent possible. Large native tree stock (thin-leaf alder, cottonwood and scrub oak) along with containerized shrubs (big sagebrush, rabbitbrush and snowberry) would be planted around the perimeter of the building pad and adjacent to Diamond Fork Creek to partially screen the facilities from view when traveling along Diamond Fork Road. A vegetation and rock screen would be installed where the access road joins the Diamond Fork Road to screen the flow control structure, access road and box culvert bridge from view along the road (see Map 2-1). The vegetative and rock screening would reduce the dominance of the building at the foreground and middleground distance zones.

2.10.3 Diamond Fork Road Reconstruction

Short-term visual impacts would result from reconstructing the Diamond Fork Road. Road cuts would be configured to match existing contours to the extent possible. Retaining walls would be colored to match existing soil and rock colors to reduce visual contrast. The vertical retaining walls would be mostly invisible to the public traveling along the Diamond Fork Road since they would be constructed at the edge of the road. Only short sections of wall would be visible and they would not be in a focal position to the traveler. Specific color selection would be coordinated with the Forest Service. Disturbed areas would be restored under the SOPs described in Chapter 1 of this EA.

2.11 Monitoring

Implementation of the proposed Upper Diamond Fork Pipeline would require the following monitoring in addition to what was described for the Proposed Action in Chapter 3, Section 3.20, Pages 3-207 through 3-218, of the FS-FEIS (CUWCD 1999).

In cooperation with the Forest Service, the Fifth Water Trail conditions would be monitored during the project construction period and corrective actions taken to address impacts from increased use resulting from the temporary closure of Three Forks.

The Stinking Springs and other sulfur springs would be monitored to determine whether flows remain diminished or return to normal average flow rates. The springs also would be monitored for biotic activity when the flows return to normal average flow rates.

2.12 Unavoidable Adverse Impacts

Unavoidable adverse impacts associated with the 2002 Proposed Action Modifications would be of the same type as identified for the Proposed Action in Chapter 3, Section 3.21, Pages 3-219 through 3-221 of the FS-FEIS (CUWCD 1999). In some cases, the magnitude of impacts may be less but the differences are not quantifiable.

2.13 Cumulative Impacts

The projects considered in the cumulative impacts are the same as described in Chapter 1, Section 1.9.3, Pages 1-83 through 1-87 of the FS-FEIS (CUWCD 1999). The 2002 Proposed Action Modifications would not

result in any different cumulative impacts than those described for the Proposed Action in Chapter 3, Section 3.22, and Pages 3-223 through 3-226 of the FS-FEIS. In some cases, the magnitude of cumulative impact may be less but the differences are not quantifiable.

2.14 Short-Term Use of Man's Environment Versus Maintenance of Long-Term Productivity

The purpose of this section is to provide a broad overview of the effect that construction and implementation of the 2002 Proposed Action Modifications would have on the long-term productivity of man's environment. Since this EA is dealing only with modifications, it is not possible to present a total picture. The Diamond Fork System is now comprised of features included in the FS-FEIS and the 2000 Final EA/FONSI. For a complete overview for the Diamond Fork System, see Chapter 3, Section 3.23, Page 3-227 in the FS-FEIS (CUWCD 1999) and Chapter 2, Section 2.19, pages 2-33 through 2-34 in the 2000 Final EA/FONSI. Completion of the Diamond Fork System by construction of the 2002 Proposed Action Modifications would remove excessive human-caused streamflows from Sixth Water Creek and Diamond Fork Creek and allow restoration of aquatic and riparian habitat in the affected reaches of these streams.

2.15 Irreversible and Irrecoverable Commitment of Resources

This section identifies resources that would be irreversibly (cannot be reversed, repealed or annulled) or irretrievably (cannot be retrieved, recovered, restored or recalled) committed to the 2002 Proposed Action Modifications.

Use of the following resources would be irreversible and irretrievable:

- Materials used during construction (see Table 1-3, in Section 1.7 of Chapter 1)
- An unknown amount of fuel that would be consumed during construction and operation
- Funds used for project construction

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Chapter 3

Consultation and Coordination

Chapter 3 Consultation and Coordination

3.1 Introduction

This chapter describes the consultation and coordination for the 2002 Diamond Fork Proposed Action Modifications Final Environmental Assessment (Final EA). As described in Chapter 1, Section 1.3, this Final EA tiers off of the Diamond Fork System FS-FEIS (CUWCD 1999) and the 2000 Diamond Fork Proposed Action Modifications Final EA/FONSI (CUWCD 2000).

3.2 Consultation

Table 3-1 lists the coordination and consultation meetings that were held in the process of preparing the Final EA.

Table 3-1 Coordination and Consultation Meetings		
Date	Agencies in Attendance	Topics
January 17, 2002	Central Utah Water Conservancy District (District) and EPA	Detailed briefing on current status and problems with Diamond Fork Tunnel construction and discussion of potential alternatives.
January 25, 2002	District, U.S. Department of the Interior (DOI), Utah Reclamation and Mitigation Conservation Commission (Mitigation Commission), U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service (USFS), Utah Division of Water Quality, Utah Department of Natural Resources, Utah Division of Wildlife Resources, Utah Division of Water Resources, Utah Division of Forestry, Fire and State Lands (EPA and Corps of Engineers invited; EPA participated by conference call).	The purpose of this meeting was an agency-scoping meeting on the Utah Lake System. However, the agencies received a detailed briefing on the current status and problems with the Diamond Fork Tunnel construction, followed by a question and answer session.
February 4, 2002	District, , DOI, USFS	Present to the Forest Service the proposed modifications necessary to complete the Diamond Fork System
February 6, 2002	District, DOI	Brief the DOI, Assistant Secretary on the problems with the Diamond Fork Tunnel construction and the proposed modifications to the previously approved Proposed Action
February 21, 2002	District, DOI, Mitigation Commission, USFS, USFWS, Utah Department of Natural Resources, Utah Division of Wildlife Resources	Field review of the proposed modifications to the Proposed Action to complete the Diamond Fork System

3.3 Coordination

This section describes the coordination that will be achieved in reviewing the Final EA. Sections of the impact analyses documented in Chapter 2 were reviewed and commented on by the Forest Service. A draft of the Final EA was reviewed by the U.S. Department of the Interior and Utah Reclamation Mitigation and Conservation Commission. A letter addendum to the Fish and Wildlife Coordination Act Report has been prepared by the U.S. Fish and Wildlife Service and is included in this Final EA as Appendix B. This Final EA contains the Biological Assessment on the Canada lynx (*Lynx canadensis*) and yellow-billed cuckoo (*Coccyzus americanus*). The U.S. Fish and Wildlife Service concurs with the “no effect” determination on these species made in Section 2.8, Chapter 2 of the Final EA in a letter attached to this Final EA as Appendix C. In a letter dated March 5, 2002 the U.S. Forest Service (Forest Service) stated their concerns and suggestions regarding the 2002 Proposed Action Modifications. Those concerns and suggestions have been addressed and included in Chapters 1 and 2 of this Final EA. The Forest Service letter and a letter of response is attached to this Final EA as Appendix D.

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Appendix A

Environmental Commitments

Appendix A Environmental Commitments

This appendix consists of two major parts. Part 1 lists the new environmental commitments associated with the 2002 Proposed Action Modifications. Part 2 lists the applicable commitments that were included in the Records of Decision on the Diamond Fork System Final Supplement to the Final Environmental Impact Statement (CUWCD 1999) and the 2000 Proposed Action Modifications Final Environmental Assessment/Finding of No Significant Impact (CUWCD 2000). All of the previous environmental commitments included in the 1990 Record of Decision (ROD), 1995 ROD, 1999 Diamond Fork System Final Supplement to the Final Environmental Impact Statement and ROD, and the 2000 Final Environmental Assessment for the Diamond Fork System Proposed Action Modifications have not changed and are incorporated in this Final EA by reference.

