

# ENVIRONMENTAL ASSESSMENT



*GVIC Canal Lining Phase IV – 540 Project  
Mesa County, Colorado*

*Prepared For*

**U.S. Bureau of Reclamation**

*and*

**Grand Valley Irrigation Company**

*Prepared By*

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Cover Photograph:

Looking east-by-southeast along the  
Grand Valley Canal in February 2017, in the Section 3  
area of the Proposed Action

## **FINDING OF NO SIGNIFICANT IMPACT**

United States Department of the Interior  
Bureau of Reclamation  
Western Colorado Area Office  
Grand Junction, Colorado

### **GVIC Canal Lining Phase IV – 540 Project**

#### **Introduction**

In compliance with the National Environmental Policy Act of 1969, as amended (NEPA), the Bureau of Reclamation (Reclamation) has conducted an environmental assessment (EA) for a Proposed Action of authorizing the use of Federal funds to implement the Grand Valley Irrigation Company (GVIC) Canal Lining Phase IV – 540 Project in Mesa County, Colorado. Reclamation is providing funding for the project through the Colorado River Basinwide Salinity Control Program, and is therefore the lead agency for the purposes of compliance with the NEPA for this Proposed Action. The EA was prepared to address the potential impacts to the human environment due to implementation of the Proposed Action.

#### **Alternatives**

The EA analyzed the No Action Alternative and the Proposed Action Alternative to authorize and fund the implementation of the GVIC Canal Lining Phase IV – 540 Project.

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

Based upon a review of the EA and supporting documents, Reclamation has determined that implementing the Proposed Action will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the area. No environmental effects meet the definition of significance in context or intensity as defined at 40 CFR 1508.27. Therefore, an environmental impact statement is not required for this Proposed Action. This finding is based on consideration of the context and intensity as summarized in the EA. Reclamation's decision is to implement the Proposed Action Alternative.

#### **Context**

The Colorado River and its tributaries provide municipal and industrial water to about 35 million to 40 million people and irrigation water to nearly 4.5 million acres of land in the United States, and another 3.3 million people and 500,000 acres in Mexico. Elevated salinity concentrations in the River are a major concern in both the United States and Mexico. Elevated salinity levels have impacts to agricultural, municipal, and industrial water users.

In June 1974, Congress enacted the Colorado River Basin Salinity Control Act (Salinity Control Act), Public Law 93-320, which directed the Secretary of the Interior to proceed with a program to enhance and protect the quality of water available in the Colorado River for use in the United States and Republic of Mexico. In October 1984, Congress amended the original act by passing Public Law 98-569 to address wildlife habitat issues, including fish and wildlife values foregone,

project funding, and operation and maintenance of habitat. In July 1995, Public Law 104-20 was enacted, authorizing the Secretary of Interior, through Reclamation, to implement a basinwide salinity control program and enter into contracts, memoranda of agreement, commitments for grants, cooperative agreements, or advances of funds to non-federal entities under such terms and conditions as may be required. Reclamation is one of the agencies working through the Colorado River Basin Salinity Control Program to implement salinity control projects in the Colorado River Basin. The program's overall goal is to cost-effectively reduce the level of salinity in the Colorado River.

GVIC of Grand Junction, Colorado, is a private, non-profit, mutually funded irrigation company. GVIC has received a grant from Reclamation, through the Basinwide Salinity Control Program, to line approximately 1.64 miles of the unlined, open Grand Valley Canal system. The Grand Valley Canal system conveys irrigation water in the Colorado River watershed of the upper Colorado River basin, in soils derived from Mancos Shale. The Mancos Shale is a Cretaceous-age saline marine deposit, which contributes salts to irrigation water. The purpose and need of the Proposed Action is to eliminate seepage and reduce salinity in the Colorado River basin by an estimated 2,363 tons of salt per year.

### **Intensity**

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

1. **Impacts may be both beneficial and adverse.** The Proposed Action will impact resources as described in the EA. Implementation of the Proposed Action will result in beneficial effects related to reduction of salt and selenium loading in the Colorado River basin.

Best Management Practices (BMPs) and mitigating measures were incorporated into the design of the Proposed Action to reduce impacts. The predicted short-term effects of the Proposed Action include impacts to the human environment due to noise and the presence of machinery along the canal during construction, and impacts to wildlife and habitat, due to noise and habitat disturbance during construction. The predicted long-term effects are loss of minor amounts of artificial wetland and riparian habitat along the segments of the GVIC System to be lined, and water depletions from critical habitat for Colorado River endangered fishes due to the historic and continuing operation of the GVIC System. The long-term loss of artificial wetland and riparian habitat is being mitigated with a habitat replacement project. Water depletions to critical habitat for Colorado River endangered fishes are mitigated by the Upper Colorado River Endangered Fish Recovery Program, as explained in the U.S. Fish and Wildlife Service's (FWS') 1999 Colorado River Programmatic Biological Opinion (PBO). The water depletions to critical habitat resulting from the operation of the GVIC System are covered under a Recovery Agreement between the FWS and GVIC executed in 2002 (FWS File ES/GJ-6-CO-99-F-033-CP20). The Recovery Agreement ensures that the historic depletion levels comply with the U.S. Endangered Species Act and are covered under the umbrella of the 1999 Colorado River PBO. No new depletions will result from the Proposed Action.

None of the environmental effects discussed in detail in the EA are considered significant. None of the effects from the Proposed Action, together with other past, current, and reasonably foreseeable actions, rise to a significant cumulative impact.

2. **The degree to which the selected alternative will affect public health or safety or a minority or low-income population.** The Proposed Action will have no significant impacts on public health or safety. No minority or low income populations would be disproportionately affected by the Proposed Action.
3. **Unique characteristics of the geographic area.** There are no unique park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas that would be negatively affected by the Proposed Action.
4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** Reclamation contacted representatives of other federal agencies, state and local governments, public and private organizations, and individuals regarding the Proposed Action and its effects on resources. Based on the responses received, the effects of the Proposed Action on the quality of the human environment are not highly controversial.
5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** There are no predicted effects on the human environment that are considered highly uncertain or that involve unique or unknown risks.
6. **The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.** Implementing the action will not establish a precedent for future actions with significant effects and will not represent a decision in principle about a future consideration.
7. **Whether the action is related to other actions which are individually insignificant but cumulatively significant.** Cumulative impacts are possible when the effects of the Proposed Action are added to other past, present, and reasonably foreseeable future actions as described under related NEPA documents; however, significant cumulative effects are not predicted, as described in the EA in Section 3.10.
8. **The degree to which the action may adversely affect sites, districts, buildings, structures, and objects listed in or eligible for listing in the National Register of Historic Places.** The Colorado State Historic Preservation Officer (SHPO) has concurred with a determination of adverse effect to the irrigation ditch system involved in the Proposed Action. Reclamation has entered into two Memoranda of Agreement (dated March 2015 and November 2016, respectively) with the SHPO and GVIC to mitigate the impacts to the affected irrigation ditch system.
9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under**

**the Endangered Species Act of 1973.** The four endangered Colorado River fishes and their designated critical habitat occur downstream of the Proposed Action Area in the Colorado River Basin, and may be affected by historic water depletions caused by consumptive use of water by the GVIC System. Reclamation previously consulted with FWS on Colorado River Basin historic water depletions caused by operation of the GVIC System (FWS File ES/GJ-6-CO-99-F-033-CP20). As a result of that consultation, the GVIC executed a Recovery Agreement with FWS to ensure compliance with the Endangered Species Act for its water depletions. The annual depletion rate would not change as a result of the Proposed Action. Therefore, the Proposed Action would not destroy or adversely modify designated critical habitat for the Colorado River endangered fishes. The Proposed Action may affect the federally-threatened western yellow-billed cuckoo. The habitat replacement component of the Proposed Action involves removal of non-native tree species from riparian habitat at a Habitat Replacement Site. Reclamation consulted with FWS to establish a strategy for non-native tree removal at the Habitat Replacement Site in order to protect potential foraging habitat for western yellow-billed cuckoo.

10. **Whether the action threatens a violation of Federal, state, local, or tribal law, regulation or policy imposed for the protection of the environment.** The Proposed Action does not violate any federal, state, local, or tribal law, regulation, or policy imposed for the protection of the environment. In addition, the Proposed Action is consistent with applicable land management plans, policies, and programs. State, local, and interested members of the public were given the opportunity to participate in the environmental analysis process.

### **Environmental Commitments**

- BMPs shall be implemented, as specified in the EA, to protect water quality and soils; to minimize ground and vegetation disturbance; to protect wildlife resources; and to minimize the spread of weeds (Section 4 of the EA is incorporated here by reference).
- Required permits, licenses, clearances, and approvals shall be acquired prior to implementation of the Proposed Action (see Section 4.10 of the EA).
- If previously undiscovered cultural or paleontological resources are discovered during construction, construction activities must immediately cease in the vicinity of the discovery and Reclamation must be notified. In this event, the SHPO shall be consulted, and work shall not be resumed until consultation has been completed, as outlined in the Unanticipated Discovery Plan in the MOA.
- In the event that threatened or endangered species are discovered during construction, construction activities shall halt until consultation is completed with the U.S. Fish and Wildlife Service and protection measures are implemented. Additional surveys shall be required for threatened or endangered species if construction plans or proposed disturbance areas are changed.

Approved by:

*E. Jack Warner II*

*12/15/17*

*Fol*

Ed Warner  
Area Manager, Western Colorado Area Office

Date

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## LIST OF ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
CAA	Clean Air Act
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health & Environment
CFR	Code of Federal Regulations
COAHP	Colorado Office of Archaeology and Historic Preservation
Company	Grand Valley Irrigation Company
CPW	Colorado Department of Natural Resources Division of Parks & Wildlife
CWA	Clean Water Act
CWCB	Colorado Water Conservation Board
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
ESA	U.S. Endangered Species Act of 1973, as Amended
FONSI	Finding of No Significant Impact
FWS	U.S. Fish & Wildlife Service
GVDD	Grand Valley Drainage District
GVIC	Grand Valley Irrigation Company
HQS	Habitat Quality Score
HUC	Hydrology Unit Code
LLC	Limited Liability Company
iPaC	Environmental Conservation Online System Information for Planning and Conservation
MOA	Memorandum of Agreement
mi	Mile
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S. Department of Agriculture Natural Resources Conservation Service
PBO	Programmatic Biological Opinion
PL	Public Law
PM	Particulate matter
Reclamation	U.S. Department of the Interior Bureau of Reclamation
SHPO	State Historic Preservation Office
SMPW	Selenium Management Program Workgroup
THV	Total Habitat Value
U.S.	United States of America
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

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# 1 INTRODUCTION

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA). The federal action evaluated in this EA is whether or not the U.S. Department of the Interior Bureau of Reclamation (hereinafter “Reclamation”) should fund and authorize the Grand Valley Irrigation Company’s (GVIC’s or “Applicant’s”) proposed Phase IV Canal Lining – 540 Project (hereinafter, “Project” or “Proposed Action”). The Proposed Action is located in Mesa County, Colorado, in the City of Grand Junction (see Figures 1 and 2 following the main text of this document). The purpose of the Proposed Action would be to reduce salt and selenium loading in the Colorado River Basin.

After a public review period for the Draft EA, Reclamation has determined that a Finding of No Significant Impact (FONSI) for the Proposed Action is warranted.

## 1.1 Background

The Colorado River and its tributaries provide municipal and industrial water to about 35 million to 40 million people and irrigation water to nearly 4.5 million acres of land in the United States. The river also serves about 3.3 million people and 500,000 acres in Mexico. The threat of salinity loading in the Colorado River basin is a major concern in both the United States and Mexico (Reclamation 2017). Salinity affects water quality, which in turn affects downstream users, by threatening the productivity of crops, degrading wildlife habitat, and corroding residential and municipal plumbing. From 2005 to 2015, an approximate average of 7.5 million tons of salt flowed into the Colorado River annually, and by the year 2035, 1.68 million tons of salt per year will need to be diverted from the system in order to meet water quality standards in the basin (Reclamation 2017). Irrigated agriculture contributes approximately 37 percent of the salinity in the system (Reclamation 2017). Irrigation increases salinity in the system both by depleting in-stream flows, and by mobilizing salts found in underlying geologic formations into the system, especially during flood irrigation practices.

In June 1974, Congress enacted the Colorado River Basin Salinity Control Act, Public Law (PL) 93-320, which directed the Secretary of the Interior to proceed with a program to enhance and protect the quality of water available in the Colorado River for use in the United States and Republic of Mexico. PL 104-20 of July 28, 1995 authorized the Secretary of the Interior, acting through Reclamation, to implement the Colorado River Basinwide Salinity Control Program. The Secretary may carry out the purposes of this legislation directly, or make grants, enter into contracts, memoranda of agreement, commitments for grants, cooperative agreements, or advances of funds to non-federal entities under such terms and conditions as the Secretary may require. PL 110-246 of June 18, 2008 amended the Salinity Control Act, establishing the Basin States Program, and authorizing Reclamation to take advantage of new, cost-effective opportunities to control salinity anywhere in the basin.

Both the Basinwide Salinity Control Program and the Basin States Program fund salinity control projects with a one-time grant that is limited to an applicant’s competitive bid. Once constructed, the facilities are owned, operated, maintained, and replaced by the applicant at their own expense. Figure 2 shows the locations of Program projects recently funded in the vicinity of the Proposed Action.

## 1.2 Purpose & Need for the Proposed Action

The Proposed Action focuses on unlined portions of the Grand Valley Irrigation Canal system located in the upper Colorado River Basin, in soils derived from Mancos Shale. The Mancos Shale is a Cretaceous-age saline marine deposit, which contributes salts to irrigation water.

Under the Proposed Action, certain canal segments would be lined, eliminating or significantly decreasing water seepage, and reducing salinity in the Colorado River basin by an estimated 2,363 tons of salt per year. An additional beneficial effect of the Proposed Action is the potential reduction of selenium in the Colorado River basin (SMPW 2011); however, the amount of selenium reduction has not been quantified.

The Proposed Action is consistent with the Colorado River Basin Salinity Control Act and helps fulfill the goals of the Colorado River Basinwide and Basin States Salinity Control Programs. Salinity reduction in the Colorado River basin will provide benefits for a broad spectrum of downstream water users, as explained in Section 1.1, above.

## 1.3 Alternatives Considered But Not Carried Forward

Reclamation and GVIC considered other alternatives for reducing seepage from the system, including piping the system, and lining the system with other types of liners. These alternatives were considered during the conceptual design process for the Proposed Action, but eliminated from detailed analysis in accordance with 40 CFR 1502.14 because they were determined to be technically challenging, were less efficient, had shorter longevity, or were significantly more expensive than the Proposed Alternative.

## 1.4 Location & Environmental Setting of the Proposed Action Area

The GVIC System is located in the City of Grand Junction, in the Grand Valley of Mesa County, Colorado (Figures 1 through 4). The specific locations of the project components involved with the Proposed Action are as follows:

- Section 1 Canal Lining: in Section 9, Township 1 South, Range 1 East of the Ute Meridian, in the Fruitvale area between E ½ and E Roads and 30 and 31 Roads (Figure 4a).
- Section 3 Canal Lining: in parts of Section 34 and 35, Township 1 North, Range 1 West and part of Section 2, Township 1 South, Range 1 West of the Ute Meridian, in the Appleton area around the intersection of 26 and G Roads south of Interstate 70 (Figure 4b).
- Habitat Replacement Site: in Section 22, Township 1 South, Range 1 West of the Ute Meridian, in the Redlands area between the Redland Power Canal and 25 ¾ Road (Figure 4c).

Note that Section 2 of the GVIC system was lined during the GVIC Phase II Canal Lining Project (Figure 2).

The Proposed Action Area is located in the Colorado Plateaus physiographic province, in the Grand Valley of the upper Colorado River Basin. The climate is semi-arid continental, characterized by low humidity and moderately low precipitation (averaging about 8 inches

annually), and an average annual temperature of approximately 52 degrees Fahrenheit. The average elevation of the Proposed Action is about 4,700 feet above mean sea level.

The GVIC System receives water diverted from the Colorado River approximately 7.2 direct miles east of the east part of the Proposed Action. The water is conveyed in the Grand Valley Canal through Section 1 of the Proposed Action Area, and in the Grand Valley Highline Canal through Section 3 of the Proposed Action Area (Figures 1 through 3). Drainage from lands irrigated by the GVIC System eventually returns to the River. The Habitat Replacement Site lies adjacent to the east bank of the Redlands Power Canal, less than 1 mile southwest of the confluence of the Gunnison and Colorado rivers (Figure 3).

Land cover surrounding the immediate vicinity of the Proposed Action Area is a combination of residential subdivision housing, commercial use, and small-parcel irrigated agricultural (Figures 4 through 4c). The water conveyed in the GVIC System supports a narrow corridor of primarily herbaceous wetland/riparian vegetation. This riparian and/or wetland habitat currently sustained by seeping irrigation water conveyed in the unlined canal segments would be lost as a result of the Proposed Action, and this loss would be mitigated with riparian vegetation plantings and enhancements at the Habitat Replacement Site. The Habitat Replacement Site is an open field within Reclamation's Grand Junction Wildlife Area, and was formerly an agricultural field.

## 1.5 Relationship to Other Projects

The canal sections involved in the proposed GVIC Canal Lining Phase IV – 540 Project are part of the larger GVIC irrigation water conveyance system. Other salinity control projects in progress or recently implemented in the general vicinity are shown on Figure 2, and include lining of parts of GVIC's Mainline Canal, Upper Mainline Canal, Mesa County Ditch, Independent Ranchman's Canal, and Highline Canal, as well as the Grand Valley Water User's Association's Government Highline Canal.

## 1.6 Scoping, Coordination, & Public Review

Scoping for this EA was completed by Reclamation, in consultation or coordination with the following agencies and organizations during the planning stages of the Proposed Action, to identify the potential natural and human environment issues and concerns associated with implementation of the Proposed Action and No Action Alternative:

- U.S. Fish & Wildlife Service, Grand Junction, CO
- Colorado Office of Archaeology and Historic Preservation, Denver, CO
- U.S. Army Corps of Engineers, Colorado West Regulatory Branch, Grand Junction, CO

Concerns raised during other similar projects (see Section 1.6, above) also helped identify potential concerns for the Proposed Action.

In compliance with NEPA, the Draft EA was available for public comment (see Section 5). Public comments are included in Attachment A, and summarized in Section 5.2. The Draft EA was made available to private landowners adjacent to the Proposed Action area, and the organizations and agencies listed in Attachment B.

Issues determined to be of potential significance, and therefore appropriate for further impacts analysis under this EA, are discussed in Section 3. The following issues were determined to be **insignificant or not applicable**, and are not analyzed further in this EA:

- Indian Trust Assets and Native American Religious Concerns (not applicable). Indian trust assets may include lands, minerals, hunting and fishing rights, traditional gathering grounds, and water rights. No Indian trust assets have been identified within the Proposed Action Area. The American Indian Religious Freedom Act was enacted to protect and preserve Native American traditional religious rights and cultural practices. These rights include, but are not limited to, access to sacred sites, freedom to worship through ceremonial and traditional rights, and use and possession of objects considered sacred. No Native American sacred sites are known within the Proposed Action Area. Neither the No Action Alternative, nor the Proposed Action, will have an effect on Indian trust assets or Native American sacred sites.
- Environmental Justice & Socio-Economic Issues (not applicable). Executive Order 12898 provides that federal agencies analyze programs to assure that they do not disproportionately adversely affect minority or low income populations or Indian Tribes. The Proposed Action Area does not occur on Indian reservation lands or within disproportionately adversely affected minority or low income populations. The Proposed Action would not involve population relocation, health hazards, hazardous waste, property takings, or substantial economic impacts. Therefore, neither the No Action Alternative, nor the Proposed Action, will have an environmental justice effect.
- Jurisdictional Wetlands & Other Waters of the U.S. (not applicable). The Proposed Action would affect surface and shallow subsurface hydrology supplied to wetland and riparian areas along the Proposed Action alignment. As an agricultural irrigation construction project, the Proposed Action is exempt from requiring a Section 404 Permit pursuant to the Clean Water Act (33 USC 1344). The applicable exemption from Section 404 of the Clean Water Act is for Farm or Stock Pond or Irrigation Ditch Construction or Maintenance. A copy of the Section 404 Exception Summary and written confirmation of the Proposed Action's exemption by the U.S. Army Corps of Engineers are included in Attachment C.
- Wild & Scenic Rivers, Land with Wilderness Characteristics, or Wilderness Study Areas (not applicable). No Wild and Scenic Rivers, land with wilderness characteristics, or Wilderness Study Areas exist in the Proposed Action Area.

## 2 PROPOSED ACTION & ALTERNATIVES

The alternatives evaluated in this EA include a No Action Alternative and the Proposed Action. The resource analyses contained within this document, along with other pertinent information, will guide Reclamation's decision about whether or not to fund the Proposed Action for implementation.

### 2.1 No Action Alternative

In accordance with NEPA and the Council on Environmental Quality regulations, a No Action Alternative is presented and analyzed in this EA in order to provide a baseline for comparison to the Proposed Action Alternative. Under the No Action Alternative, Reclamation would not provide funding to GVIC to line sections of the Grand Valley Canal System. Seepage from these sections would continue to contribute to salt and selenium loading to the Colorado River Basin.



## 2.2 Proposed Action Alternative

The Proposed Action would entail funding a project to equip approximately 1.64 linear miles of irrigation canal with an impervious liner, in order to minimize seepage from the canal and reduce salt loading in the Colorado River Basin (Figures 3 and 4).

In accordance with the Colorado River Basin Salinity Control Act, which requires replacement of incidental fish and wildlife habitat forgone in the implementation of salinity control projects, a habitat replacement project would be funded concurrently with the canal lining project. The habitat replacement project would be implemented at Reclamation's Grand Junction Wildlife Area (Figure 4c).

### Canal Lining

In Section 1 of the Proposed Action (Figure 4a), approximately 0.68-mile of the Upper Mainline Canal would be lined. In Section 3 of the Proposed Action (Figure 4b), approximately 0.96 linear miles of the Highline Canal would be lined.



Machinery working to shape a canal in preparation for lining.



Example of a lined canal.

The installation of a canal liner involves grading and shaping of the existing canal, installing a drain system in the canal bottom, placement of the liner materials, covering the liner materials with protective shotcrete, and anchoring the system. First, existing riprap is removed or buried in the canal bed and any debris and grubbed vegetation in the canal is hauled off site and disposed in a local county landfill. Soft, unstable soils in the canal are excavated and replaced with granular pit run material obtained from a local commercial source. Pit run material and onsite suitable material is used to shape the canal to dimensions specified in the design. After the canal is shaped, it is compacted using vibratory plates mounted to excavators, to specifications verified by a geotechnical engineer. An underliner drain system is

then installed in the canal bottom to collect groundwater and prevent uplift pressure from damaging the liner system. To install the underliner drain system, a trench is excavated in the canal bottom and lined with a non-woven geotextile fabric. Six inches of gravel is then placed in

the trench and a slotted drain pipe placed on top of the gravel. The pipe is then covered with additional gravel and the geotextile is folded on top of the gravel. The next step is to place the synthetic liner system on the prepared grade. The first layer consists of a non-woven geotextile that is intended to protect the second layer (a polyvinyl chloride [PVC] membrane) from damage from any remaining sticks or sharp rocks in the subgrade. The PVC membrane (30 mil) is placed on top of the non-woven geotextile and seams between PVC panels are heat fused together. A final layer of non-woven geotextile is placed on the PVC membrane in order to provide a bonding surface for the shotcrete. A minimum of 3 inches of fiber reinforced shotcrete is then sprayed on top of the liner. After the shotcrete has been applied, the synthetic liner system is horizontally anchored into the canal banks a minimum of 2 feet, and the edges of the liner fabric are buried. Post-construction cleanup would include smoothing of the right-of-way, trash pickup, and weed control.

Along with installation of the liner system, GVIC would replace the irrigation headgates in each section with new concrete structures with punch plate trash screens. No water storage, pump stations, compressor stations, or new irrigated areas would be associated with the canal lining project.

Equipment required for construction would be determined during the pre-construction bid process, and is anticipated to include some of the following: track hoes with 18-inch and 24-inch buckets, an excavator with a 12 or 18-inch bucket, a conventional loader, a skid steer loader, a tamper, a grader, an end dump, haul trucks, a concrete truck, and a pneumatic concrete pump for spraying shotcrete. The choice of equipment will be appropriate to the size and limitations of the construction area. Pit run fill material would be transported to the site with haul trucks.

All construction activities would take place within GVIC's existing right-of-way, which includes the canal and averages 80 to 100 feet wide in the Proposed Action Area. Existing access roads or graded surfaces typically parallel both sides of the canal within the GVIC right-of-way. These surfaces are generally kept clear of vegetation and used for ongoing maintenance and operation of the GVIC System. No new roads or accessways would be required to implement the Proposed Action. Prior to initiating canal liner construction, some existing roads or graded surfaces in the right-of-way adjacent to the canal would require maintenance. Such maintenance would include trucking of gravel/road material and minor grading. Existing public surface roads would be used for hauling equipment and materials to the GVIC existing permanent right-of-way. Supplies would be assembled at the GVIC shop facility off 26 Road and at the construction site within the existing GVIC right-of-way.

Construction of the liner system would occur in Spring and Fall construction cycles between January 2018 and Spring 2020. Typical hours of construction would be 7 am to 5:30 pm Monday through Friday and 7:30 am through 4 pm on Saturday. Shotcrete application would typically not take place on Saturdays; however, some shotcrete application may be necessary on Saturdays to maintain the project schedule if inclement weather on weekdays precludes it. The Fall construction cycle would extend from approximately mid-October through mid-December and the Spring construction cycle would extend from approximately early January through mid-April (see Section 4.9 for anticipated sequence and timing). The main limitation on construction timing is the irrigation season which runs from approximately April 1 through November 1. Construction timing is further limited by mid-winter temperatures which can hinder the ability to perform grading activities in the canal due to frozen ground as well as cold temperature limitations on the placement of shotcrete. The anticipated project schedule is explained in Section 4.9.

Best Management Practices (BMPs) would be used to control erosion, minimize harm to wildlife, prevent spills of petroleum products, and minimize the spread of weeds during and following construction (see Section 4).

### *Habitat Replacement*

The habitat replacement project would occur on 6.4 acres (“Habitat Replacement Site”) within the Reclamation-owned Grand Junction Wildlife Area, north of the Reclamation Shop in the Redlands area of Grand Junction (Figures 3, 4, and 4c). The Habitat Replacement Site is a former agricultural field with a preponderance of non-native vegetation. Habitat value lost due to the canal lining project will be offset at the Habitat Replacement Site in accordance with a Reclamation-approved Habitat Replacement Plan (Attachment D). The plan will enhance the wildlife values of the parcel by seeding a mix of native grasses, forbs, and shrubs; planting young native trees and shrubs; and by controlling and removing noxious weeds. GVIC would be responsible for maintenance of the Habitat Replacement Site for the duration of the grant period. After this period, Reclamation would maintain the Habitat Replacement Site as part of their existing operation and maintenance of the Grand Junction Wildlife Area.

Irrigation of the tree and shrub plantings would be necessary until they become established. The parcel has not been recently irrigated and replacement of an existing irrigation headgate on the Redlands Power Canal directly adjacent to the parcel would be necessary in order to deliver irrigation water to the plantings. The Proposed Action involves the replacement of the headgate; Reclamation staff would be responsible for implementing the irrigation method.

Shrubs and small trees would be planted by hand or with the assistance of a small tractor. Seeding would be done with a range drill seeder. A small amount of vegetation slash (i.e., non-native trees and shrubs removed from the site) would be produced by the Proposed Action. Slash would be chipped and shredded onsite or hauled to a local county landfill.

The timing of the work at the Habitat Replacement Site would correspond with the most effective and appropriate times for seedings, plantings, weed control, irrigation, and other site maintenance, with the following exceptions: Removal of non-native vegetation and soil scarification practices would be avoided during the migratory bird nesting season (including the nesting season for western yellow-billed cuckoo).

The Habitat Replacement Plan (Attachment D) would be implemented in accordance with the environmental commitments listed in Section 4. BMPs would be used to control erosion, minimize harm to wildlife, prevent spills of petroleum products, and minimize the spread of weeds during site plantings and maintenance (see Section 4).

## **3 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES**

This section discusses resources that may be affected by the Proposed Action and the No Action Alternative. During preparation of this EA, information on issues and concerns was received from GVIC, resource agencies, and other interested parties, as noted in the subsections below.

For each resource, the potentially affected area and/or interests are identified, existing conditions described, and potential impacts and environmental consequences predicted under

the No Action and Proposed Action Alternatives. This section is concluded with a summary of impacts and environmental consequences.

### 3.1 Water Rights & Use

The GVIC System delivers water diverted from the Colorado River near Palisade. The Upper Colorado River Basin is approximately 9,916 square miles in size (excluding the Gunnison basin). Information on water rights within the Upper Colorado River Basin in general can be found in the report entitled “*Upper Colorado River Basin Information, Colorado’s Decision Support Systems*” (CWCB 2007).

The Grand Valley Canal was established in 1882, and the Grand Valley Irrigation Company was incorporated in 1894. GVIC currently has more than 3,000 shareholders and more than 1,000 delivery points in the Grand Valley between Palisade and Mack, Colorado.

GVIC holds absolute decrees for 640.28 cubic feet per second direct flow from the Colorado River, which is diverted from the river in the east part of the Grand Valley near Palisade. The GVIC System supplies irrigation water to approximately 34,000 acres of alfalfa, corn, small grains, and pasture grasses in the Grand Valley. Although the System primarily provides agricultural irrigation, the water is also used for domestic, municipality, residential lawn, and gardening purposes. On-farm water distribution is accomplished with a combination of methods including open ditches, gated pipe, and sprinklers. The irrigation season is approximately 188 days long (typically April 1 through November 1).

No Action: The No Action Alternative would have no direct effect on water rights and uses within the Upper Colorado River Basin. The GVIC System would continue to function as it has in the past.

Proposed Action: Under the Proposed Action Alternative, the capacity of the GVIC System would be maintained. GVIC would have the ability to better manage its water rights with efficiencies gained from eliminating seepage by lining portions of the System’s canals. The Proposed Action does not include new storage or new water diversions. No new lands would be irrigated as a result of the Proposed Action, except for small areas of the Habitat Replacement Site (not more than 7.9 acres) which would be irrigated temporarily (for several irrigation seasons) until plantings become established. The Habitat Replacement Site was formerly an agricultural field that was irrigated in the past from an existing diversion on the Redlands Power Canal. Therefore, no direct adverse effects on water rights in the Colorado River Basin would occur due to implementation of the Proposed Action.

### 3.2 Water Quality

Irrigation practices in the Grand Valley contribute to high downstream salinity and selenium levels and create an adverse effect on the water quality of the Colorado River Basin (see Section 1.1). Selenium is an element that occurs in the region’s soils in soluble forms such as selenate, which is leached into waterways by runoff and irrigation practices. Though trace amounts of selenium are necessary for cellular functioning of many organisms, it is toxic in lightly elevated amounts. An estimated 2,363 tons per year of salts are contributed to the Colorado River from operation of the unlined segments 1 and 3 of the GVIC System. Selenium loading contributed to the Colorado River Basin by the GVIC System has not been quantified,

but it is potentially contributing to an adverse effect on the water quality of the Colorado River basin.