Part 1 New Environmental Commitments

Mitigation

Erosion Control and Restoration

Mulch will be used on sites with low annual precipitation or high erosion potential, on slopes exceeding 15 percent, or on windy sites. Mulch can consist of noxious weed-free straw or hay, erosion control fabric or a functional equivalent. It will be applied before seeding if final cleanup (including final grading and installation of permanent erosion control measures) is not completed in an area within 10 days after a trench has been backfilled or if construction or restoration activity is delayed for extended periods, such as a seeding period restriction. (District)

Straw mulch will be applied at the following rates: 1 ton per acre on level ground; two tons per acre over at least 75 percent of the ground surface on all dry, sandy sites and sites with slopes greater than 8 percent; and three tons per acre if slopes are within 100 feet of water bodies and wetlands. When wood chips are used as a mulch, a maximum of 1 ton per acre along with 11 pounds per acre of available nitrogen (at least 50 percent of the nitrogen should be slow-release). (District)

Mulch will be anchored to help stabilize erodible soils by using a mulch crimper or disk with notched coulters to crimp the mulch to a depth of 2 to 3 inches. If a blower is used, mulching materials will be at least 8 inches long to allow anchoring. Liquid mulch binders will be used at recommended manufacturer rates and will not be used within 100 feet of wetlands or water bodies. (District)

Erosion control fabric such as jute thatching or bonded fiber blankets will be used on water body banks during final recontouring or on extremely steep slopes. The fabric will be anchored with staples or other anchoring devices. (District)

Silt fences will be used to temporarily control erosion and sedimentation during construction. Silt fence material will be the least contrasting color to minimize visual impacts. All silt fence will be removed following completion of construction and revegetation activities. (District)

If necessary, a travel lane will be left open to allow access by construction traffic. When access is no longer required, the lane will be removed and the right-of-way restored. (District)

Noxious weeds will be controlled as described in the Noxious Weed Control Plan presented in Appendix A of the FS-FEIS. (District)

Slash and woody debris removed during construction will be crushed and scattered throughout riparian zones in and adjacent to the construction areas. (District)

Smaller trees and slash removed as part of the road reconstruction and other construction activities will be spread over disturbed and undisturbed areas. (District)

Recreation Resources

The District will coordinate with the Forest Service in developing an improved parking area at the Fifth Water Trailhead to the Hot Pots. (District)

Dispersed camping sites that occur along reconstructed roads that will be disturbed will be restored to pre-construction conditions. (District)

Water Quality

Any water contacted during the construction of the Diamond Fork Shafts will drain down to the completed Upper Diamond Fork Tunnel and flow out the tunnel to the water treatment and disposal facilities developed for the construction of the tunnel. Appropriate measures (such as encapsulation and sufficient soil depth to prevent water infiltration) will be taken to prevent any water from coming into contact with waste material and entering Diamond Fork Creek. (District)

Wetlands

Trees will be planted within the riparian area to replace those removed or severely damaged during construction. (District)

Trees removed during construction will be left on nearby undisturbed riparian areas as down woody material to provide cover and nesting opportunities for wildlife, trap sediment, and stabilize stream banks, and provide fisheries habitat. (District)

Smaller trees and slash removed as part of construction activities will be spread over disturbed areas. (District)

A retaining wall will be constructed to avoid filling a riparian wetland area west of the existing Diamond Fork Road about 600 feet north of the proposed Upper Diamond Fork Flow Control Structure. (District)

Visual Resources

Interpretive signs will be updated as appropriate to inform the public about the construction activities. (District)

Road cuts will be configured to match existing contours to the extent possible. (District)

Slash and woody debris removed during pipeline construction will be crushed and scattered to appear as naturally occurring in areas viewed at the foreground distance zone. (District)

The pipeline air vent, vacuum release, and manway access structure upstream of the replaced Diamond Fork Creek bridge will be screened with vegetation, rocks and/or soil mounds and colors using appropriate earth-tone colors. (District)

Retaining walls along the Diamond Fork road will incorporate special drainage features and will be constructed of tinted and textured concrete and embedded rocks to blend with the surrounding landscape. (District)

Rock riprap used for bank revetment around the replaced Diamond Fork Creek bridge will be native rock matching surrounding rock colors. The guardrails along the retaining walls and replaced bridge will be a 15-percent gray, painted surface. (District)

The Diamond Fork Shafts concrete-masonry control building and roof slab will be colored and textured to closely match the surrounding vegetation and rocks, and colored non-reflective materials will be used on the building roof, doors and ventilation equipment. (District)

The Diamond Fork Shafts air vent will extend above the roof slab and will be colored and textured to match existing soil colors. Consultation will be conducted with the Forest Service related to specific color and texture selections for the building, roof slab, air vent and retaining wall. (District)

The Diamond Fork Shafts and Flow Control Structure vinyl-coated chain link fence will be colored to match the surrounding vegetation and rocks. Large native tree stock (thin-leaf alder, cottonwood and scrub oak) along with containerized shrubs (big sagebrush, rabbitbrush and snowberry) will be planted around the perimeter of the building pad and adjacent to Diamond Fork Creek to partially screen the facilities from view when traveling along Diamond Fork Road. A vegetation and rock screen will be installed where the access road joins the Diamond Fork Road to screen the flow control structure, access road and box-culvert bridge from view along the road. (District)

Transportation

Reconstructed roads will be outsloped to drain toward the stream. Where ephemeral drainages intersect the road, the outsloped road grade will meet the ephemeral drainage. Riprap cutoff walls will be installed to prevent drainage and debris from collecting in ditches. Cuts and fills along the reconstructed road will be minimized to the extent possible. (District)

The District will install appropriate signage at the upstream end of the Upper Diamond Fork Tunnel Outlet construction area warning users of where the road narrows from two lanes to one and one half lanes and also warning of the change in surface conditions (i.e., rough road ahead). (District)

Additional signing in Hobble Creek, at Sawmill Hollow, and on the Sheep Creek Road will be installed at appropriate locations to inform the public of the extent and impacts of the proposed road closure. (District)

Monitoring

In cooperation with the Forest Service, the Fifth Water Trail conditions will be monitored during the Project construction period and corrective actions taken to address impacts from increased use resulting from the temporary closure of Three Forks. (District, Forest Service)

Stinking Springs and other natural sulfur springs will be monitored to determine whether flows remain diminished or return to a normal average flow rates. (District, Mitigation Commission)

Stinking Springs and other natural sulfur springs will be monitored for biotic activity when the flows return to normal average flow rates. (Mitigation Commission)

Part 2

Environmental Commitments Contained in the Records of Decision

Mitigation

Agricultural

To minimize conflicts between pipeline construction and other land activities, the following will be done before construction begins: Owners, tenants, lessees and managers of public lands will be informed of the construction schedule; grazing permittees will be consulted and informed of fence openings, disturbances to range improvements and other range-related activities; and utilities will be contacted if their facilities will be crossed by features of the Proposed Action Modifications. (District)

Fences along the right-of-way will be braced before they are opened. Access and livestock will be controlled with temporary fencing and gates during construction to reduce impacts on other land uses. If damaged, barriers (such as cattle guards) for livestock control will be replaced by measures that are equally effective. Construction will not inhibit existing livestock access to water and adjacent grazing areas unless agreed to by the owner and/or permittee in advance. Fences, gates and cattle guards will be restored to their original condition or replaced when construction is completed. (District)

The construction contractor will work with the owner, Forest Service representative and livestock permittees to minimize conflicts with the annual entry and removal of livestock on the public lands. (District)

Air Quality

The District will follow, to the extent feasible, the EPA's recommendations for aggregate storage pile emissions (AP-42, Section 11.2.3) to minimize dust generation (i.e., periodic watering of equipment staging areas and dirt roads). (District)

Construction machinery will be routinely maintained to ensure that engines remain tuned and emission-control equipment is properly functioning as required by law. (District)

The contractor will follow Utah air quality regulations. (District)

Aquatic Resources

To the extent feasible, heavy equipment use in streambeds and riparian areas during construction at stream crossings will be minimized. (District)

Impacts on aquatic resources will be avoided and minimized by following hazardous materials procedures included under the health and safety SOPs, the restoration and erosion control SOPs, and wetlands SOPs. (District)

Cultural Resources

The District will have a Class III cultural resources survey conducted of the Area of Potential Effect (APE) to identify historic properties in a manner consistent with the *Secretary of the Interior's Standards and Guidelines for Identification* (48 CFR 44720-23) and taking into account NPS publication, *The Archeological Survey*:

Methods and Uses (1978 GPO stock #04-016-00091) and guided by *National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties*. (District)