The Proposed Action lies in hydrologic units directly tributary to the Colorado River in the Grand Valley (Figure 5). Currently, all tributaries to the Colorado River from the Government Highline Canal diversion to Salt Creek are on the Colorado Department of Public Health and Environment's (CDPHE's) 303(d) list of water quality impaired waters in the State of Colorado (CDPHE 2016b) due to selenium and iron concentrations.

No Action: Under the No Action Alternative, the estimated 2,363 tons of salt annually contributed to the Colorado River Basin from the operation of the GVIC System would continue. Current selenium loading levels would continue.

Proposed Action: The Proposed Action would eliminate seepage from a portion of the GVIC System, reducing salt loading to the Colorado River basin at an estimated rate of 2,363 tons per year, at a cost-effectiveness value of approximately \$49.57 per ton (as per the Funding Application). The Proposed Action is also expected to reduce selenium loading into the Colorado River basin; however, this reduction has not been quantified. Improved water quality resulting from the Proposed Action would likely benefit downstream aquatic species by reducing salt and selenium loading in the Colorado River Basin. In the short-term, construction activities in the canals have the potential to mobilize sediments. However, construction activities would occur during the irrigation off-season (while no water is flowing in the canals) and BMPs to protect water quality would be implemented. Note that no Clean Water Act Section 401 Water Quality Certification is required for the Proposed Action because the Proposed Action is exempt from Section 404 of the Clean Water Act as an irrigation maintenance activity. Written verification of this exemption from the U.S. Army Corps of Engineers is included as Attachment C.

### 3.3 Air Quality

The National Ambient Air Quality Standards (NAAQS) established by the U.S. Environmental Protection Agency (EPA) under the Clean Air Act (CAA) specify limits for criteria air pollutants. Criteria pollutants include carbon monoxide, particulate matter (PM 10 and PM 2.5), ozone, sulfur dioxide, lead, and nitrogen. If the levels of a criteria pollutant in an area are higher than the NAAQS, the airshed is designated as a nonattainment area. Areas that meet the NAAQS for criteria pollutants are designated as attainment areas. Mesa County is in attainment for all criteria pollutants. According to the Colorado Department of Public Health & Environment (CDPHE), the Grand Junction area has frequent elevated wintertime PM 2.5 levels, but it has not violated the federal standard (CDPHE 2017).

No Action: There would be no effect on air quality in the Proposed Action Area from the No Action Alternative. Dust and exhaust would occasionally be generated by vehicles and equipment conducting routine maintenance and operation on the GVIC System.

Proposed Action: There would be no long-term impacts to air quality from the Proposed Action. Dust and vehicle exhaust from construction activities would have a temporary, short-term effect on the air quality in the immediate Proposed Action Area. Dust would be generated by movement of construction equipment in the GVIC System right-of-way. BMPs would be implemented to minimize dust, and would include measures such as watering the right-of-way and work areas within the right-of-way, as appropriate.

### 3.4 Access, Transportation, & Construction Impacts

The GVIC System currently operates in a combination of dedicated and prescribed rights-of-way and fee title land in the vicinity of the GVIC shop area off 26 Road (collectively, “right-of-way”).

All access ways to the GVIC right-of-way are from existing public roads. The primary public surface roads in Section 1 of the Proposed Action Area are Business Loop 70, 30 Road, E Road, 31 Road, and E ½ Road (Figure 4a). Access to the Section 1 right-of-way is via 30 Road, 31 Road, or Business Loop 70. The primary public transportation resources in Section 3 of the Proposed Action Area are 26 Road and G Road. Access to the Section 3 right-of-way is via G Road, 26 Road, or Beaver Lodge Road off of G ½ Road (Figure 4b). Access to the Habitat Replacement Site is via 25 ¾ Road, a dead-end road (Figure 4c). Each of these roads provide access and mobility for residents traveling in the immediate area.

Various overhead, buried, or bridge-suspended utilities cross or are present near the sections of the GVIC System involved with the Proposed Action. The utility entities include Clifton Water District, Ute Water Conservancy District, Xcel Energy, Spectrum Company (telecommunications), and Charter Spectrum (cable TV). The GVDD system is also located near the GVIC System in several locations. The Denver and Rio Grande Western Railway line parallels Business Loop 70 through the Section 1 area, with a bridge crossing between the two segments of Section 1.

A low baseline level of noise and visual disturbance occurs in the right-of-way, associated with GVIC’s operation and routine maintenance of the GVIC System. Operation and maintenance involves the use of light-duty trucks and, occasionally, heavy equipment.

No Action: There would be no effect to access or public transportation from the No Action Alternative. There would be no construction impacts from the No Action Alternative.

Proposed Action: Short-term temporary impacts related to access, public transportation, and construction noise and visual disturbance would result from the Proposed Action. The majority of construction activities related to the canal lining aspect of the Proposed Action would take place entirely in the GVIC System right-of-way, except for underline drain tie-ins to the Grand Valley Drainage District (GVDD) drain system, which would occur in the GVDD right-of-way, and an approximately 20-foot long crossing of private land in Section 3, for installation of an underliner drain line between the GVIC and GVDD rights-of-way. An easement for this crossing would be obtained by GVIC prior to construction. The Proposed Action Area would be accessed during construction using the existing public roads described above and shown on Figures 4a, 4b, and 4c. Implementation of the Proposed Action may cause limited delays along public roadways adjacent to the Proposed Action Area from construction vehicles entering and exiting the GVIC System right-of-way. Prior to construction, GVIC would submit a traffic plan to the City of Grand Junction and obtain a work-in-right-of-way permit. GVIC would also submit a traffic plan to the Colorado Department of Transportation for ingress/egress activities from Business Loop 70. Appropriate traffic signage would be used to notify drivers of active construction ingress/egress. There would be no need for construction of new roads for the Proposed Action; however, some road maintenance would be conducted in the right-of-way prior to construction. There are no known bridges around the Proposed Action Area with weight restrictions that would be used by construction traffic. Canal lining activities would not be performed under the Business Loop 70 or railroad

overpasses. All utilities would be located and marked, and if necessary, relocated or raised, prior to any construction activities in the Proposed Action Area. In addition to water quality (Section 3.2) and air quality (Section 3.3) effects resulting from the Proposed Action construction activities (operation of machinery and vehicles, and the presence of workers) would generate noise and visual disturbance in residential neighborhoods adjacent to the Proposed Action. These disturbances would occur during daylight hours, Monday through Saturday, on a sequenced basis along the canal sections involved with the Proposed Action (see Section 4.9).

### 3.5 Vegetative Resources / Habitat

The general landcover types in and around the Proposed Action Area include residential and commercial development and irrigated agricultural hayfields and/or pastures (Figures 4 through 4c). Levels of residential or commercial development near the Proposed Action Area range from moderately dense and without characteristics of intact native habitat, to somewhat rural, with native and naturalized vegetation in the surroundings.

GVIC aggressively manages vegetation along the canal, and other than the emergent vegetation along the canal waterline and scattered stands of upland weeds or pasture grasses, the right-of-way has a high percentage of bare ground. Typically, GVIC does not permit substantial growths of trees or shrubs to establish along the canal banks or within the GVIC System right-of-way in general.

The existing canal banks at the waterline support a narrow margin of emergent wetland vegetation. Prominent wetland plant species on the canal banks include arctic rush, cattail, scouring horsetail, showy milkweed, common reed (a non-native), inland saltgrass, foxtail barley (a non-native), Johnsongrass (a non-native), and reed canarygrass (a non-native). Some patches of shrub willows, cottonwoods, Russian olive, and Siberian elms lie just outside the GVIC right-of-way, and a short stretch of Section 3 contains a linear stand of mature cottonwoods or poplars near the right canal bank within the right-of way. These vegetation communities, supported by the water that flows seasonally in the GVIC System, create relatively low-quality wildlife habitat in urbanized and semi-urbanized areas of the Grand Valley.

The Habitat Replacement Site that is part of the Proposed Action is currently dominated by a preponderance of pasture grasses and ruderal herbaceous weeds, but also contains stands of trees along its west and east boundaries dominated by Russian olive.

The flowing water in the canals and regular travel of maintenance vehicles in the GVIC System right-of-way are vectors for the spread of noxious weeds and other non-native species. Stands of noxious weeds in the GVIC System right-of-way include Canada thistle, Russian knapweed, whitetop, and sapling Russian olive. These weeds are typical and widespread in the Grand Valley, and tend to thrive in moist and/or disturbed ground. GVIC actively treats weeds along the canal.

No Action: There would be no effect on existing vegetation or habitat from the No Action Alternative.

Proposed Action: Long-term loss of wetland or riparian habitat would result from the canal lining aspect of the Proposed Action. According to the Habitat Assessment (Attachment E) conducted in accordance with Reclamation methodology (Reclamation 2013), lining the canal sections would result in permanent loss of approximately 2.39

acres and 8.78 Total Habitat Value (THV) units of wetland vegetation. The Colorado River Basin Salinity Control Act requires that the Secretary of the Interior “provide for the mitigation of incidental fish and wildlife values that are lost” as a result of salinity control projects. Vegetation treatments at the Habitat Replacement Site (Figures 3 and 4c) would compensate for the habitat loss resulting from the canal lining activities associated with the Proposed Action. The Habitat Replacement Plan for the Habitat Replacement Site is included as Attachment D to this EA.

Lining the canal would minimize the potential establishment of noxious weeds directly adjacent to the canal prism, due to the shotcrete lining. Noxious weed infestations along the GVIC right-of-way would be controlled in accordance with the Mesa County Noxious Weed Plan ([www.mesacounty.us/WorkArea/DownloadAsset.aspx?id=21847](http://www.mesacounty.us/WorkArea/DownloadAsset.aspx?id=21847)) and the City of Grand Junction Weed Abatement Program (<http://www.gjcity.org/siteassets/parks-and-rec/pdfs/weed-program/weed-abatement-brochure.pdf>). Ongoing weed management efforts by GVIC would be implemented prior to and following construction, as appropriate.

### 3.6 Wildlife Resources

In the Proposed Action Area, the unlined canal segments provide limited riparian and wetland habitat within a matrix of irrigated agricultural fields, residential areas, and light commercial areas (Section 3.5). This habitat provides nesting, breeding, foraging, cover, and movement corridors for an array of wildlife. Note: migratory birds are discussed in Section 3.7.

Colorado Parks & Wildlife (CPW) describes the Proposed Action Area as overall range for mule deer (CPW 2017). A CPW-mapped mule deer resident population area encompasses Section 3 of the Proposed Action Area, and the Habitat Replacement Site lies in CPW-mapped winter range for mule deer. Most mule deer are altitudinal migrants, summering at higher elevations and wintering in the lower elevation valleys. As development has increased in lower elevation valleys where open space and agricultural areas have been converted to residential use, critical winter range (severe winter range and winter concentration areas) has become a limiting factor on mule deer populations in the state (CPW 2014).

A variety of small mammals, reptiles, and amphibians also inhabit the general area. Those that would be likely to use the existing canal or canal margins include ground-dwelling rodents, such as white-tailed prairie dog, several species of mice, voles, shrews, and bats, cottontail rabbit, striped skunk, raccoon, red fox, coyote, badger, western terrestrial garter snake, smooth green snake, Woodhouse’s toad, northern leopard frog, and tiger salamander.

No Action: Under the No Action Alternative, terrestrial and aquatic wildlife habitat would remain in its current condition, and no displacement of wildlife would occur. Salinity and selenium loading of the Colorado River Basin would continue at current rates, which would continue to affect water quality, potentially affecting the wildlife using the area.

Proposed Action: Since the Project Area lies in an urban and semi-urban area where an existing background level of disturbance frequently occurs, only minor temporary impacts to wildlife species would be expected. Direct impacts to mule deer would include short-term localized disturbance while canal liner construction is underway. There is also the potential for disturbing year-round resident mule deer at the Habitat Replacement Site. Mule deer wintering habitat in the vicinity of the Proposed Action Area is not



considered critical winter range (i.e., it is not a winter concentration area or severe winter range) and mule deer have access to forage and refuge in suitable habitats nearby.

Direct impacts to small animals, such as burrowing amphibians, reptiles, and small mammals, could include direct mortality and displacement during construction activities in the canals and at the Habitat Replacement Site.

The reduction of salt and selenium loading in the Colorado River Basin resulting from the Proposed Action would likely benefit downstream fish and amphibians dependent on wetland and riparian habitats.

Wildlife dependent on wetland and riparian habitat in the Proposed Action Area would experience a long-term (greater than five years) loss of local habitat. In compliance with the Colorado River Basin Salinity Control Act, the wetland and riparian habitat value that would be lost due to implementation of the Proposed Action would be replaced at the nearby Reclamation-approved Habitat Replacement Site (Attachment D).

### 3.7 Special Status Species

#### *Migratory Birds & Raptors*

Migratory birds protected under the Migratory Bird Treaty Act (MBTA) find nesting and/or migratory habitat in and around the Proposed Action Area. Under the MBTA, it is illegal to take, possess, import, export, transport, sell, purchase, or barter any migratory bird, bird parts, nests, or eggs of such birds except by permit. Migratory songbirds of conservation concern protected under the Migratory Bird Treaty Act that could potentially find habitat in the Proposed Action Area and the immediate vicinity include the following: brown-capped rosy finch (migrating, wintering, breeding), black-chinned sparrow (breeding), Lewis's woodpecker (year-round), loggerhead shrike (breeding), veery (breeding), Virginia's warbler (breeding), and willow flycatcher (breeding). Destruction of vegetation that harbors active bird nests during nesting season can result in direct loss (i.e., "take") of eggs or young, or cause adult birds to abandon eggs. The primary nesting season for migratory songbirds in the Proposed Action Area is April 1 through July 15.

Common migratory raptors with a high potential to occur in the Proposed Action Area include red-tailed hawk (nesting, foraging, wintering, migrating), great-horned owl (nesting, foraging, wintering, migrating), bald eagle (wintering, foraging, nesting, migrating), and golden eagle (foraging, wintering, migrating). These and other less common but potentially present migratory raptors, including burrowing owl (breeding), ferruginous hawk (wintering, possibly breeding), prairie falcon (year-round), Peregrine falcon (breeding), long-eared owl (wintering, breeding, migrating), and Swainson's hawk (breeding), are protected by the MBTA.

In addition, bald eagles and golden eagles are protected by the Bald and Golden Eagle Protection Act of 1940. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." "Disturb" means to agitate or bother a bald or golden eagle to a degree that it causes injury or interferes with normal breeding, feeding, or sheltering behavior.

Bald eagles shelter in communal roost sites, consisting of trees or other tall structures where they gather regularly during the course of a season and shelter overnight or during inclement weather. There is a documented bald eagle roost site less than 1 mile east of the Habitat Replacement Site (Figure 6). CPW maps the Habitat Replacement Site within bald eagle winter range and winter foraging range (Figure 6). Bald eagles and other raptors are common hunters during winter on the local mesas around the Proposed Action, especially on open and agricultural ground where prairie dogs and other burrowing rodents provide prey.

The core nesting season for raptors (hawks, falcons, and owls) in the area is April 1 through July 15; however, individuals may begin courtship and nest construction as early as February 15 (CPW 2008). Bald eagles nest during the period between October 15 and July 31 (CPW 2008). The most common raptors in the area typically choose tall cottonwood trees for nest sites, with the exception of golden eagles and falcons, which typically choose cliffs, and burrowing owls, which occupy prairie dog dens. Tree-nesting raptors construct substantial stick nests, and generally return to the same nest location annually.