The District, in consultation with the Utah SHPO, will evaluate properties identified in the survey in accordance with 36 CFR 800.4. If properties included in or eligible for the National Register of Historic Places or meeting the National Register Criteria (36 CFR 60.4) are identified, the District will comply with 36 CFR 800.5. (District)

Energy Conservation

Standard energy conservation measures will be used during construction, operation and maintenance (e.g., avoiding unnecessary idling and keeping vehicles and equipment tuned and maintained). (District)

The shortest possible transportation routes will be used during construction to conserve fuel. (District)

Erosion Control and Restoration

Erosion control procedures will be implemented in areas disturbed during construction of project components, including temporary access roads and access roads that are upgraded to construction traffic standards. The contractor will be required to contour and revegetate all disturbed surfaces not covered by project facilities and avoid and minimize erosion. (District)

Temporary slope breakers will be used to reduce runoff velocity and divert waste from the construction right-of-way. They will be constructed with materials such as soil, silt fence, staked hay or straw bales, or sandbags, using the written recommendations of local land managing agencies and soil conservation authorities. In the absence of these recommendations, temporary slope breakers will be installed at the following spacing:

Slope	Spacing
5 percent to 15 percent	300 feet
More than 15 percent to 30 percent	200 feet
More than 30 percent	100 feet

Slope breakers will be constructed with a 2 to 8 percent outslope to divert surface flow to stable, well-vegetated areas. Slope breakers will comply with all applicable survey requirements if they extend beyond the edge of the construction right-of-way. Appropriate energy-dissipating devices will be built in the absence of a stable area, or at the end of the slope breaker, if necessary. (District)

Sediment barriers will be installed to keep wetlands and water bodies free of possible sedimentation resulting from construction. The barriers will be constructed of materials such as silt fence, staked hay or straw bales, or sandbags. They will be installed as necessary and maintained at the base of slopes adjacent to road crossings and at construction locations near water bodies or wetlands where siltation could occur. (District)

Existing topsoil will be carefully removed and stored during trenching operations and replaced after trenches are backfilled. Where drainage occurs, gaps will be left between topsoil piles to prevent increased water saturation. Topsoil stripping activities will cease during excessively wet weather, and topsoil will not be stockpiled for longer than 2 years. Additional topsoil will be added, if needed, to allow vegetation growth.

Final cleanup of an area (including replacement of topsoil, final grading, and installation of permanent erosion-control structures) will be completed within 10 days after backfilling. If unavoidable delays occur, final cleanup will be completed as soon as possible and always before the end of the next recommended seeding season. (District)

After construction, soil will be replaced and worked with a disc, chisel plow, or other appropriate implement as practical to reduce compaction and leave soil in proper revegetation condition. Topsoil will be replaced with a minimum of handling. (District)

Permanent trench breakers will be built to stop the flow of subsurface water along trenches. These will be constructed of such materials as concrete, sandbags or polyurethane foam. Trench breakers will also be installed at the base of slopes adjacent to water bodies and wetlands. When necessary, an engineer or similarly qualified professional will determine the need for and spacing of trench breakers. Topsoil will not be used in trench breakers. (District)

Seedbeds will be prepared in disturbed areas to a depth of 3 to 4 inches using appropriate equipment. If hydroseeding is used, the seedbed will be scarified to facilitate lodging and germination of seed. Seeding will be done in consultation with the Forest Service. (District)

To maximize the success of revegetation, planting will occur during appropriate climatic periods in properly prepared soil. Planting and fertilizer application techniques will be chosen for specific conditions at each site and the needs of selected plant species. Temporary erosion control measures will be used at any site where seeding has been delayed. (District)

Where possible, seed mixes of local origin will be used along with mulching. The criteria for selecting species to plant in disturbed areas will include hardiness, compatibility with wildlife, capacity to self-perpetuate and rooting characteristics that help stabilize soil. (District)

Temporary traffic barriers will be placed as necessary to keep vehicles from traveling over areas that have been revegetated. Traffic barriers may include temporary fencing, concrete jersey barriers, berms and boulders. (District)

Health and Safety

The Utah Occupational Safety and Health Act and federal Occupational Safety and Health Standards will be followed during construction. Copies of these publications and the health and safety SOPs will be provided to project workers at construction sites. (District)

Warning signs and temporary barriers will be provided in areas used by permittees and other public land users where construction activities are underway. (District)

Onsite and offsite construction activities will fully conform to standards in the USBR safety and health standards manual (USBR 1993). (District)

Noise

Mufflers on construction equipment will be checked regularly to minimize noise. (District)

The District's contractor will follow noise exposure and hearing conservation standards and practices in the USBR safety and health standards manual to protect workers and the public from potential harmful noise. (District)

Noxious Weed Control

Revegetated areas will be monitored for invasion of noxious weeds and other weed species, as required by Section 4.17.3 of the Utah Noxious Weed Act, and appropriate weed control measures implemented. The noxious weed control will include the following measures:

- Establishing a cover of desirable and preferably indigenous plant species as quickly as possible after construction (District)
- Interim seeding and weed control of topsoil stockpiles if they will remain barren for extended periods of time (District)
- Conducting weed surveys during the fall and spring after initial seedings (District)
- Applying herbicides, removing the weeds by hand or using mechanical or biological control methods before they develop seeds or spread roots (District)
- Herbicides will be applied in accordance with federal and state application, permit and record keeping requirements. Key considerations will include compatibility with wildlife management plans, protecting indigenous plant communities and avoiding environmental contamination. (District)
- Noxious weed removal in the vicinity of Ute ladies'-tresses will be done in a manner that avoids or minimizes impacts on these species or their habitats. (District)
- Weeds removed by mechanical or hand control methods will be burned or otherwise properly disposed of to prevent their spread to other areas. (District)
- Monitoring for revegetation success will be conducted for three years following completion of initial revegetation. Monitoring will be conducted for a longer period if anticipated results are not achieved and the project is contributing to the spread of noxious weeds. (District)
- The District will implement a program to make contractors and others in field positions aware of undesirable vegetation. (District)

Transportation

Traffic control and other safety measures will be followed in construction and maintenance areas to minimize the risk of vehicle and pedestrian accidents. (District)

Roads damaged by project construction activities will be restored to at least preconstruction levels. (District)

Construction and traffic control procedures will be designed to minimize the length of delays and/or detours. (District)

Salt will not be used in snow removal efforts. (District)

Snow, ice and debris will be removed from currently functioning culverts to keep the drainage system functioning efficiently. Ditches will be kept functional. (District)

All debris, except snow and ice, which is removed from the road surface and ditches, shall be deposited away from stream channels in areas identified by the Forest Service. (District)

During snow removal operations, banks shall not be undercut and every effort will be made not to blade off gravel or other selected surfacing off roadways. (District)

Snow berms shall not be left on the road surface. Berms left on the shoulder of the road shall be removed and/or drainage holes shall be opened and maintained. Drainage holes shall be spaced as required to obtain satisfactory surface drainage without discharge on erodible fills. (District)

Any damage resulting from snow removal will be repaired to at least the preconstruction condition. (District)

Visual Resources

In addition to restoration SOPs, the following visual resources SOPs will be implemented to minimize visual impacts.

Disturbed areas will be landscaped to match existing and characteristic landforms. When feasible, they will be recontoured and slopes rounded along maintenance roads, pipeline alignments and streambanks to blend with surrounding natural contours. (District)

New plantings will be blended with natural vegetation at the edges, and configured to match existing vegetation patterns and provide horizontal and vertical diversity. (District)

Existing vegetation that screens pipeline alignments, flow-control facilities, parking lots and other features from key viewing areas will be retained to the extent feasible. Indigenous trees will be planted to screen disturbed areas at gaps in existing vegetation where pipeline corridors, flow control facilities, parking lots and other features may be visible from key viewing areas. (District)

Disturbed soils will be restored to match soil colors and textures of adjoining areas as closely as possible to reduce contrast in the landscape. Boulders may be placed in some areas to replicate the landscape character. (District)

Water Quality

Construction activities for the Proposed Action Modifications will be performed according to the Final Draft Nonpoint Source Water Pollution Control Plan of Hydrologic Modifications in Utah (Robinson 1994). The measures identified in this plan specify construction practices where there is potential for disturbing stream channels, riparian areas and floodplains. These practices are designated as Utah's Best Management Practices for nonpoint source water pollution control. (District)

The possibility of accidental releases of materials into surface waters will be managed according to spill containment and countermeasure requirements of the District's construction specifications. Such specifications include worker education, incident reporting and remediation provisions in the event of a spill. The hazardous materials procedures included under the health and safety and erosion control SOPs also will help avoid and minimize adverse water quality impacts. (District)

Construction workers will be careful to avoid the escapement of wet concrete into waterways and other sensitive fish and wildlife habitat. (District)

Concrete trucks and equipment will be washed only in areas approved by the Contracting Officer that will not impact streams or sensitive fish and wildlife habitat. (District)

Appropriate Utah water quality permits will be obtained prior to construction in or near water resources. (District)

Wetland and Riparian Resources

Direct and indirect impacts on wetlands will be avoided, unless there are no other practical alternatives (as defined in 40 CFR 230.3). Procedures to avoid impacts will include protecting wetlands with silt fencing during construction and avoiding quantity and quality impacts on surface water and groundwater resources that serve as a source of water for wetlands. (District)

The contractor will be required to prepare a road modification plan for approval by the District before starting any modifications on the Diamond Fork Road. The plan will document methods to protect wetlands adjacent to the road from construction and operational impacts. (District)

Where impacts on wetlands cannot be avoided, they will be minimized to the extent possible. All mitigation approaches to minimize impacts on wetlands will be reviewed with the U.S. Army Corps of Engineers. Heavy equipment in wetland areas will be operated on temporary earth fills placed on geotextile mats (or other appropriate measures) to minimize soil disturbance. Construction barriers will be installed to prevent unnecessary damage to adjacent wetlands. (District)

Materials excavated from the pipeline trench will be placed on the adjacent roadway or in other upland areas. No excavated material will be placed in any wetlands. Wetland soils will be removed, segregated and stockpiled in upland areas. Wetland topsoil will be replaced in the top 6 to 12 inches of the pipeline trench, and the disturbed area will be graded to match previous contour elevations and revegetated with a mixture of desirable wetland plant species. (District)

Pipelines will be installed using construction measures such as cutoff walls if a bedding material is used that could otherwise cause wetlands to be drained. (District)

Wildlife Resources

Impacts on wildlife resources also will be avoided and minimized by following hazardous materials procedures included under the health and safety SOPs, the restoration and erosion control SOPs, and wetlands SOPs. (District)

Contractor personnel will not be allowed to have any firearms while on the construction site. (District)

Trenches will be covered or backfilled at the completion of each day and no more than 600 feet of trench will be open at any one time. (District)

Diamond Fork System

***2002 Final Environmental Assessment
for the Proposed Action Modifications***

Appendix B

***Update and Addendum to the
U.S. Fish and Wildlife Service
Fish and Wildlife Coordination Act Report***



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 25, 2002

Harold Sersland
Environmental Programs Manager
Central Utah Water Conservancy District
355 West University Parkway
Orem, Utah 84058-7303

Dear Mr. Sersland:

This letter serves as a 2002 update and addendum to the U.S. Fish and Wildlife Service's (Service) Fish and Wildlife Coordination Act Report for the Diamond Fork System (June 1999) and update and addendum (June 1, 2000). This 2002 addendum addresses environmental impacts described in the 2002 Final Environmental Assessment (Final EA), which presents and analyzes the impacts of modifications to the Proposed Action, which was described in the 2000 Diamond Fork System Final Environmental Assessment/Finding of No Significant Impact for the Proposed Action Modifications (2000 Final EA/FONSI). The Proposed Action Modifications described in the 2002 Final EA include features from the 2000 Final EA/FONSI and the Diamond Fork System Final Supplement to the Final Environmental Impact Statement (FS-FEIS) issued by the Central Utah Water Conservancy District (CUWCD) in 1999. We are issuing this letter under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401; as amended, 16 U.S.C. 661 et seq.).

Project Description

The following features would replace or modify features described in the 2000 Final EA/FONSI and FS-FEIS:

- * Sixth Water Connection to Upper Diamond Fork Shaft (change in number of shafts, but no change in overall size of the area)
- * Upper Diamond Fork Shaft (relocated)
- * Upper Diamond Fork Flow Control Structure (relocated)
- * Upper Portion of the Diamond Fork Tunnel (replaced with Tanner Ridge Tunnel)
- * Diamond Fork Siphon (modified by the Upper Diamond Fork Pipeline)

All previous Environmental Conditions pertinent to construction and operation of features that will remain the same or features listed above that will be modified are retained. New Environmental Commitments have also been identified to avoid, minimize, or compensate for resources permanently or temporarily impacted.

Impact Assessment

We have participated in the planning of the proposed modifications, meetings to discuss potential impacts and avoidance measures, and a field trip to review the construction route and sites of proposed facilities. Our concerns have primarily focused on avoiding impacts to sensitive habitats such as wetlands, riparian vegetation, and Diamond Fork Creek during construction and ensuring appropriate restoration and revegetation measures are taken to minimize the duration of temporary loss of habitat. Because the project will be located to the extent possible either underground (tunnel or siphon) or under the road, permanent surface impacts are minimized. Access roads, staging areas, and pipeline and tunnel construction will result in unavoidable temporary impacts which will be directed, to the extent possible, to upland habitats. Trees of all species will be avoided to the extent possible and replaced except directly over the pipeline. Erosion control measures will be taken. Except for a few hundred feet of new impacts, these impacts have all been addressed in previous documents.

Recommendations and Conclusions

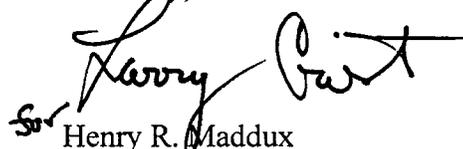
We believe the measures identified in Chapters 1 and 2 of the 2002 Final EA and new and previous Environmental Commitments are sufficient to accomplish environmental protection and restoration. We also note that mitigation for unavoidable wetland and riparian losses has already been accomplished through acquisition by the Utah Reclamation Mitigation and Conservation Commission of 109.7 acres of land containing wetlands and riparian habitat. This acquisition was intended to compensate for all wetland/riparian impacts on the Diamond Fork System.

While we regret the necessity for these project modifications, we understand that geologic conditions did not allow continuation of the Diamond Fork Tunnel project as proposed. We appreciate the efforts the CUWCD, Department of Interior CUP Completion Act Office, and the Utah Reclamation Mitigation and Conservation Commission are making to find a way to complete the Diamond Fork System in a manner that meets project water delivery purposes, facilitates restoration of Sixth Water and Diamond Fork creeks, and minimizing environmental impacts.

The Utah Division of Wildlife Resources has reviewed this 2002 addendum to the Fish and Wildlife Coordination Report for the Diamond Fork System and concurred with these conclusions in a letter dated March 25, 2002, copy enclosed.

If the Service can be of further assistance, please contact Dr. Lucy Jordan at the letterhead address or telephone (801) 975-3330 ext. 143.

Sincerely,


Henry R. Maddux
Field Supervisor

Enclosure

cc: DOI - CUPCA Office Attn: (Ron Johnston, Program Director)
Utah Division of Wildlife Resources (Attn: Rick Larson, CUP Coordinator)
Utah Reclamation Mitigation and Conservation Commission (Attn: Mike Welland,
Executive Director)
USDA Forest Service, Pinta National Forest (Attn: Reese Pope, CUP Coordinator), 88
West 100 North, P.O. Box 1428, Provo, Utah 84603



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WILDLIFE RESOURCES

Michael O. Leavitt
Governor

Kathleen Clarke
Executive Director

John Kimball
Division Director

1594 West North Temple, Suite 2110

PO Box 146301

Salt Lake City, Utah 84114-6301

801-538-4700

801-538-4709 (Fax)

801-538-7458 (TTY)

March 25, 2002

Mr. Henry Maddux
U.S. Fish and Wildlife Service
145 East 1300 South, Suite 404
Salt Lake City, UT
84115

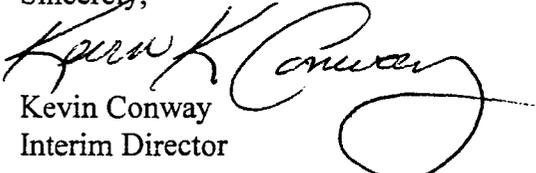
Subject: Concurrence with the 2002 update and addendum to the U.S. Fish and Wildlife Service's Fish and Wildlife Coordination Act Report for the Diamond Fork System (June 1999) and update and addendum (June 1, 2000).