Suitable nest sites (cliffs) for golden eagles, peregrine falcons or prairie falcons do not exist in or near the Proposed Action Area. “Probable” breeding burrowing owls have been identified in the Grand Valley by the Colorado Breeding Bird Atlas, but their preferred nesting habitat of extensive prairie dog colonies are not present in the Proposed Action Area. Bald eagles nest in the Grand Valley along the Colorado River corridor; no CPW-mapped active eagle nests exist within several miles of the Proposed Action Area (Figure 6). A few tall trees suitable for tree-nesting raptors exist in the vicinity of the Proposed Action and throughout the residential areas near the Proposed Action, but not in the proposed disturbance footprint. Like migratory songbirds, raptors disturbed during nesting may abandon their eggs or be less successful at feeding their young.

A baseline level of disturbance in the area to migratory birds and raptors occurs from residential, commercial, and farming activities, from vehicles traveling along the nearby interstate, highways, and other roads, and from regular canal maintenance activities conducted by GVIC.

No Action: In the absence of the Proposed Action, migratory songbird and raptor foraging habitat would remain in its current condition, and no temporary displacement of migratory birds or raptors would occur. Salinity and selenium loading in the Colorado River Basin would continue at current rates, which will continue to affect water quality within the drainage, potentially affecting the wildlife using the area.

Proposed Action: Direct impacts to migratory songbirds and raptors would include minor short-term disturbance and displacement from the Proposed Action Area from construction activities during migratory seasons or winter. Wintering and migrating songbirds and raptors are not expected to experience measurable short- or long-term effects due to construction disturbance or displacement given the existing level of disturbance in the area. Winter foraging habitat for songbirds and raptors around the Grand Valley and in the vicinity of the Proposed Action Area is extensive, and foraging habitat not unique or exceptional in the Proposed Action Area compared to surrounding areas.

There would be no direct effect to breeding songbirds since canal liner construction and Habitat Replacement Site non-native tree removal would occur outside the primary nesting season of April 1 through July 15. Migratory songbirds are not likely to nest in the emergent vegetation of the canal sections involved in the Proposed Action.

Nonetheless, the long-term loss of potential songbird nesting habitat along the canal sections would be mitigated by a habitat replacement project, and the timing of construction would not overlap with primary nesting season. No direct loss of raptor nesting habitat (tall trees) would occur as a result of the Proposed Action.

Project activities taking place outside the recommended buffer distances and seasonal restrictions for Colorado raptors (CPW 2008) would have no measurable effects on raptors. No known active raptor nests are located near the Proposed Action Area and inside the recommended buffer zone for the species. If raptors initiate nesting near the Proposed Action area during construction activities, it is assumed that they are individuals that are tolerant to such activities.

There is one documented bald eagle winter roost approximately ½ mile east of the Habitat Replacement Site (Figure 6). This distance lies outside the recommended buffer distance of ¼ mile for a bald eagle roost from human disturbance (CPW 2008), and is therefore not likely to be affected by the Proposed Action.

*Threatened & Endangered Species & Their Critical Habitats*

The Endangered Species Act (ESA) of 1973 protects federally listed endangered, threatened and candidate plant and animal species and their critical habitats. Table 1 presents the federally-listed species and species proposed for listing that may occur within or near the Proposed Action area, briefly explains habitat requirements of each species, and indicates whether the species range or distribution intersects the Proposed Action Area.

The species presented in Table 1 were generated from the FWS Environmental Conservation Online System Information for Planning and Conservation (IPaC) for a Threatened & Endangered Species Inventory (Rare Earth 2017), prepared as a background document for this EA and summarized below. Unless otherwise specified, all information related to the species descriptions and discussions below was obtained from resources accessed through iPaC.

**Table 1. Federally-Listed Species Potentially Occurring in or Near the Proposed Action Area**

Name	Status	Habitat Requirement Summary	Range in Project Area?	Habitat in Project Area?
<b>BIRDS</b>				
Mexican spotted owl <i>Strix occidentalis lucida</i>	Threatened	Typically nests in older mature conifer stands, and on walls of shady wooded canyons. Confirmed nest records in Colorado from Mesa Verde in Montezuma County and around Pikes Peak and the Wet Mountains east of the Great Divide. No documented occurrences of spotted owl have been recorded in the Grand Valley.	No	No

Name	Status	Habitat Requirement Summary	Range in Project Area?	Habitat in Project Area?
Yellow-billed cuckoo <i>Coccyzus americanus</i>	Threatened	Breeds in low elevation river corridors with extensive mature cottonwood galleries; breeding birds have been detected in the Grand Valley and critical habitat is proposed along reaches of the Colorado River.	Yes	Yes
<b>FISHES</b>				
Greenback cutthroat trout <i>Oncorhynchus clarkia stomias</i>	Threatened	High elevation cold water streams and cold water lakes with adequate stream spawning habitat present during spring. No spawning habitat or perennial water exist in the Proposed Action Area (Dare et al. 2011).	No	No, (there are no perennial coldwater streams in project area)
Bonytail <i>Gila elegans</i>	Endangered	Although no habitat is present within the project area for these four species, designated critical habitat in the Colorado River is affected by consumptive use of water for agricultural irrigation.	No	No, but designated critical habitat is affected by irrigation activities
Colorado pikeminnow <i>Ptychocheilus lucius</i>				
Humpback chub <i>Gila cypha</i>				
Razorback sucker <i>Xyrauchen texanus</i>				
<b>MAMMALS</b>				
North American wolverine <i>Gulo gulo luscus</i>	Proposed Threatened	Wolverines do not specialize on vegetation or geological aspects of habitat, but instead select areas that are cold enough to reliably maintain deep persistent snow during winter and late into the warm season, namely boreal, alpine, and arctic regions (Copeland et al. 2010). Therefore, in the southern portion of the species' range (i.e., western Colorado) where ambient temperatures are warmest, wolverine distribution is restricted to high elevations. Deep, persistent, and reliable spring snow cover (April 15 to May 14) is the best overall predictor of wolverine occurrence in the contiguous United States.	No	No (restricted to high-elevation habitat with persistent spring snow cover)

Name	Status	Habitat Requirement Summary	Range in Project Area?	Habitat in Project Area?
<b>PLANTS</b>				
Colorado hookless cactus <i>Sclerocactus glaucus</i>	Threatened	Known range limited to alluvial river terraces and Mancos Shale formation of the Gunnison River valley from near Delta, Colorado, to southern Mesa County, Colorado; and alluvial river terraces of the Colorado River and in the Plateau and Roan Creek drainages in the vicinity of DeBeque, Colorado. Plant associations include semi-desert shrublands, big sagebrush shrublands, and sagebrush-juniper woodland transition areas. None observed during inspection of project area.	Yes	No

Mexican spotted owl, greenback cutthroat trout, Colorado hookless cactus, and North American wolverine are not considered further in this analysis for the following reasons (also see Table 1): There are no records of Mexican spotted owl in Mesa County and no Mexican spotted owl designated critical habitat lies within the Proposed Action Area. No suitable habitat for greenback cutthroat trout is within the Proposed Action area or located downstream. The Proposed Action Area is in a state of perpetual disturbance and has no suitable habitat for Colorado hookless cactus. The Proposed Action area lacks suitable habitat for the North American wolverine. Furthermore, there are no viable populations of wolverine in western Colorado. Only one individual has been documented in the Southern Rocky Mountains (in north-central Colorado) since 1919.

The western yellow-billed cuckoo was listed as threatened in 2014 (79 FR 59992–600038), after several years as a candidate for listing. Critical habitat was proposed for the species on August 15, 2014, at 79 FR 48548–48652, including areas along the Colorado River Corridor in the Grand Valley (Figure 7). The yellow-billed cuckoo is a secretive migratory songbird that breeds in the United States and winters in South America. The yellow-billed cuckoo has a short nesting season—incubation to fledging can take place in as little as 17 days. Cuckoos arrive on breeding and nesting grounds in Colorado in late May or early June, and depart by early August through early September. Yellow-billed cuckoos have been detected historically in the Grand Valley; however, the Colorado Breeding Bird Atlas II surveys did not detect cuckoos in the Grand Valley between the 2007 to 2012 survey periods (Wickersham 2016). The last cuckoo sighting at the Grand Junction Wildlife Area was in July 2013, when a single bird was observed by Reclamation and FWS staff. Reasons for decline of the yellow-billed cuckoo throughout the western U.S. have been attributed to destruction of its preferred riparian habitat due to agricultural conversions, flood control projects, and urbanization. In some parts of its breeding range, pesticide use may have affected the yellow-billed cuckoo’s prey base—injurious pest insects such as tent caterpillars, which tend to occur in cyclic outbreaks.

The preferred breeding habitat of the yellow-billed cuckoo is low elevation old-growth cottonwood forests or woodlands with dense, scrubby understories of willows or other riparian shrubs. FWS established Primary Constituent Elements (PCEs) for cuckoo critical habitat in the proposed rule, based on the current knowledge of the physical or biological features and habitat

characteristics required to sustain the species' life-history processes including breeding, and foraging and dispersing. The PCEs include riparian woodlands (PCE 1), adequate prey base (PCE 2), and dynamic riverine processes (PCE 3). Riparian woodlands meeting PCE 1 are mixed willow-cottonwood vegetation that contain habitat for nesting and foraging in contiguous or nearly contiguous patches that are greater than 325 feet (100 m) in width and 200 acres or more in extent. These habitat patches contain one or more nesting groves, which are generally willow-dominated, have above average canopy closure (greater than 70 percent), and have a cooler, more humid environment than the surrounding riparian and upland habitats. The Proposed Action Area does not fall within yellow-billed cuckoo proposed critical habitat (Figure 7), nor does habitat in either canal section or the Habitat Replacement Site meet the requirements of PCEs 1 and 3 established at the proposed rule. Although both the canal sections and the Habitat Replacement Site contain or are located near riparian woodlands, these woodlands lack size, understory and canopy composition, and connectivity to dynamic riverine processes described in the PCEs (see Section 3.5). Although the woodland habitat in or adjacent to the Proposed Action Area (including the Habitat Replacement Site) does not represent adequate nesting habitat for yellow-billed cuckoo, it is possible that cuckoos could use the areas for foraging.

The Colorado River Basin has four endangered fishes: the bonytail, the Colorado pikeminnow, the humpback chub, and the razorback sucker. Decline of the four endangered fishes is due at least in part to habitat destruction (diversion and impoundment of rivers) and competition and predation from introduced fish species. In 1994, the FWS designated critical habitat for the four endangered species at Federal Register 56(206):54957-54967, which in Colorado includes the 100-year floodplain of the upper Colorado River from Rifle to Lake Powell, and the Gunnison River from Delta to Grand Junction. None of the four endangered Colorado River fishes occur in the Proposed Action Area; however, the historic and ongoing irrigation activities associated with the GVIC System cause water depletions to downstream designated critical habitat for these species.

No Action: In the absence of the Proposed Action, historic water depletions would continue, salt and selenium loading from the Proposed Action Area would continue at current rates, and there would be no effects to threatened or endangered species or their critical habitats.

Proposed Action: A threatened and endangered species inventory (Rare Earth 2017) was completed for the Proposed Action/Proposed Action Area, and used as a background document for this EA. The results of the inventory are summarized as follows:

- **Western Yellow-billed Cuckoo.** No direct effects to the western yellow-billed cuckoo would result from the Proposed Action, since the construction activities or other disturbances associated with the Proposed Action would not take place during the cuckoo breeding season (June 1 - September 1) when cuckoos could be expected to be in the area. The Proposed Action Area does not encompass suitable breeding habitat for cuckoo, therefore no breeding habitat loss for this species would occur as a result of the Proposed Action. Indirect effects to cuckoo could result from removal of potential foraging habitat, such as stands of Russian olive and other non-native trees on the Habitat Replacement Site. Reclamation conducted a technical consultation in January 2017 with FWS to develop a strategy for removal of non-native trees that would be protective of cuckoo foraging habitat as well as migratory bird nesting habitat (Jennifer Ward, Reclamation, pers. comm.). The strategy

involves removal of the non-native trees on the west side of the Habitat Replacement Site, while leaving the non-native trees in place on the east side of the Habitat Replacement Site, so that some tree-stature habitat structure would be provided on site while new native tree and shrub plantings are becoming established. Based on these findings and the timing of the Proposed Action, and measures to conserve cuckoo foraging habitat on the Habitat Replacement Site, the Proposed Action may affect, but is not likely to adversely affect, western yellow-billed cuckoo.

- **Western Yellow-billed Cuckoo Proposed Critical Habitat.** The Proposed Action Area does not lie within proposed critical habitat (Figure 7). Therefore, the Proposed Action would have no effect on western yellow-billed cuckoo proposed critical habitat.
- **Colorado River Basin Endangered Fishes.** The endangered Colorado pikeminnow, razorback sucker, humpback chub, and bonytail do not occur within the immediate Proposed Action Area. Based on previously issued biological opinions that all depletions within the Upper Colorado River Basin may adversely affect the four fishes, the Proposed Action may affect, and is likely to adversely affect, the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail.
- **Colorado River Basin Endangered Fishes Critical Habitat.** Consumptive use of water due to the operation of the GVIC System results in an average annual depletion of approximately 58,515 acre-feet from the Colorado River (see Attachment F), which affects critical habitat in the Colorado River Basin for the endangered Colorado pikeminnow, razorback sucker, humpback chub, and bonytail. Reclamation previously consulted with FWS on this annual depletion rate in 2002, as part of the Grand Valley Irrigation Company Diversion Dam Fish Passage and Screen Project (File ES/GJ-6-CO-99-F-033-CP20). As a result of that consultation, Company executed a Recovery Agreement with FWS to ensure compliance with the U.S. Endangered Species Act for depletions to the Colorado River Basin (Attachment F). The annual depletion rate resulting from the operation of the GVIC System would not change as a result of the Proposed Action. Therefore, the Proposed Action will not destroy or adversely modify the designated critical habitat for the Colorado River endangered fishes. Furthermore, the potential reduction in selenium loading to the Colorado River as a result of the cumulative efforts of the Colorado River Basin Salinity Control Basinwide and Basin States Programs improves water quality within designated critical habitat for the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail throughout the Colorado River Basin.

### 3.8 Cultural Resources

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

Alpine Archaeological Consultants, Inc. (Alpine) conducted cultural resource inventories (including literature searches and site surveys) of irrigation features and areas slated for disturbance in the Proposed Action Area (Hoose 2014; Harrison & Linland 2016).

The inventories concluded that segments of the GVIC System are eligible for inclusion on the National Register of Historic Places (NRHP). No archaeological sites or isolated finds were discovered during the inventories.

No Action: The No Action Alternative would have no effect on cultural resources.

Proposed Action: As a result of the cultural resources inventories of the Proposed Action Area, and in consultation with the Colorado State Historic Preservation Officer (SHPO), Reclamation has determined that the Proposed Action would have an adverse effect on parts of the GVIC System, which are resources that are officially eligible for listing in the NRHP. The inventory recommended that to mitigate these adverse effects, Level I documentation (OAHF 2013) be conducted to capture the historic landscape characteristics of the eligible features prior to implementation of the Proposed Action. Level I documentation includes archival-quality photographs, maps, and narrative descriptions of the resources, which would be publicly available at the Colorado Office of Archaeology & Historic Preservation (OAHF) and on Reclamation's Western Colorado Area Office website. Memoranda of Agreement (MOAs) have been executed between Reclamation and the SHPO, with GVIC participating as an invited party, to mitigate the adverse effects of the Proposed Action (Attachment G). The MOAs stipulate that Level I documentation be completed prior to any earth disturbances for the Proposed Action, and requires that any post-review discoveries trigger an Unanticipated Discovery Plan (UDP; Attachment B to the MOAs). The UDP outlines procedures that would be followed in order to protect potential archaeological materials or cultural resources discovered during implementation of the Proposed Action. In addition, the MOA stipulates that the Level I documentation be made available to the public. The required Level I documentation was completed in March 2017 by Alpine Archeological Consultants (Harrison & Linland 2017) and posted to the Reclamation Western Colorado Area Office's cultural resources webpage at (<https://www.usbr.gov/uc/wcao/rm/cr/index.html>).