Dear Henry:

The Utah Division of Wildlife Resources has reviewed the subject correspondence and concurs with the Fish and Wildlife Service's analysis and recommendations.

Thank you for the opportunity to review the subject document. Should you have any questions, please feel free to contact Rick Larson (801-538-4822) or Doug Sakaguchi at our Central Regional Office in Springville (435-491-5644).

Sincerely, -


Kevin Conway
Interim Director

cc: Admin

Diamond Fork System

***2002 Final Environmental Assessment
for the Proposed Action Modifications***

Appendix C

Addendum to the

U.S. Fish and Wildlife Service

August 24, 1999 Biological Opinion



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, 2002

FWS/R6
ES/UT

Mr. Harold Sersland
Central Utah Water Conservancy District
355 West 1300 South
Orem, UT 84058-7303

RE: Informal Section 7 Consultation for the Diamond Fork System 2002 Environmental Assessment for Proposed Action Modifications

Dear Mr. Sersland:

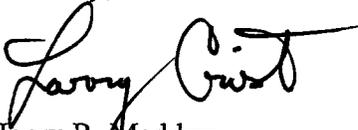
The U.S. Fish and Wildlife Service has reviewed the subject Environmental Assessment in regards to your assessment of project effects to Federally listed species. We concur that your previous determinations regarding threatened and endangered species (as presented in the Final Supplement to the Final Environmental Impact Statement and the 2000 Final EA) are still valid for the Proposed Action modifications. We also concur with your determination that the proposed action and modifications will not affect the Canada lynx.

We appreciate your evaluation of potential project impacts to the Western yellow-billed cuckoo, a Candidate species. As you are aware, Candidate species have no legal protection under the Endangered Species Act (ESA). Candidate species are those species for which we have on file sufficient information to support issuance of a proposed rule to list under the ESA. Identification of candidate species can assist environmental planning efforts by providing advance notice of potential listings, allowing resource managers to alleviate threats and, thereby, possibly removing the need to list species as endangered or threatened.

The proposed action modifications would temporarily disturb 4.1 acres of potential yellow-billed cuckoo habitat, and would permanently disturb 1.3 acres of potential habitat. Surveys for the yellow-billed cuckoo have not been conducted in the Diamond Fork drainage. Recent confirmed sightings have occurred during surveys along the Spanish Fork River (south of Utah Lake) and at the mouth of Provo Canyon. Due to the occurrence of potential habitat in the Diamond Fork Drainage, the Service recommends that project planning minimize the loss of riparian habitat to the extent feasible. Mitigation should include successful revegetation of all disturbed areas. Permanently disturbed sites can be mitigated by enhancing remaining riparian areas or developing other strategies to compensate for lost wildlife habitat values.

We appreciate your interest in conserving endangered species. If further assistance is needed or you have any questions, please contact Laura Romin, at (801) 975-3330 extension 142.

Sincerely,


for Henry R. Maddux
Utah Field Supervisor

Diamond Fork System

***2002 Final Environmental Assessment
for the Proposed Action Modifications***

Appendix D

Comment Letter from

U.S. Forest Service and

Joint-Lead Agency Letter of Response



United States
Department of
Agriculture

Forest
Service

Uinta National Forest

88 West 100 North
P.O. Box 1428
Provo, UT 84603-1428

File Code: 1500

Date: March 5, 2002

Lee Wimmer
Central Utah Water Conservancy District
335 West University Parkway
Orem, UT 84058-7303

Dear Lee:

We are providing you our concerns and suggestions regarding the 2,800 feet of pipeline not covered by previous NEPA decisions for construction of the Diamond Fork Pipeline. These comments were identified during a February 25th Interdisciplinary Team meeting and subsequent field trip to examine the project area.

Before discussing our concerns and suggestions, it is important I make it clear that, while not as desirable from an environmental effects standpoint, I recognize and support the need for adjustments in the project. Although our Interdisciplinary Team and I believe that this is the best solution for the Diamond Fork water project, we also believe the potential impacts could be reduced even more with appropriate mitigation and careful implementation. Our comments are outlined below:

BIOLOGICAL CONCERNS

Impacts to riparian vegetation and wetlands.

To place the additional 2,800 feet of pipe in the Diamond Fork road, various age classes of riparian vegetation will be removed and additional cut slopes created in the upland hillsides along the corridor.

Impacts to fisheries and macro-invertebrates. Impacts to neo-tropical birds.

The removal of trees and brush along the current road alignment will reduce the habitat for neo-tropical migratory birds. These birds are dependent on the vegetation that exists in riparian corridors for cover, nesting and foraging habitat. Soil and vegetation disturbance associated with the project will result in increased sedimentation in the adjacent Diamond Fork Creek.

Impacts to upland vegetation. Noxious weed control.

Removal of vegetation and soil disturbance will result in conditions conducive to the establishment of non-native, invasive weeds.

PHYSICAL CONCERNS

Impacts on Water Resources.

The project area contains erosive soils that clog culverts after significant storm events. Demolition of the existing road to place the pipeline, construction of the staging area, diversion of



the intermittent stream at the Diamond Fork Road bridge, as well as the pipeline and road reconstruction will result in significant soil disturbance. There is the potential for impacts to the existing alignment of the stream as well as highly elevated sediment introduction to the stream itself.

Impacts of road use, pipeline and reconstruction of road/drainage.

Heavy trucks traveling over the road from the existing construction site to Sawmill Hollow will most likely destroy the existing road surface, especially the sections within one mile on either side of the Three Forks Trailhead, where the road is extremely narrow.

SOCIO-ECONOMIC CONCERNS

Visual impacts of project.

The addition of human facilities and disturbance associated with the proposed project will affect visual quality. This is particularly so with the proposed intake facility and cut slopes adjacent to the Diamond Fork Road. The 1984 Uinta National Forest Land and Resource Management Plan (Forest Plan) did not establish Visual Quality Objectives (VQO) for this area; however, VQO's were subsequently identified and these have been used in implementing the Forest Plan. The VQO identified in this effort for the project area is Retention. The process of revising the Forest Plan has been initiated. Visual Quality Objectives for the Forest will be established in the revised Forest Plan. A Draft EIS and Draft Revised Plan have been issued. In both of the two preferred alternatives described in the Draft Revised Forest Plan, a VQO of Partial Retention was identified for the project area. Since the Forest Plan, as amended, did not formally establish VQO's for the project area, the project should be designed to comply with a Partial Retention VQO.

The intake facility to be located at the terminus of this added section of pipeline would not only be evident, but dominant if constructed similarly to the one at the mouth of the canyon. This would not meet the VQO of Partial Retention. Additional mitigation relative to scale, design/materials/color, fencing and effective vegetative screening would be necessary in order to preclude dominance.

Scenery is an important natural resource and recreational element in this part of the Forest, particularly along this well-traveled riparian corridor. It is primarily through their visual sense that most visitors perceive the Forest and its interrelated components. The VQO of Partial Retention allows for management activity/development that is sensitively blended into the landscape so as to not become dominant or, in other words--attract little attention.

Reclamation of side channel.

The ephemeral channel just south of the bridge that crosses Diamond Fork Creek currently flows across the Diamond Fork Road. The proposed action is to divert this channel into Diamond Fork Creek upstream of where the channel would cross the newly installed pipe. The diverted channel outlet would be rip-rapped. The only place where this could be done would be at a steep and high outside bend of Diamond Fork Creek. The potential for major channel incision in the ephemeral drainage, and additional sediment loading into Diamond Fork Creek is great should this option be chosen.

Limited public access to Three Forks Trailhead and Hot Pots.

When public access to the Hot Pots from upper Diamond Fork is eliminated, all the use will be shifted to the Sheep Creek Road at the 5th Water Trailhead. This Trailhead has had no improvements and is already becoming heavily impacted. There is a need to improve the 5th Water Trailhead to handle the additional users.

In addition, the increased use of the trail accessing the Hot Pots may result in erosion, resource damage, or damage to the trail.

Long-term public use and safety on Diamond Fork Road.

After the reconstruction of the roadbed, the Diamond Fork Road will be a combination of alternating widths and standards. This could pose a safety problem for motorists.