### 3.9 Agricultural Resources & Soils

It is the policy of the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) to "maintain and keep current an inventory of the prime farmland and unique farmland of the Nation...the objective of the inventory is to identify the extent and location of important rural lands needed to produce food, feed, fiber, forage, and oilseed crops" (7 CFR 657.2). NRCS identifies farmlands of national importance based on soil types and irrigation status.

Two types of farmlands of national importance occur in the vicinity of the Proposed Action (Figure 8): *Prime Farmland if Irrigated* and *Prime Farmland if Irrigated and Drained*. According to USDA, Prime Farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops.

All surface disturbance related to the canal lining aspect of the Proposed Action will occur in the existing previously-disturbed GVIC right-of-way. No surface disturbance would occur to farmlands irrigated by the GVIC System. No significant farmlands are identified at the Habitat Replacement Site.

All soil types in the Proposed Action Area are derived from Mancos Shale, which formed in a marine environment and now contribute salinity and selenium loading in the Colorado River basin.



**No Action:** The No Action Alternative would have no effect on soils of agricultural significance. Farmlands in the Proposed Action Area would continue to produce as in the past. Salinity loading from irrigation water contact with Mancos Shale-derived soils in the current GVIC System would continue as it has in the past.

**Proposed Action:** No farmlands would be removed from production as a result of the Proposed Action. Overall, the water delivery efficiencies gained from the Proposed Action may result in a longer irrigation season, and potentially in increased agricultural productivity. However, no new land would be irrigated as a result of the Proposed Action.

### 3.10 Cumulative Impacts

Cumulative impacts are direct and indirect impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts can also be characterized as additive or interactive. An additive impact emerges from persistent additions from one kind of source, whether through time or space. An interactive—or synergistic—impact results from more than one kind of source.

The analysis of cumulative impacts for the No Action and Proposed Action Alternatives considers both spatial (geographic) boundaries and temporal limits of impacts, on a resource-by-resource basis. Spatial and temporal analysis limits vary by resource, as appropriate (see Table 2). Spatial analysis limits were selected to be commensurate with the impacts on, and realm of influence of, each resource type. The temporal limits of analysis were established as 50 years for each resource type (a standard timeframe for cumulative impacts analysis), except for resource types perceived to have only temporary impacts (impacts that end following construction of the Project or within a few seasons following construction).

**Table 2. Cumulative Impacts Analysis Spatial & Temporal Limits by Resource**

Resource Issue	Spatial Limits of Analysis	Temporal Limits of Analysis
Water Rights and Use	Colorado River Basin	50 years
Water Quality	Colorado River Basin	50 years
Air Quality	Project Area plus 2-mile buffer	Duration of Project
Access, Transportation, & Construction Impacts	Project Area	Duration of Project
Vegetative Resources / Habitat	Project Area	50 years
Wildlife Resources	Project Area	50 years

Resource Issue	Spatial Limits of Analysis	Temporal Limits of Analysis
Special Status Species (Migratory Birds & Threatened and Endangered Species)	Grand Valley, except for Colorado River endangered fishes, where the designated critical habitat is considered the spatial limit of analysis	50 years
Cultural Resources	Grand Valley	50 years
Agricultural Resources & Soils	Grand Valley	50 years

Effects of past actions are reflected in the current condition described in the affected environment in each of the resource topics of Section 3. Effects of present, and reasonably foreseeable future actions (planned actions or known proposals for actions in the spatial limits of analysis that would take place within the temporal limits of analysis shown in Table 2), are summarized in Table 3.

**Table 3. Cumulative Impacts Scenario**

Resource Issue	Existing or Future Activities in the Limits of Analysis and their Contribution to Cumulative Impacts with the Proposed Action
Water Rights and Use	The Proposed Action would not contribute measurably to cumulative impacts on water rights and use in the area of analysis. Irrigation water rights in the area will continue to be bought and sold in the future, and used for agricultural purposes. Due to future population growth and increasing subdivisions in the area, agricultural water rights may be converted to municipal or industrial uses. The Proposed Action is expected to lead to increased efficiency of water delivery to irrigated lands. The No Action Alternative would have no impact on water rights and water use in the area of analysis.
Water Quality	Three ongoing federal programs at a basin-wide scale are producing significant cumulative beneficial effects on water quality: the Colorado River Basin Salinity Control Program, the Upper Colorado River Endangered Fish Recovery Program, and the Gunnison Basin Selenium Management Program. Collectively and cumulatively, projects funded under the Salinity Control Program result in reduced salt loading in the Colorado River basin. The Recovery Program involves federal, state and private organizations and agencies in Colorado, Utah, and Wyoming, and is working for the benefit of four species of endangered fishes in the Colorado River and its tributaries while allowing water use and development to continue meeting human needs. The Proposed action is expected to reduce salt loading in the Colorado River basin by an estimated 2,363 tons per year. Under the No Action Alternative, water quality benefits would not be realized by the Project.

Resource Issue	Existing or Future Activities in the Limits of Analysis and their Contribution to Cumulative Impacts with the Proposed Action
Air Quality	<p>Air quality in the area of analysis is affected by vehicular traffic (exhaust gases and road dust), agricultural practices (exhaust gases from farm equipment, dust and smoke from harrowing and ditch/field burning), and occasional controlled burns, wildfires or dust storm events (either local, or blown in from distant locations with the westerly prevailing winds). Dust and exhaust gases related to construction of the Proposed Action are expected to be temporarily elevated in the Project Area, near the Project Area, and east of the Project Area (influenced by the prevailing winds) for the short-term duration of construction. Under the No Action Alternative, there would be no contribution to the cumulative impact on air quality in the area of analysis.</p>
Access, Transportation, & Construction Impacts	<p>Proposed Action Area is limited to the GVIC permanent right-of-way. Access would be from existing public roads. Existing traffic includes local residents, regional travelers, and commercial vehicles. Effects from the Proposed Action would be temporary and would not contribute significantly to cumulative impacts on access, transportation, or public safety in the Project Area. Under the No Action Alternative, there would be no contribution to the cumulative impact on access, transportation, &amp; public safety in the area of analysis.</p>
Vegetative Resources / Habitat	<p>Present and future actions within the analysis area that affect vegetation and habitat resources include infrastructure development and/or maintenance (including public and private roads, utilities, and urban/suburban commercial and residential development). Drought and wildfire also will continue to affect the region’s vegetative resources and natural habitat in the future, possibly with increasing intensity. Considering the habitat replacement project to be executed and maintained for the duration of the grant period to address the loss of riparian and wetland habitat caused by the Proposed Action, the overall contribution of the Proposed Action to the cumulative effects on the vegetation and habitat in the analysis area are expected to be negligible. Other similar salinity reduction projects in the region are also required to establish habitat replacement projects to functionally replace riparian and wetland habitats affected by the projects. Under the No Action Alternative, there would be no contribution to the cumulative impact on vegetative resources in the area of analysis.</p>
Wildlife Resources	<p>Present and future activities in the analysis area affecting this resource are similar to those described for vegetative resources / habitat, above. The negative effects to wildlife from the Proposed Action would be of short duration and magnitude, and would not result in a substantial contribution to cumulative area-wide impacts on population trends of wildlife. Impacts would be mitigated by design features and environmental commitments described elsewhere in this EA. Under the No Action Alternative, there would be no contribution to the cumulative impact on wildlife resources in the area of analysis.</p>

Resource Issue	Existing or Future Activities in the Limits of Analysis and their Contribution to Cumulative Impacts with the Proposed Action
<p>Special Status Species (Migratory Birds and Threatened and Endangered Species)</p>	<p>Present and future activities in the analysis area affecting this resource are similar to those described for vegetative resources / habitat, above. The Proposed Action, when combined with the ongoing or foreseeable future activities in this area, is not likely to contribute to substantial negative long-term cumulative impacts to migratory birds or threatened and endangered species. Migrating and wintering birds are expected to disperse to other areas during construction, and the Proposed Action timing restrictions would be imposed on certain activities to protected breeding birds. The Proposed Action and similar salinity and selenium control projects occurring in the area in the future are not expected to destroy or adversely modify downstream critical habitat for the four species of Colorado River endangered fishes, because the projects will not typically result in an increase in average annual depletion rates of water from the system. Salinity control projects have the unquantified benefit of reducing selenium loading in the Colorado River Basin, improving water quality for aquatic wildlife. Under the No Action Alternative, there would be no measurable contribution to the cumulative impact on special status species. Average annual depletions of water from downstream designated critical habitat for the four Colorado River endangered fishes would continue as in the past in the area of analysis.</p>
<p>Cultural Resources</p>	<p>Cultural resources are defined as fragile and nonrenewable remains of prehistoric and historic human activity, occupation, or endeavor, as reflected in districts, sites, structures, buildings, objects, artifacts, ruins, etc. Significant cultural resources are eligible for listing in the National Register of Historic Places, are typically at least 50 years old, and meet other requirements specified at 36 CFR Part 60. Cultural resources within the Proposed Action Area (segments of the GVIC System itself) were found to be eligible for listing in the National Register of Historic Places, and will be adversely affected by project implementation. Other salinity and selenium control projects in the area of analysis also will affect or have the potential to destroy cultural resources such as irrigation ditches and appurtenant structures. For significant resources, these effects are mitigated by Historic Resource Documentation at an appropriate level for the significance of the resource. For projects which will adversely affect NRHP-eligible cultural resources, a Memorandum of Agreement (MOA) is executed between Reclamation and the State Historic Preservation Office to ensure proper documentation of the resource prior to its destruction. Under the No Action Alternative, there would be no contribution to the cumulative impact on cultural resources in the area of analysis.</p>

Resource Issue	Existing or Future Activities in the Limits of Analysis and their Contribution to Cumulative Impacts with the Proposed Action
Agricultural Resources & Soils	<p>Actions with the potential for cumulative effects on soils and agricultural resources in the North Fork River drainage include existing and future Colorado River Basin Salinity Control Program projects, Selenium Management Program projects within the Gunnison Basin, existing and future NRCS irrigation improvement projects, infrastructure development, livestock grazing, and residential development. Each of these activities can result in soil erosion or degradation of soil health; however, erosion control and reclamation are required for most of these activities to reduce direct, indirect, and cumulative soils effects. Residential development can result in conversion of irrigated agricultural or grazing rangelands. The Proposed Action would not result in the direct loss of irrigated agricultural lands or grazing rangelands. Under the No Action Alternative, there would be no contribution to the cumulative impact on agricultural resources &amp; soils in the area of analysis.</p>

### 3.11 Summary of Impacts

Table 4 summarizes the predicted impacts/environmental consequences of the No Action and Proposed Action Alternatives analyzed in this EA.

**Table 4. Summary of Impacts of the Proposed Action**

Resource Issue	Impacts	
	No Action Alternative	Proposed Action Alternative
Water Rights and Use	No Effect	No long-term effect or possible beneficial effect from efficiencies gained by lining the canal segments.
Water Quality	Salt and selenium loading from the Project area would continue to affect water quality in the Colorado River Basin.	An estimated salt loading reduction of 2,363 tons per year to the Colorado River Basin will result from implementation of the Proposed Action. The Proposed Action is also expected to reduce selenium loading in the Colorado River; however, these benefits have not been quantified. Improved water quality would likely benefit downstream water users and aquatic species in the Colorado River.
Air Quality	No Effect	Minor short-term effects due to dust and exhaust created by construction equipment. Dust control measures would be implemented to mitigate the effects.
Access, Transportation, & Construction Impacts	No Effect	Minor temporary increase to local surface road traffic from construction traffic entering and exiting the construction areas. No long-term effects. Short-term temporary elevated daytime noise levels from construction in neighborhoods where the canal segments will be lined.

Resource Issue	Impacts	
	No Action Alternative	Proposed Action Alternative
Vegetative Resources / Habitat	No Effect	Estimated long-term loss of 8.78 Total Habitat Value units, due to lining of the canal segments and elimination of seepage. Habitat value that would be lost due to implementation of the Proposed Action would be mitigated with the nearby Reclamation-approved Habitat Replacement Site. GVIC would maintain the Habitat Replacement Site for the grant period. After this period, Reclamation would resume maintenance of the habitat project as part of their ongoing management of the Grand Junction Wildlife Area.
Wildlife Resources	No Effect	Short-term temporary minor disturbances to local wildlife during construction. The wetland and riparian habitat value that would be lost due to implementation of the Proposed Action would be mitigated at the nearby Habitat Replacement Site approved by Reclamation.
Threatened and Endangered Species	Selenium loading from the Project area would continue to affect downstream critical habitat for endangered fishes.	Timing of the Proposed Action will avoid direct effects to western yellow-billed cuckoo. Removal of cuckoo foraging habitat at the Habitat Replacement Site would be insignificant. No effect on cuckoo proposed critical habitat since none of the areas associated with the Proposed Action lie within proposed critical habitat. Water depletions (irrigation water consumption) would continue at historic levels from the Colorado River basin, and would adversely affect designated critical habitat for the four Colorado River federally endangered fishes in the basin. Reclamation previously consulted with FWS on this annual depletion rate in 2002, and GVIC executed a Recovery Agreement with FWS to ensure compliance with the U.S. Endangered Species Act for depletions to the Colorado River Basin. The Proposed Action would improve water quality to the benefit of endangered fishes by contributing to the reduction of selenium loading in the Colorado River.
Migratory Birds	No Effect	The timing of the Proposed Action would avoid migratory bird nesting season.

Resource Issue	Impacts	
	No Action Alternative	Proposed Action Alternative
Cultural Resources	No Effect	Reclamation determined that the Proposed Action would have an adverse effect on parts of the GVIC System, which are resources that are officially eligible for listing in the NRHP. The adverse effect will be mitigated through implementation of Memoranda of Agreement between Reclamation and the Colorado SHPO.
Agricultural Resources & Soils	No Effect	There would be no direct disturbance of soils of agricultural significance. Overall, the water delivery efficiencies gained from the Proposed Action may result in a longer irrigation season, and potentially in increased agricultural productivity, but these increases are not quantified.
Cumulative Impacts	No Effect	Beneficial effects related to reduction of salt and selenium loading in the Colorado River Basins. Indirect and direct contributions to cumulative effects on other resources are temporary and/or negligible, with consideration of mitigative measures (i.e., the habitat replacement agreement) and BMPs.

#### 4 ENVIRONMENTAL COMMITMENTS

This section discusses the environmental commitments developed to protect resources and mitigate adverse impacts to a non-significant level. The cooperative agreement between Reclamation and GVIC requires that GVIC be responsible for “implementing and/or complying with the environmental commitments contained in the NEPA/Endangered Species Act compliance documents to be developed by Reclamation for the project.”

The following environmental commitments will be implemented as an integral part of the Proposed Action, and would be incorporated in the contractor bid specifications.

Note that any construction activities proposed outside of the inventoried Proposed Action Area would first require additional review by Reclamation to determine if the existing surveys and information are adequate to evaluate additional impacts outside this corridor.

Note that construction work conducted outside the planned timeframe of the Proposed Action would also require evaluation for impacts to wildlife, specifically special status species.

An Environmental Commitment Checklist (“Checklist”) is included with this EA as Attachment H. The Checklist would serve as a tool to help Reclamation and GVIC comply with the environmental commitments set forth in this EA. GVIC would complete the Checklist as each environmental commitment is fulfilled, provide Reclamation with copies of all documents produced, and would be required to return the completed checklist to Reclamation upon the Project’s completion.

#### 4.1 Construction Access

The majority of construction activities would occur in the GVIC System right-of-way, except for underliner drain connections in the GVDD right-of-way, and an underliner drain crossing on private property in Section 3.

- GVIC has coordinated and shall continue to coordinate with GVDD for work in the GVDD right-of-way for installation of underliner drain tie-ins.
- GVIC shall obtain a 20-foot easement on a private land crossing of an underliner drain in Section 3 prior to construction.

#### 4.2 Water Quality

The following standard BMPs and environmental commitments would be implemented to minimize erosion and protect water quality of downstream resources:

- Straw wattles, silt curtains, cofferdams, dikes, straw bales, or other appropriate and suitable erosion control measures shall be used to prevent erosion from entering waterways during construction.
- Any wastewater from concrete-batching, vehicle wash down, and aggregate processing shall be contained and treated or removed for off-site disposal.
- Fuels, lubricants, hydraulic fluids, and other petrochemicals shall be stored and dispensed in an approved staging area.
- Equipment shall be inspected daily and immediately repaired as necessary to ensure equipment is free of petrochemical leaks.
- Construction equipment shall be parked, stored, and serviced only at an approved staging area.
- A spill response plan shall be prepared in advance of construction by the contractor for areas of work where spilled contaminants could flow into water bodies. All employees and workers, including those under separate contract, shall be briefed and made familiar with this plan.
- A spill response kit, which includes appropriate-sized spill blankets, shall be easily accessible and onsite at all times.
- Onsite supervisors and equipment operators shall be trained and knowledgeable in the use of spill containment equipment.
- Appropriate federal and Colorado authorities shall be immediately notified in the event of any contaminant spill.

#### 4.3 Ground Disturbances

The following BMPs and environmental commitments would be implemented to minimize and mitigate ground disturbances:



- Ground disturbances shall be limited to only those areas necessary to safely implement the Proposed Action.
- Prior to construction, brush shall be removed by mowing or chopping, and stumps shall be removed by grubbing. Vegetation materials shall either be hauled to the Mesa County Landfill, or chipped and mulched onsite.
- Straw wattles, silt curtains, cofferdams, dikes, straw bales, or other suitable erosion control measures shall be used at the edges of ground disturbance to minimize soil erosion and prevent soil erosion from entering waterways during construction.
- Noxious weeds shall be controlled in disturbed areas according to the Mesa County Noxious Weed Plan ([www.mesacounty.us/WorkArea//DownloadAsset.aspx?id=21847](http://www.mesacounty.us/WorkArea//DownloadAsset.aspx?id=21847)) and the City of Grand Junction Weed Abatement Program (<http://www.gjcity.org/siteassets/parks-and-rec/pdfs/weed-program/weed-abatement-brochure.pdf>).
- Equipment used at the Habitat Replacement Site shall be thoroughly cleaned of soils prior to delivery to the site; after working in weed infested areas, equipment shall be cleaned prior to moving to uncontaminated terrain.

#### 4.4 Wildlife Resources

The following BMPs and environmental commitments would be implemented to minimize and mitigate disturbances to wildlife:

- Construction areas shall be confined to the smallest feasible area and within approved construction limits/rights-of-way to minimize disturbance to wildlife within the Proposed Action Area.
- Construction timing shall be limited to the timeframes described in the description of the Proposed Action (Section 2.2).

#### 4.5 Habitat Disturbance & Loss

The Salinity Control Act requires that no net loss of wildlife values result from projects under its authorization. The implementation of a Reclamation-approved Habitat Replacement Plan (Attachment D) within Reclamation's Grand Junction Wildlife Area (Figures 3, 4, and 4c) would satisfy mitigation requirements for the Proposed Action. The Habitat Replacement Site must be managed and maintained per the Funding Agreement between GVIC and Reclamation following the construction of the Proposed Action.

#### 4.6 Special Status Species

- Vegetation (tree, shrub, and dense grass) removal shall avoid the primary nesting season of migratory birds (April 1 through July 15) to prevent violations of the Migratory Bird Treaty Act.
- Non-native tree and shrub removal at the Habitat Replacement Site shall avoid the breeding season of the threatened western yellow-billed cuckoo (June 1 through September 1).

- If an active eagle or other raptor nest is discovered in or adjacent to the construction footprint, consult Reclamation prior to conducting any activities.
- The Proposed Action (Habitat Replacement Site) lies approximately ½ mile from a mapped bald eagle winter roost. If an active bald eagle roost is discovered within ¼ mile of the Proposed Action, activity shall cease until Reclamation is consulted.
- In the event that threatened or endangered species are discovered during construction, construction activities shall halt until consultation is completed with the U.S. Fish and Wildlife Service and protection measures are implemented. Additional surveys shall be required for threatened or endangered species if construction plans or proposed disturbance areas are changed.

#### **4.7 Cultural Resources**

Reclamation and the Colorado State Historic Preservation Office (SHPO) have entered into Memoranda of Agreement (MOAs) to mitigate the Proposed Action's adverse effects to cultural resources (Attachment G). The MOAs commit Reclamation to complete historic resource documentation of the canal segments prior to construction activities in accordance with the guidance for Level I documentation found in "Historic Resource Documentation, Standards for Level I, II and III Documentation" (COAHP 2013), and to post this documentation on the Reclamation Western Colorado Area Office's cultural resources webpage (<https://www.usbr.gov/uc/wcao/rm/cr/index.html>). GVIC is an invited signatory in the MOAs. The required Level I documentation was completed in March 2017 by Alpine Archeological Consultants (Harrison & Linland 2017), and has been placed on Reclamation's webpage.

If previously undiscovered cultural or paleontological resources are discovered during construction, construction activities must immediately cease in the vicinity of the discovery and Reclamation must be notified. In this event, the SHPO shall be consulted, and work shall not be resumed until consultation has been completed, as outlined in the Unanticipated Discovery Plan in the MOA.

#### **4.8 Hazardous Materials, Waste Management & Pollution Prevention**

Environmental impacts from hazardous materials or waste related to the Proposed Action involve potential spills or leaks of motor fuels and lubricants. Fuel and lubricant spills have the potential to impact soil and water resources, but because of the relatively small amounts of such materials that would be used in the Proposed Action Area (i.e., a 55-gallon drum), impacts from accidental spills or leaks are expected to be minimal.

During construction, the use, storage and disposal of hazardous materials and wastes within the Proposed Action Area will be managed in accordance with all federal, state, and local standards, including the Toxic Substances Control Act of 1976, as amended (15 USC 2601, et seq., 40 CFR Part 702-799, and 40 CFR 761.1-761.193). Any trash or solid wastes generated during the Proposed Action will be properly disposed offsite.

The following BMPs and environmental commitments would be implemented with regard to hazardous materials, waste management, and pollution prevention:

- The construction contractor shall transport, handle, and store any fuels, lubricants, or other hazardous substances involved with the Proposed Action in an appropriate manner that prevents them from contaminating soil and water resources.
- Portable secondary containment shall be provided for any fuel or lubricant containers staged within the Proposed Action Area. Any staging of fuel or lubricants, or fueling or maintenance of vehicles or equipment, will not be conducted within 100 feet of any live water or drainage.
- The construction contractor shall prepare, prior to initiation of construction, a spill response plan for areas of work where spilled contaminants could flow into water bodies. All employees and workers, including those under separate contract, will be briefed and made familiar with this plan.
- A spill response kit, which includes appropriate-sized spill blankets, shall be easily accessible and onsite at all times.
- Onsite supervisors and equipment operators shall be trained and knowledgeable in the use of spill containment equipment.
- All spills, regardless of size, shall be cleaned up promptly and contaminated soil shall be disposed of at an approved facility.
- Appropriate federal and Colorado authorities shall be immediately notified in the event of any contaminant spill. Any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b.

#### **4.9 Sequence and Timing of the Proposed Action**

The Proposed Action would take place during the period of January 2018 through mid-April 2020, in Fall and Spring construction cycles. The anticipated construction schedule for the canal lining aspect of the Proposed Action would be as follows:

- Spring 2018: Section 1-A (west of Business Route 70)
- Fall 2018: Section 1-B (east of Business Route 70)
- Spring 2019: Section 3-A (GVIC shop bridge to 26 Road)
- Fall 2019: Section 3-B (26 Road to Beaver Lodge Road)
- Spring 2020: Complete Section 3-B, if needed

The sequence of work for canal lining would be as follows (some overlap would occur between the different tasks):

- Road maintenance in the GVIC right-of-way (approximately 2 to 4 weeks during October in the Fall construction cycle and approximately 2 to 4 weeks during January in the Spring construction cycle).

- Canal shaping, underline drain placement, and assembly of the liner textiles and sheeting (approximately 6 weeks in November/December during the Fall construction cycle and approximately 6 weeks in February/March during the Spring construction cycle).
- Shotcrete application and installation of headgate structures (approximately 2 weeks in early to mid-December during the Fall construction cycle and approximately 2 weeks in March during the Spring construction cycle).
- Cleanup (approximately 2 weeks in December during the Fall construction cycle and approximately 2 weeks in the first part of April during the Spring construction cycle).

Typical hours of construction are 7 am to 5:30 pm Monday through Friday and 7:30 am through 4 pm on Saturday. Shotcrete application would typically not take place on Saturdays.

At the Habitat Replacement Site, ground- and vegetation- disturbing activities would avoid the migratory bird primary nesting season of April 1 through July 15. Removal of non-native trees and shrubs would occur outside the western yellow-billed cuckoo nesting season of June 1 through September 1. Seeding, tree plantings, and weed control would occur during appropriate times for those activities to be effective. Irrigation would take place during the period of April 1 through November 1, while maintenance and repairs of irrigation infrastructure would occur mostly during the irrigation off-season.

#### **4.10 Permits, Licenses and Approvals Needed to Implement the Proposal**

The following permits, licenses, or approvals (and their statuses) are needed to implement the Proposed Action:

- Stormwater Management Plan, to be submitted to the Colorado Department of Public Health and Environment (CDPHE) by the construction contractor prior to construction disturbance (a copy shall also be provided to Reclamation).
- CWA Section 402 Storm Water Discharge Permit compliant with the National Pollutant Discharge Elimination System (NPDES), to be obtained from CDPHE by the construction contractor prior to construction disturbance (regardless of whether dewatering would take place during construction). A copy of this permit shall be provided to Reclamation.
- Utility clearances, to be obtained by the construction contractor prior to construction activities from local utility companies.
- A traffic plan and City of Grand Junction Public Right-of-Way Work Permit.
- A CDOT Traffic Access or Ingress/Egress Permit.

Because the Proposed Action is exempted from CWA Section 404, no Clean Water Act Section 401 Water Quality Certification would be required; however, water quality BMPs (as outlined above) would be implemented to protect water resources.

## 5 CONSULTATION & COORDINATION

Reclamation's consultation and coordination process presents other agencies, interest groups, and the general public with opportunities to obtain information about a given project and allows interested parties to participate in the project through written comments. The key objective is to facilitate a well-informed, active public that assists decision-makers throughout the process, culminating in the implementation of an alternative. This section explains consultation and coordination undertaken for the Proposed Action.

### 5.1 Agency Consultation

This EA was prepared by Rare Earth Science, LLC, of Paonia, Colorado, for Reclamation and GVIC. The following local, state, and federal agencies were contacted or consulted in the preparation of this EA. Additional entities were given the opportunity to comment during a public review period.

- U.S. Fish & Wildlife Service, Western Colorado Field Office, Grand Junction, CO
- Colorado Office of Archaeology and Historic Preservation, Denver, CO
- U.S. Army Corps of Engineers, Colorado West Regulatory Branch, Grand Junction, CO

### 5.2 EA Comments

In compliance with NEPA, the Draft EA was released for public review (via Reclamation's website at <http://www.usbr.gov/uc/wcao/envdocs/index.html>). During the public review period, Reclamation received one comment letter via electronic mail from a private individual, James Noble (see Attachment A). Mr. Noble's comment is summarized below, followed by Reclamation's response:

*Comment 1:* A large cottonwood tree located on the Noble family property relies on water from ditch seepage from the GVIC's Upper Mainline Canal. The family requests that the portion of the canal which runs through the property and adjacent to the cottonwood tree's root system be exempt from the canal lining proposal.

*Response 1:* Precluding portions of the Highline Canal from the lining project is not feasible because the project was selected for federal funding based on the reduction in salinity loading benefit, compared to the cost per ton of salt removed. Reclamation acknowledges that riparian and wetland vegetation which is dependent on canal seepage would be lost due to implementation of the proposed action, and has included a Habitat Replacement Plan as part of the proposed action for the purpose of replacing fish and wildlife values foregone (see Section 3.5 and Attachment D). GVIC has offered to work directly with the Noble family regarding a supplemental water source for the tree. Any agreement between GVIC and the landowner or subsequent work is outside the scope of the proposed action, and would be solely between GVIC and the landowner.

### 5.3 Distribution

Notice of the public review period and availability of the Draft EA (posted on Reclamation's website) was announced through a press release. Notice was also distributed (via U.S. mail or electronic mail) to private landowners adjacent to the Proposed Action Area, and the organizations and agencies listed in Attachment B. This EA will also be available on Reclamation's website. Publicly-available electronic versions of the Draft and Final EA meet the

technical standards of Section 508 of the Rehabilitation Act of 1973, so that the documents can be accessed by people with disabilities using accessibility software tools.