Impacts to livestock management.

The Diamond Fork Allotment is managed using a three pasture, rest-rotation system. During the 2002 grazing season, the Diamond Fork Allotment will use the Waters Unit first and then the Diamond Fork Unit. The Hollows Unit will be rested. Cattle will be trucked to the first unit via Tank Hollow on the south end of the allotment.

As the cattle are moved into the second unit, some will come through Three Forks and then will need to trail up the Diamond Fork Road through the proposed 2,800 foot area where the pipe will be buried. Cattle will move into the second unit, depending on forage utilization, as early as mid-July and possibly as late as mid-August. The cattle will also need to trail through the new construction site to exit the Forest in the Fall. Again, the timing of this will depend on forage utilization. This could range any where from September 1 to October 15. This could result in a conflict between livestock permittee and construction operations.

Further limitations in dispersed use from Three Forks to Sawmill Hollow.

It is projected that eight dispersed camping sites will become inaccessible behind the new closure and approximately three additional sites will become permanently inaccessible because of the new pipeline and roadwork.

Concurrent construction project occurring at Three Forks Trailhead.

We are currently planning to reconstruct the Three Forks Trailhead this year. We will be installing a culvert and filling and leveling the parking area. We will also be installing a restroom as part of this project. Without adequate coordination, there could be a conflict between trailhead construction and pipeline construction operations.

Loss of water in springs associated with the tunnel collapse.

Placement of two cement plugs in the existing tunnel does not guarantee that water will be returned to the dewatered springs. At this point in time, we cannot be certain of the extent of dewatering that has occurred within the Diamond Fork watershed, nor on the adjoining Timber Mountain area. These springs are an important water source for troughs used to provide water to grazing cattle, as well as wildlife within the area.

RECOMMENDED MITIGATION BIOLOGICAL CONCERNS

Impacts to riparian vegetation and wetlands.

Tree and vegetation removal should be minimized during construction. Mature trees should be felled and left within the riparian zone or moved and placed in Diamond Fork at strategic locations for large woody debris recruitment. Remaining smaller trees and slash could be spread over the disturbed area in order to protect soil resources, provide a mulch to newly planted seed, provide habitat for small wildlife, and keep intact the nutrient cycle of the watershed. Trees should be planted within the riparian area to replace those removed or severely damaged during construction. Slash and woody debris placement should be done as described under the section concerning visual impacts.

Impact to fisheries and macroinvertebrates. Impacts to neo-tropical birds.

To maintain the continuity of the riparian corridor along the Diamond Fork Creek, removal of trees and subsequent vegetation should be kept to a minimum. Disturbed areas along the 2,800-foot corridor should be rehabilitated, reseeded and mulched according to the Uinta National Forest Land and Resource Management Plan. Native trees should be planted within the riparian area to replace shade and habitat from those removed or severely damaged during construction.

Trees within the riparian corridor removed during construction should be left on nearby undisturbed riparian areas as down woody material to provide cover and nesting opportunities for wildlife, trap sediment and stabilize stream banks, and provide fisheries habitat. Silt fencing should be installed between all construction sites and Diamond Fork Creek.

Impacts to upland vegetation. Noxious weed control.

Best Management Practices (BMPs) for noxious weed control should be followed. Seed and/or plants used for revegetation/rehabilitation should be reviewed by the Forest Ecologist and approved by the Forest Service prior to their application. Only native species may be used.

PHYSICAL CONCERNS

Maintenance of stream alignment. Introduction of additional sediment.

The reconstructed road should be outsloped after pipe construction and dips should be constructed at areas where ephemeral drainages intersect the road. This will prevent the road from concentrating drainage in inside ditches and clogging culverts. Other BMPs, such as silt fences will need to be utilized to prevent the introduction of additional sediment during construction and use.

Impacts to road use, pipeline and reconstruction of road/drainage.

Once the pipeline has been installed, the road will need to be reconstructed from the existing staging area at the tunnel portal up through the new 2,800-foot section. A 20-foot wide, paved road with intervisible turnouts should be constructed to replace the existing road through the 2,800-foot section. The road between the 2,800-foot section and the existing staging area should

be repaved. To the extent feasible, intervisible turnouts should be constructed along this reach to provide for user safety. A plan in hand review with the Forest Engineer should be conducted.

Reclamation of the side channel.

The ephemeral channel should be left in its current location, and the existing channel outlet into Diamond Fork Creek rip-rapped. This would allow some of the sediment discharge from this channel to be filtered out and energy dissipated before it enters Diamond Fork Creek. Design of the road crossing should be coordinated with the Forest Engineer.

SOCIO-ECONOMIC CONCERNS

Visual impacts of project.

In foreground views, any slash associated with the removal of trees should be crushed and/or well scattered so as to be naturally occurring and otherwise kept off any ridge or horizon line.

With respect to any necessary cuts or fills requisite to the pipeline right-of-way or road/curve widening: they should be the minimum needed for the proposed use—particularly at less vegetatively or topographically screened areas or on steeper slopes. Any silhouetting of cuts or retaining walls should be avoided.

If practicable, any structures should be located so as not to be in terminal view as seen in focal point from the road and/or for an extended period of time. The building for the intake facility does not meet the VQO of Partial Retention. Therefore, it should be the minimum necessary to house anticipated equipment. As maintenance dictates, the building could possibly be all or partially buried and constructed with non-reflective textured finishes. Natural surfaces are typically well textured and consequently exhibit shadow effects, which tend to darken them. Man made structures are usually smooth and reflect more light than natural surfaces, even if a dull-finish paint is used. No material, obsolete or unneeded equipment should be stored outdoors at the facility. Any necessary power lines should be installed underground and buried near existing roadways to keep ground disturbance to a minimum. At a minimum any structures and associated access should as described earlier, be well screened by topography or native vegetation that would be effective during all seasons.

Where practical, any necessary access road closure activity, etc. should use natural materials in lieu of steel gates, wire fences and other man-made structures. Surfaces of any required culverts, gates, fences, buildings, etc., should be of a color and finish so as not to reflect sunlight and to minimize visibility. For culverts and guardrails, fifteen percent gray, painted surfaces are preferred; with a suitable alternative being acid etched galvanized coatings. Buildings and fences should be earth tone colors. If any boulders are used as barriers, they should be of a color and texture similar to those occurring in the project area, and should be partially buried and arranged so as to appear natural. Placement of these barriers should be approved by the Forest Landscape Architect.

Where silt fencing is used to temporarily control erosion/sedimentation, it should be of the least contrasting color available and removed as soon as its effectiveness is sufficiently complete. Any needed signage should be kept to an appropriate minimum in size, quantity, color and reflectivity and should fit within the context of the surrounding landscape.

Finally, it is important to provide for public understanding by using appropriate interpretation. This is a good opportunity for educating the public on the reasons for, and benefits of projects such as this, which when better understood, serves to ameliorate scenic impact in the public's eye.

Limited public access to Three Forks Trailhead and Hot Pots.

The CUWCD should coordinate with the Forest Service and construct an improved parking area at the 5th Water Trailhead on the Sheep Creek Road.

As soon as conditions allow, the Forest Service and CUWCD should inspect the trail accessing the Hot Pots, and identify any improvements the trail will need to accommodate the increased use it will receive. During the life of the project, trail conditions should be monitored and corrective actions taken to address impacts due to increased use resulting from the temporary closure of Three Forks.

Additional signing in Hobble Creek and on the Sheep Creek road will be necessary to inform the public of the extent and impacts of the proposed road closure.

Long term public use and safety on Diamond Fork road.

Before the Diamond Fork Road is re-opened to public use, adequate signing warning Forest users of road conditions should be in place. This should include notification of changes in surface conditions and reaches where the road narrows from two lanes to one and a half lanes or less.

Impacts to grazing program.

The best option would be to have the pipe buried under the road by mid-July to avoid any conflict with cattle movement. However, cattle movement this year within the lower construction site went well. As long as the cattle have approximately 15 feet of road to trail along they can still be moved. This can be accomplished with help from the construction company, which should shut down and move their equipment off the road for several hours as the cattle are trailed though the area.

Last year the construction of the pipe under the road, was in the rest unit. This year the new proposed construction would be in the unit that is grazed last. Cattle will be in area of the construction site. They will not have riders constantly with them.