## 6 REFERENCES

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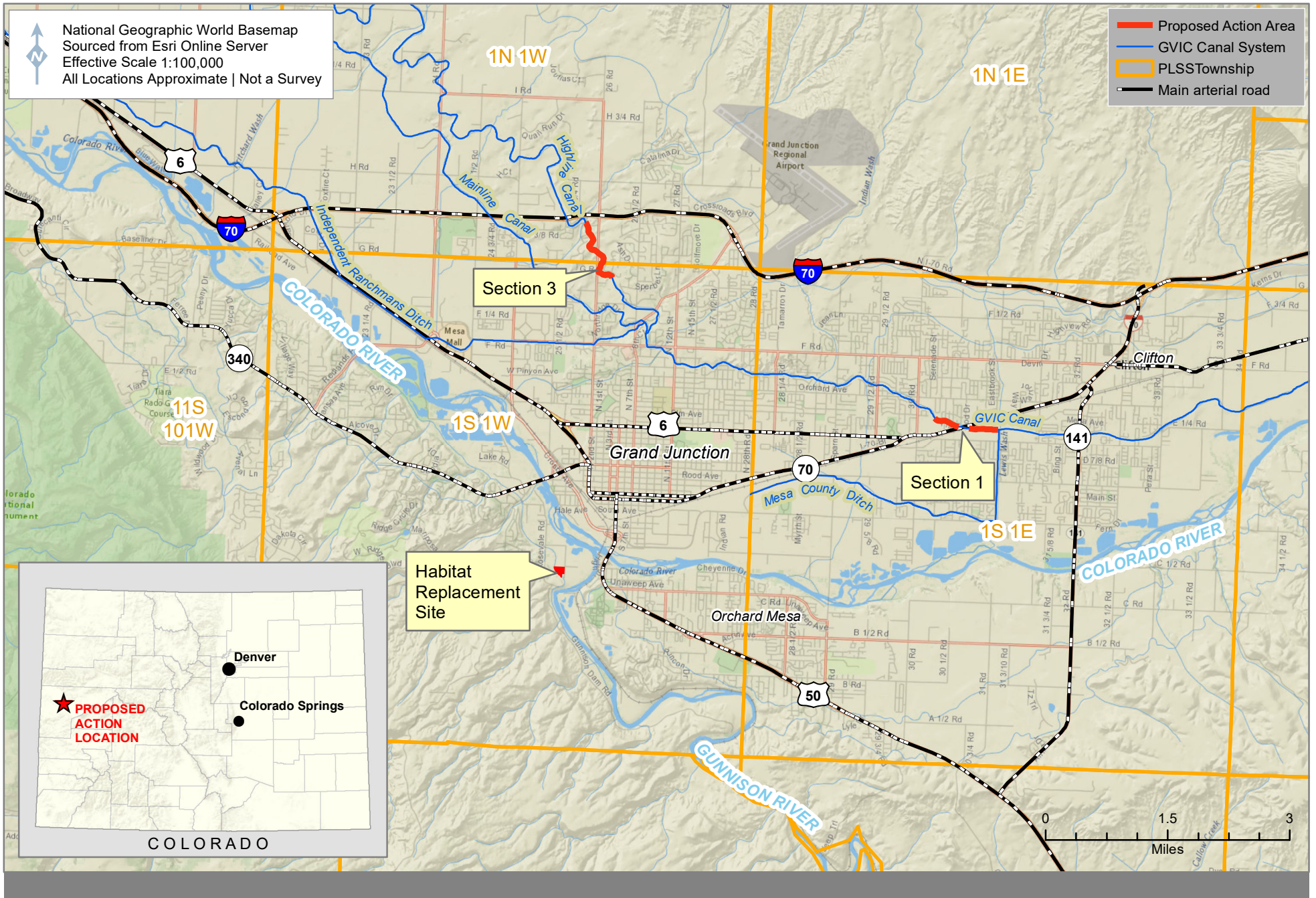
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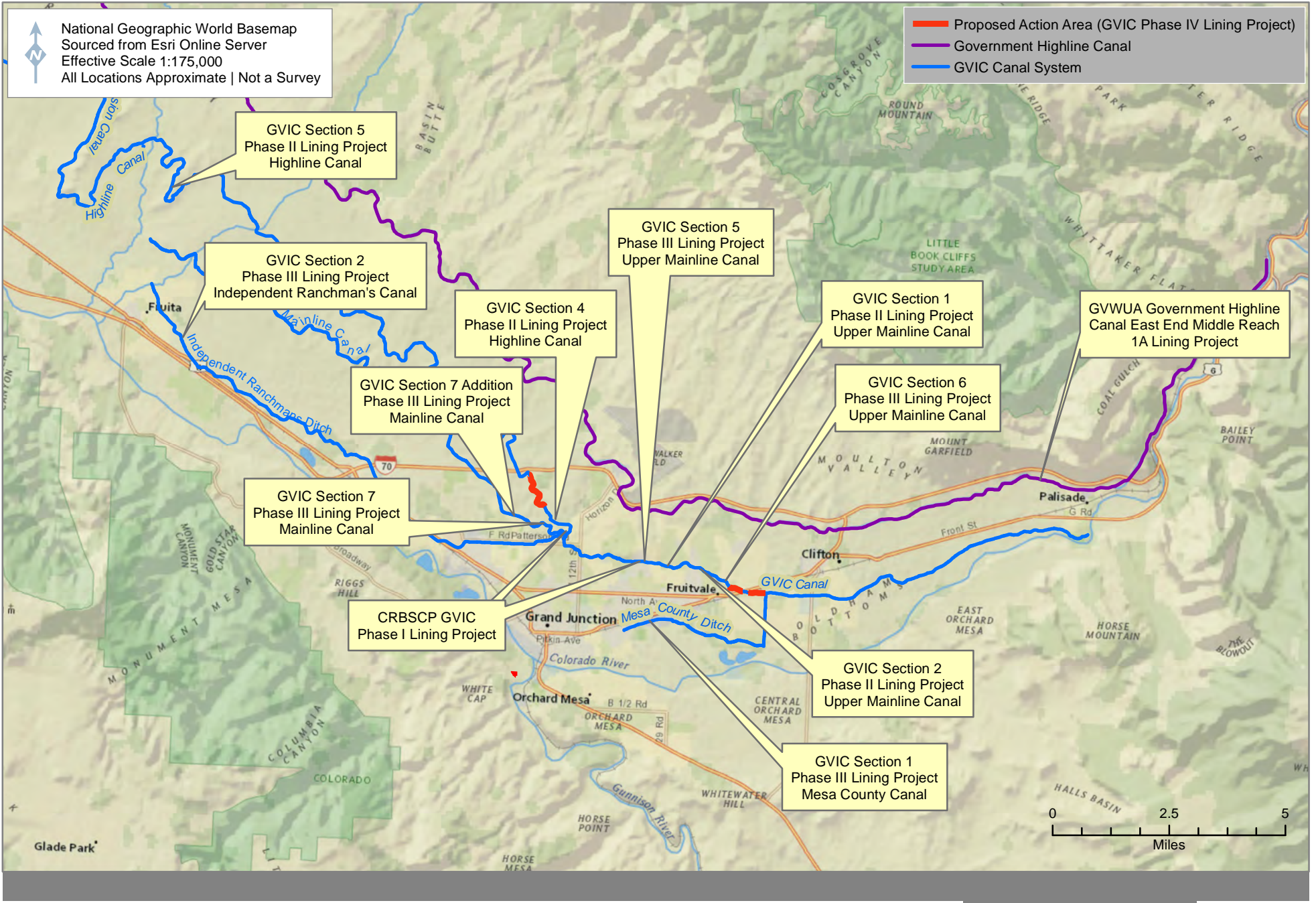
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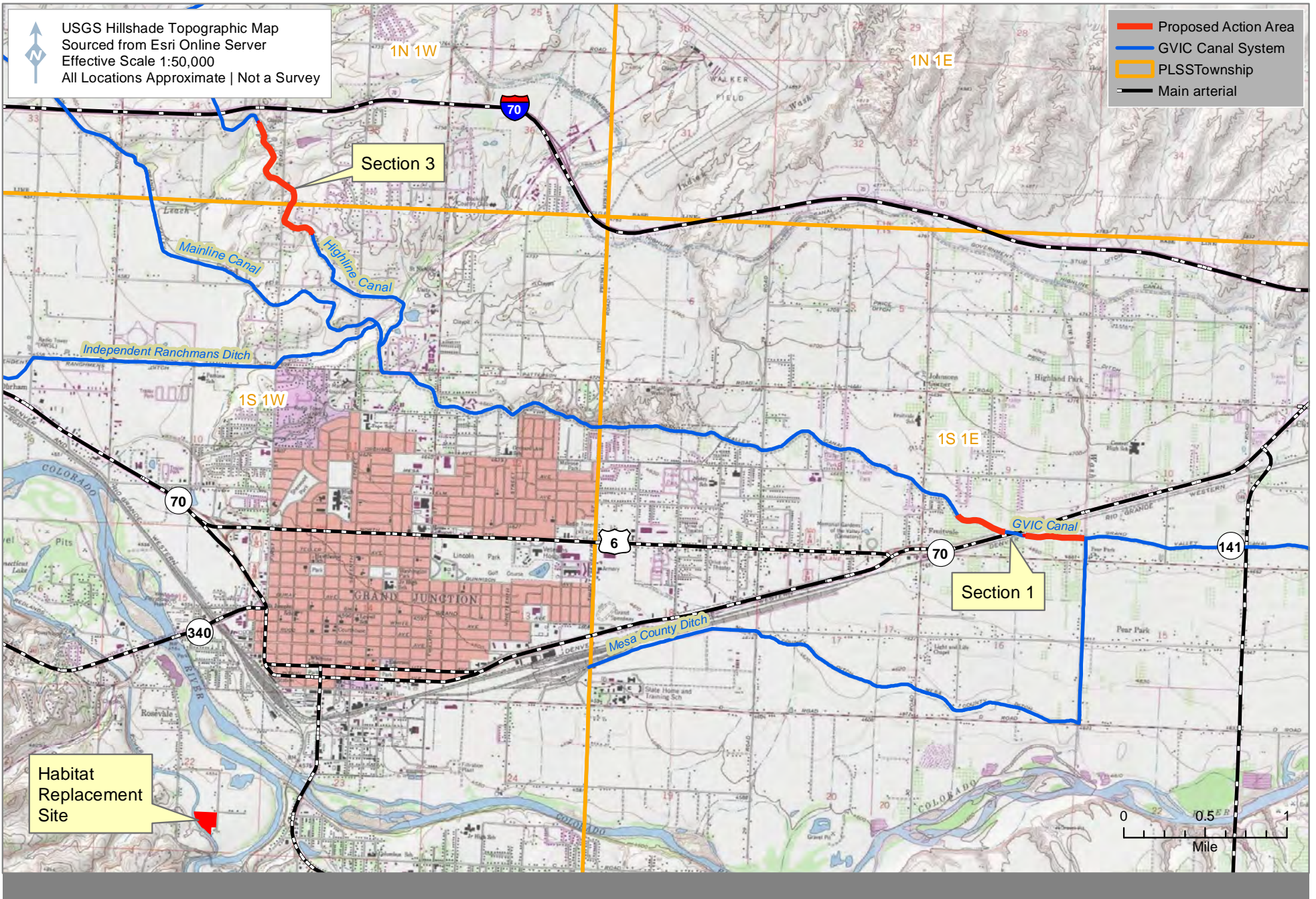


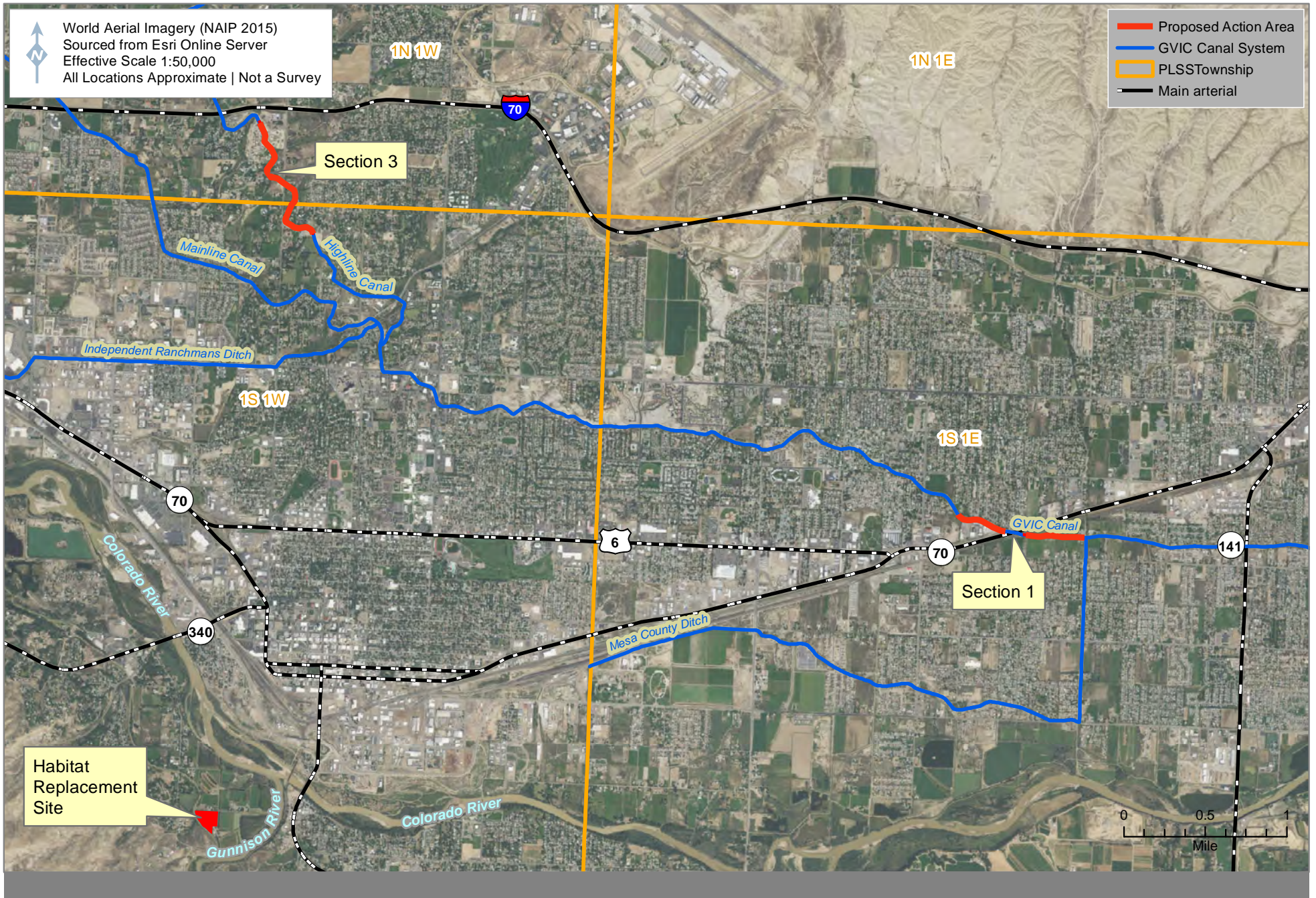
## **FIGURES**

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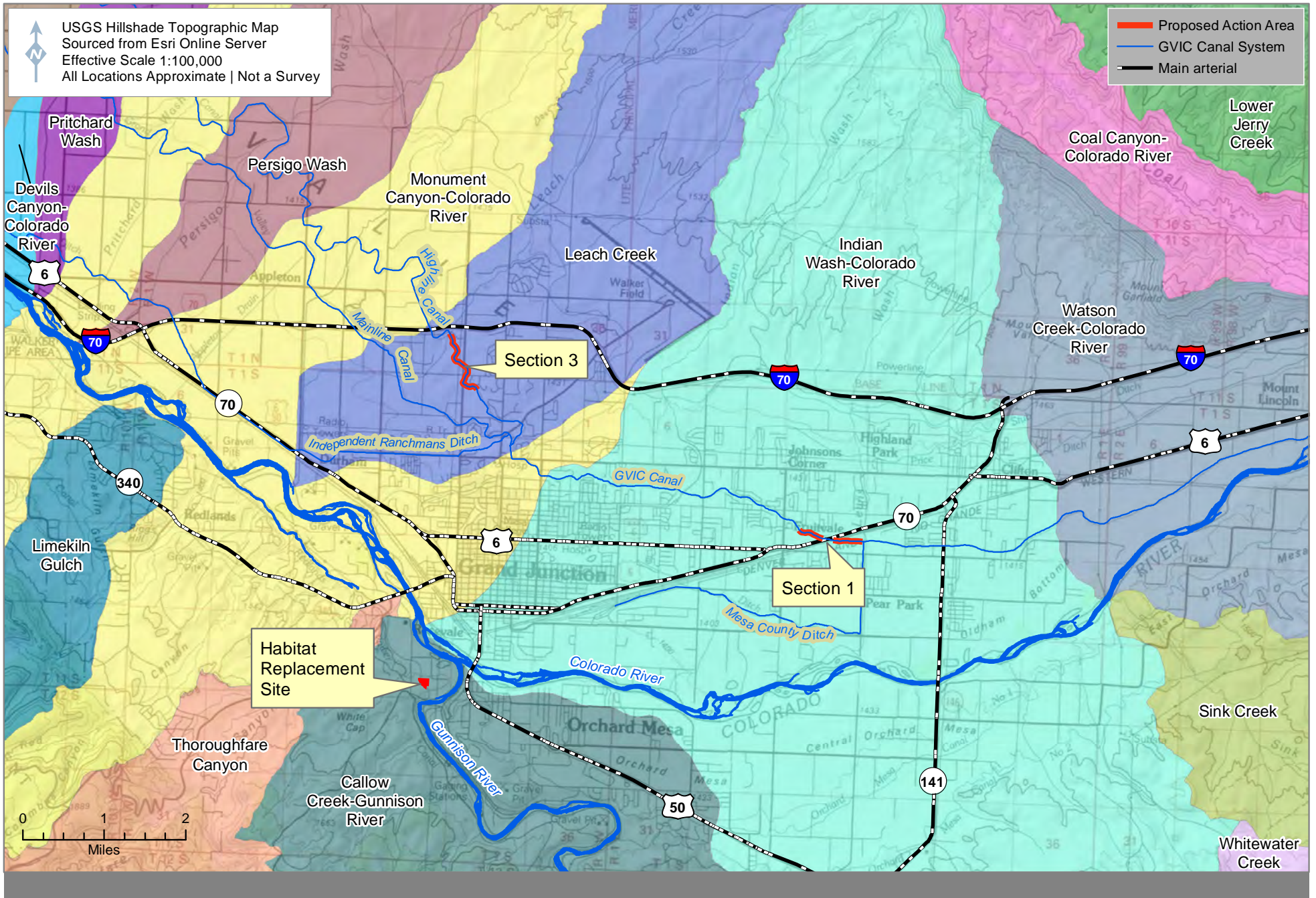