As with any reseeding efforts, rest from grazing for at least two grazing seasons is necessary to provide good results. The Diamond Road is used for trailing over 2000 cattle in any given year. Therefore these areas cannot be rested. Fencing should be used to protect seeded areas.

Further limitations in dispersed use from Three Forks to Sawmill Hollow.

Dispersed camping is part of the recreational opportunity that the Uinta National Forest provides to the public. We support the need for the pipe and roadwork, but the three destroyed sites should be replaced somewhere else in the Diamond Fork drainage. This should be done at a site agreed to by District Ranger Bill Ott. Additionally, the CUWCD should construct a parking area and turn-around at the mouth of Sawmill Hollow just north of the proposed closure.

Concurrent project occurring at Three Forks Trailhead.

We would like to explore the opportunity of working with CUWCD as a partner, to help with that project instead of having a different contractor's equipment trying to get around CUWCD's

equipment. If this is not feasible, pipeline construction operations will need to accommodate trailhead construction access.

Loss of water in springs associated with the tunnel collapse.

If any dewatered springs that provide water for livestock do not regain their water production capabilities, a waterline should be installed to deliver water to a holding tank or other holding facility on Timber Mountain or other affected areas, to replace the water lost as a result of the tunnel collapse. This will provide water for existing troughs and ensure continued proper distribution of livestock across the allotment.

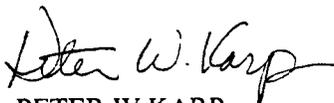
Protection of historical and cultural resources.

It is always possible historical or cultural resource sites will be uncovered during construction activities. If sites should be uncovered, work there should be immediately halted, and an archeologist contacted to evaluate the site. After evaluation, the CUWCD should consult with the Forest Service and State Historical Preservation Officer and agree upon any necessary mitigation before reinitiating work.

In closing, I want to reiterate that our Interdisciplinary Team and I support the pipeline project. We believe that this project can be made environmentally better by applying the appropriate mitigation measures such as those identified in this letter.

I would like to express my appreciation to you and the CUWCD staff for keeping us informed and especially for providing us an opportunity to make proactive comments and suggestions on this project. I look forward to continuing this positive relationship and working with you to complete the Central Utah Project while protecting the Uinta National Forest. If you have any questions regarding these suggestions, please contact Reese Pope at (801) 342-5104.

Sincerely,



PETER W KARP
Forest Supervisor

cc: William A.R. Ott
Duane Resare
Karen Hartman
Renaë Bragonje
Chad Hermandorfer
Charmaine Thompson
Sheri Linn Ramsay
Kevin Draper
Reese Pope
John Logan
Kim Martin
Loyal Clark



Central Utah Water Conservancy District

355 WEST UNIVERSITY PARKWAY, OREM, UTAH 84058-7303
TELEPHONE (801) 226-7100, FAX (801) 226-7107
TOLL FREE 1-800-281-7103
WEBSITE www.cuwcd.com

OFFICERS
E. Tim Doxey, President
R. Roscoe Garrett, Vice President
Don A. Christiansen, General Manager
Secretary/Treasurer

March 27, 2002

Mr. Peter W. Karp
Forest Supervisor
Uinta National Forest
88 West 100 North
P.O. Box 1428
Provo, Utah 84603-1428

Dear Mr. Karp:

Thank you for your letter dated March 5, 2002, which transmitted your concerns and suggestions regarding the modifications to the Diamond Fork System. We have reviewed your letter and addressed all of your concerns in the 2002 Diamond Fork System Final Environmental Assessment for the Proposed Action Modification.

The Central Utah Water Conservancy District (District), the U.S. Department of the Interior (DOI), and the Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission) prepared the 2002 Final EA on (modifications to 1) the proposed Action Modifications described in the 2000 Diamond Fork System Final Environmental Assessment for the Proposed Action Modifications and FONSI (2000 Final EA/ FONSI) and 2) the 1999 Diamond Fork System Final Supplement to the Final Environmental Impact Statement (FS- FEIS). These modifications resulted from conditions encountered during construction of the Upper Diamond Fork Tunnel, including high inflows of groundwater with extreme concentrations of hydrogen sulfide from a partial collapse of the tunnel in a fault zone behind the tunnel-boring machine. The District and DOI concluded that further excavation if the tunnel was not feasible because of adverse geologic conditions, worker safety in a high concentration hydrogen sulfide environment, and corrosive effects of water containing hydrogen sulfide on the tunnel lining and operation and maintenance equipment. It was decided to terminate tunnel-boring operations, seal the tunnel below the area of collapse and complete the Diamond Fork System by implementing the modifications detailed in the EA.

Appendix A of the 2002 EA contains the new environmental commitments associated with the modifications. They also address all of your recommended mitigation and biological concerns. The previous environmental commitments included in the 1990 Record of Decision (ROD), 1995 ROD, FS-FEIS and ROD, 2002 EA/FONSI have not changed and are incorporated in the 2002 Final EA by reference.

The District, DOI, and Mitigation Commission have consulted with the other cooperating agencies, have addressed their issues and concerns in the EA, and have their full support on the Proposed Action Modifications.

We appreciate your support of the completion of the Central Utah Project.

Sincerely,

H. Lee Wimmer
Assistant General Manager

BOARD OF TRUSTEES

Afton G. Blood
Leo L. Brady
Brent Brotherson

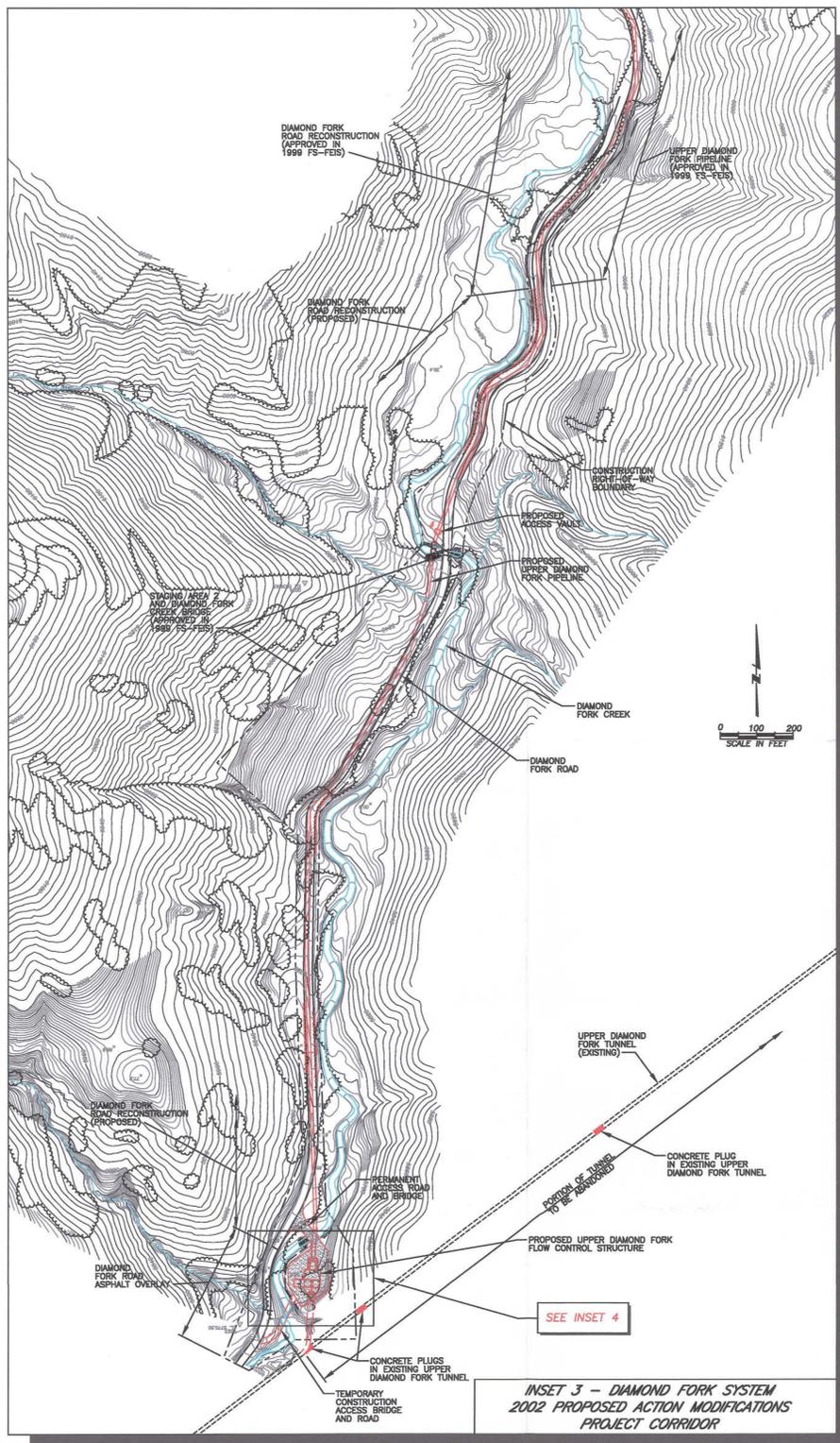
Evans Tim Doxey
R. Roscoe Garrett
Harley M. Gillman

Claude R. Hicken
Roger W. Hicken
Michael H. Jensen

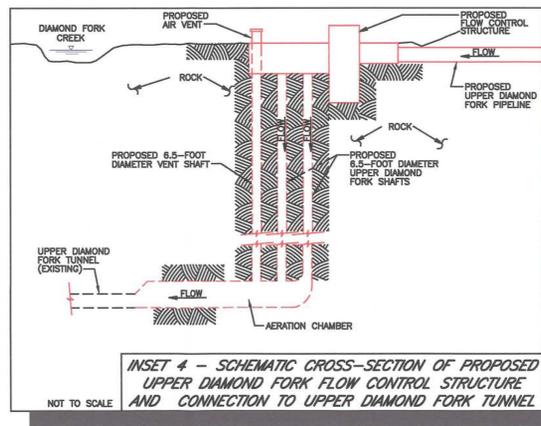
Rondal R. McKee
Patricia A. O'Rourke
Gary D. Palmer

David R. Rasmussen
W. Howard Riley
James J. Smedley

Stanley R. Smith
John L. West
Boyd Workman



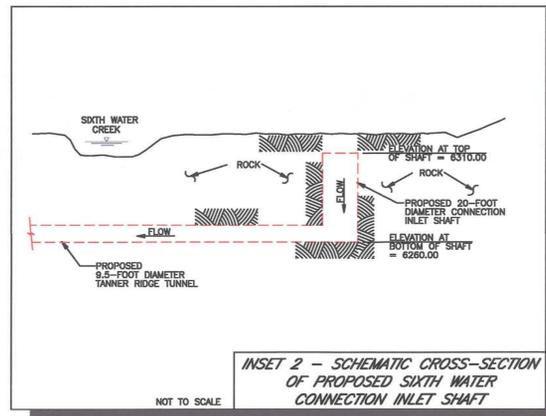
**INSET 3 - DIAMOND FORK SYSTEM
2002 PROPOSED ACTION MODIFICATIONS
PROJECT CORRIDOR**



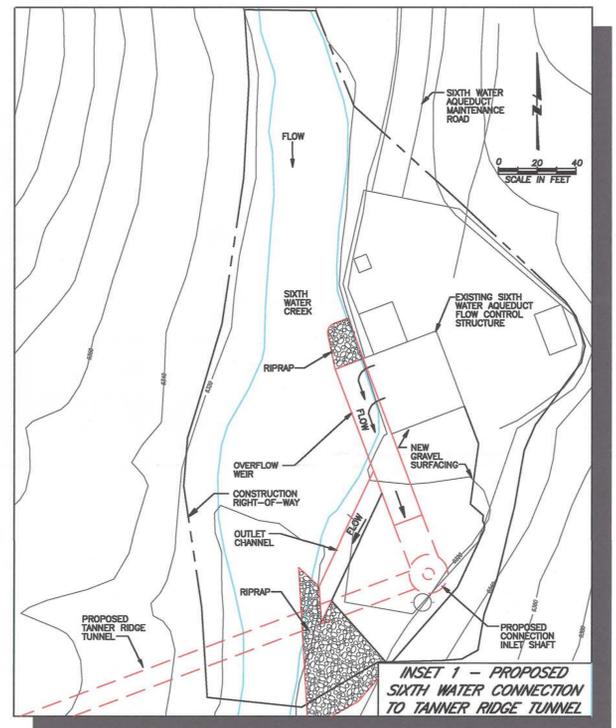
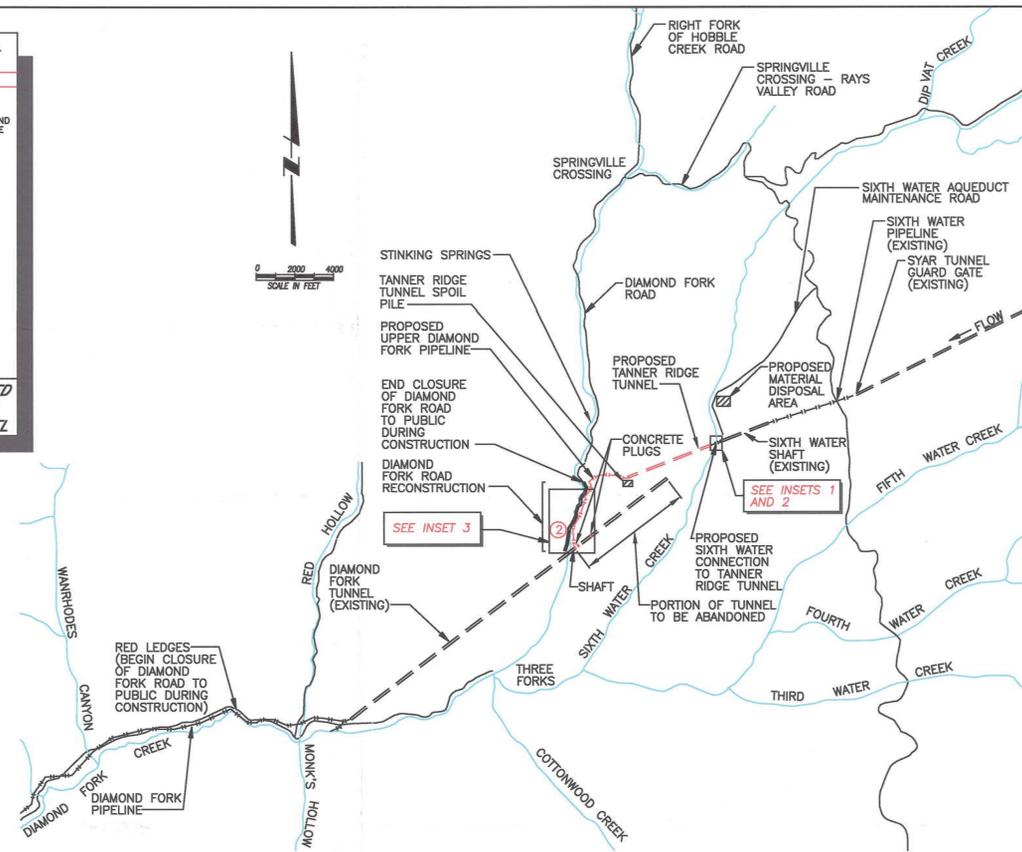
**INSET 4 - SCHEMATIC CROSS-SECTION OF PROPOSED
UPPER DIAMOND FORK FLOW CONTROL STRUCTURE
AND CONNECTION TO UPPER DIAMOND FORK TUNNEL**

LEGEND

- EXISTING TUNNEL AND SHAFT
- PROPOSED TUNNEL OR SHAFT
- EXISTING PIPELINE
- PROPOSED PIPELINE
- CONSTRUCTION RIGHT-OF-WAY
- EXISTING ROAD
- STREAM, RESERVOIR, WETLANDS
- EPHEMERAL DRAINAGE
- ② CONSTRUCTION STAGING AREA
- CULVERT
- WASTE DISPOSAL AREA
- PROPOSED RETAINING WALL



**INSET 2 - SCHEMATIC CROSS-SECTION OF PROPOSED SIXTH WATER
CONNECTION INLET SHAFT**



**INSET 1 - PROPOSED
SIXTH WATER CONNECTION
TO TANNER RIDGE TUNNEL**