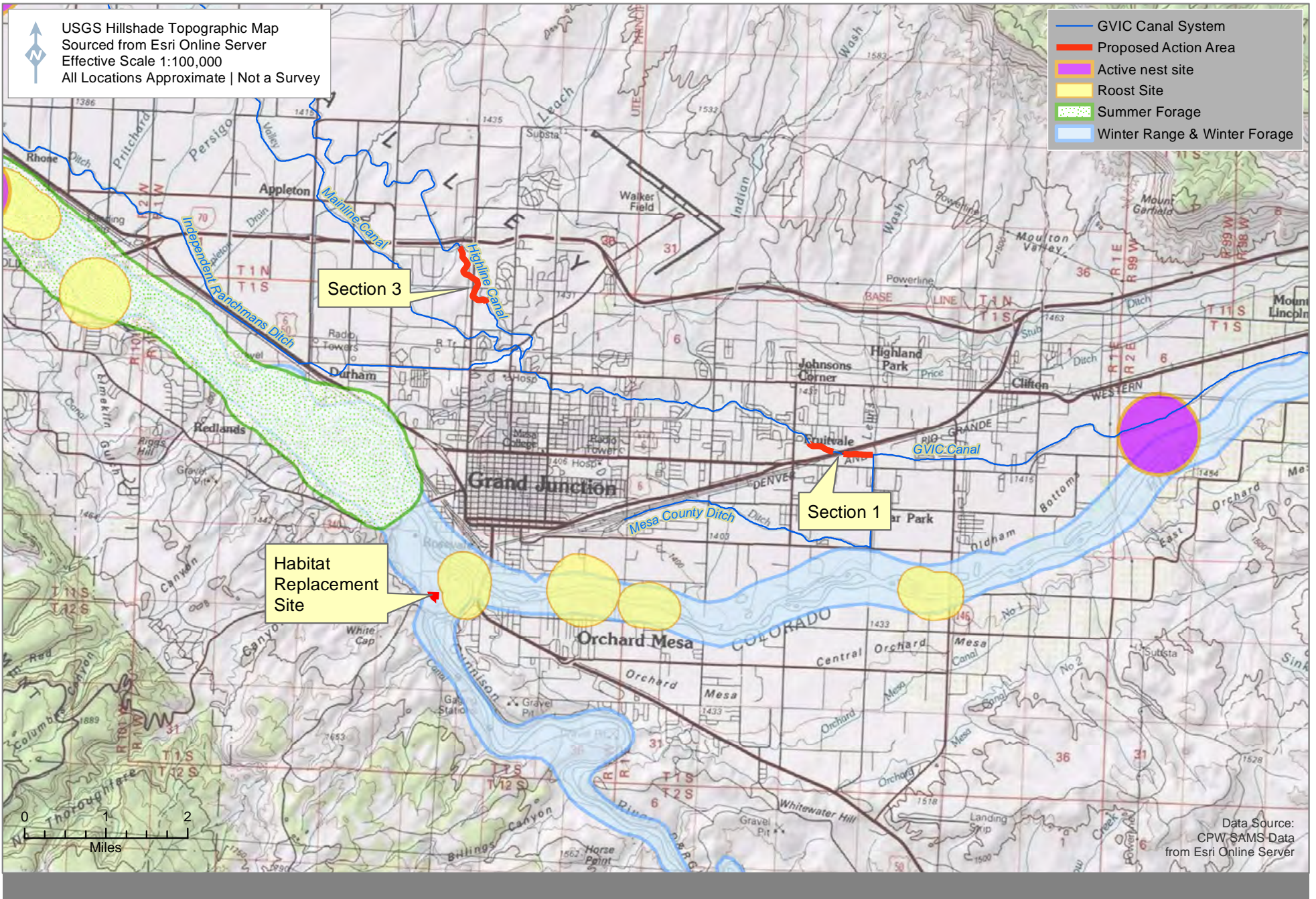


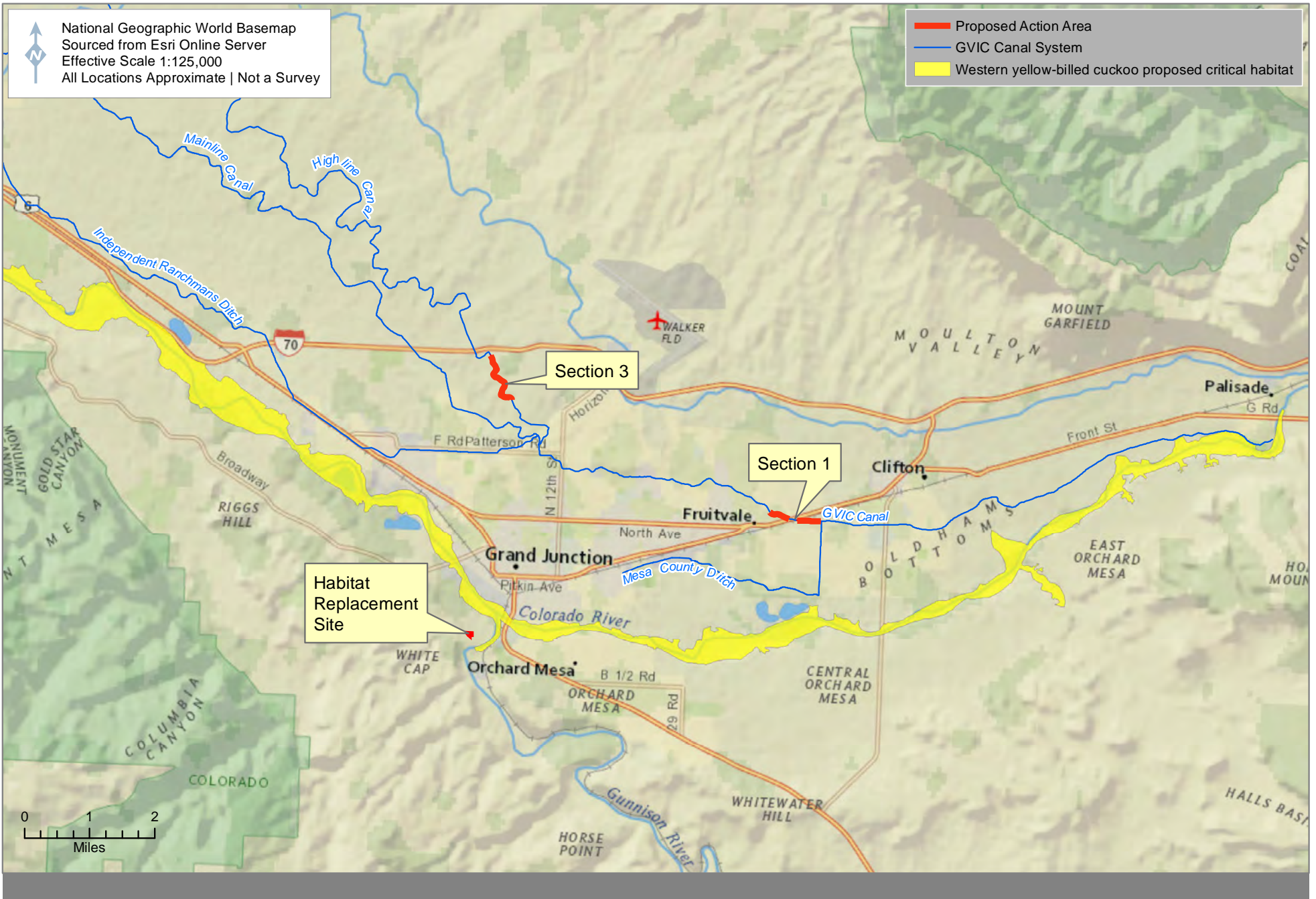
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Sourced from Esri Online Server  
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 Proposed Action Area







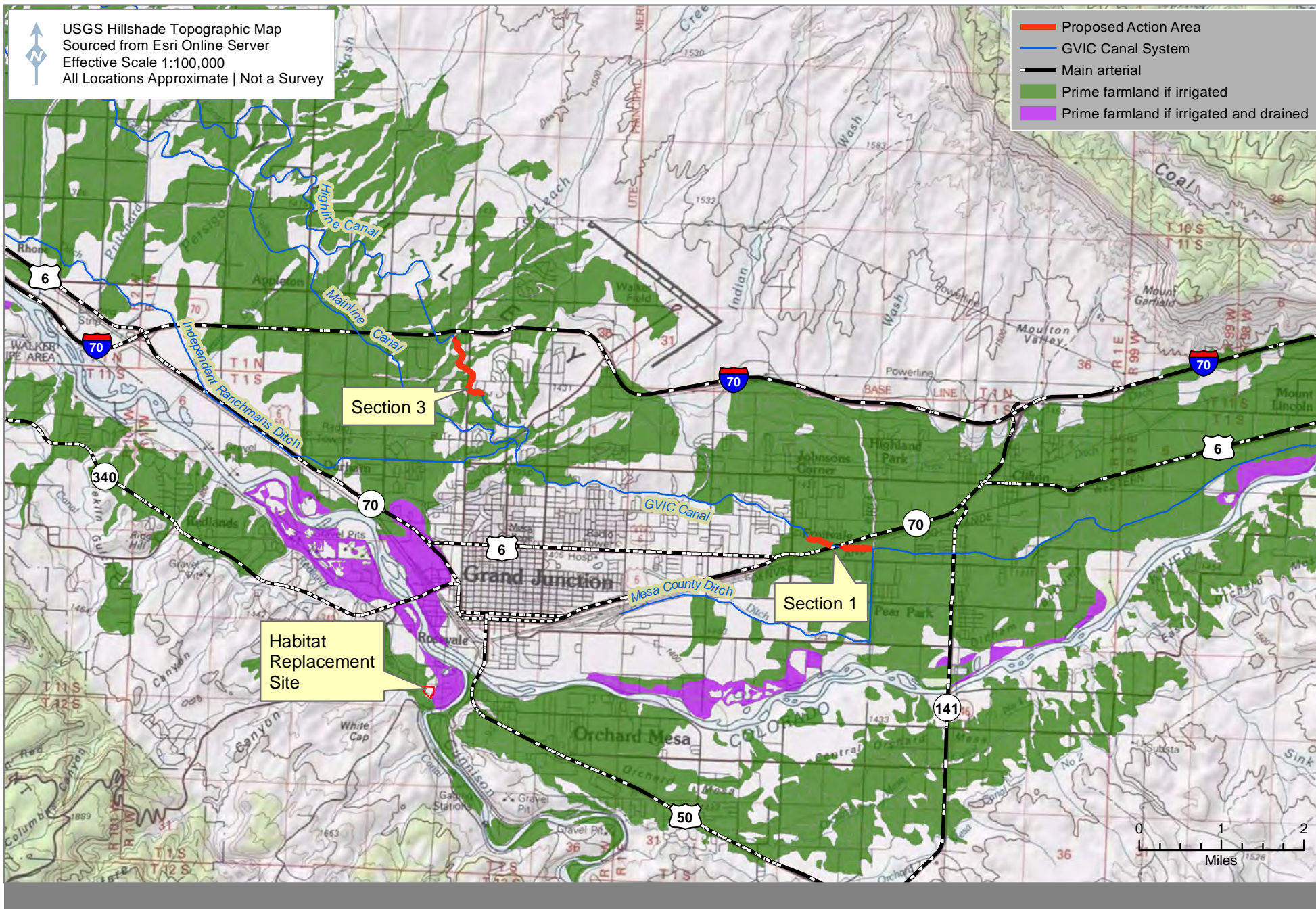


Environmental Assessment  
Mesa County, Colorado  
www.rareearthscience.com  
Map by H. Watts | September 2017

## Western Yellow-Billed Cuckoo Proposed Critical Habitat

**GVIC  
PROJECT 540**

FIGURE  
**7**



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## **ATTACHMENT A**

Comment Letter Received on the DRAFT EA

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From: J N <GreaterNorthRoad@hotmail.com>  
Date: Fri, Dec 1, 2017 at 6:22 PM  
Subject: RE: Comments for the Bureau of Reclamation Draft Environmental Proposal  
To: "jward@usbr.gov" <jward@usbr.gov>, "mwernke@ubr.gov" <mwernke@ubr.gov>  
Cc: "akpnoble@gmail.com" <akpnoble@gmail.com>, Kathleen Haney <khaney1998@gmail.com>

Western Colorado Area  
Office  
12/01/2017

Jenny Ward

RE: Comments for the Bureau of Reclamation Draft Environmental Proposal

Jenny:

I am writing this email in response to a Letter that was sent out requesting comments on the “Draft Release of the Environmental Assessment for the Grand Valley Irrigation Company’s Phase 4-504 Canal Lining Project”.

History: My Mother and Father (deceased) was born in Colorado back in the mid to late 1930’s. My mother was born in Delta Colorado, while my Father was born in Gunnison.

After my Father was Honorably Discharged from the Navy, my parents were married and briefly moved to the State of California. In 1969 they decided to move our family to Alaska to live the Alaskan Lifestyle.

It is a place I still call home.

Later in life, my sister got married and decided to move to Grand Junction back in 1993. As the winters in Alaska seemed to get longer, my Mother and Father decided to return to Grand Junction to visit my sister and her husband and take relief from the winter months back in 1993 as well. Eventually, they purchased a house and land located on 694 26 Road, Grand Junction, CO.

The Tree: Part of that purchase included a Large Cottonwood Tree that sank its roots into the ground over 80 years ago, very close to where a canal passes through today. This tree measures approximately 30ft in diameter and stands 60+ feet tall. It appears to be a landmark size tree in the area, and in fact, a local Tree Service Technician that my Mother hired to Prune and Maintain the Tree, told her that he believes it is ranked as the 4<sup>th</sup> largest Cottonwood in the State of Colorado. Unfortunately, I have not been able to find documentation to substantiate that claim, but what I can substantiate is... is that the cost of Tree Service for the Large Cottonwood Tree, and a couple smaller trees on her property, came to \$8,000.00.

The Canal: My mother told me a couple years ago that she heard talk of a proposal to line designated areas of the canal system for the Reduction of Salinity Loading in the Colorado River Basin. Sadly though, on March 18<sup>th</sup> 2015, my Father passed away in Grand Junction and our family was more focused on our Fathers Passing than of the Canals Lining Proposal that was underway.

Since my Father use to visit that tree, along with many other Residents & Travelers who stop by and enjoy her beauty, we are now very concerned about the Life and Health of this Tree. Common sense would dictate that lining that portion of the canal from which that Tree draws water from...would detrimental to the life of this Tree.

The Water: Both my Sister and I have contacted Grand Valley Irrigation Company ([970-242-2762](tel:970-242-2762)). Since my sister lives only a few blocks away from the location of the Tree, as well as GVIC's office, she stopped by in person and talked to them about the concern. As for me, I called and spoke to an individual by the name of "Charlie" who stated that he was in charge of "Engineering of this Canal Project". When I asked him about what he believe would happen to the Tree if it was cut off from its water supply due to canal lining...I didn't get a definitive answer. Instead, his best recommendation to both my Sister and I, was for my Mother to connect a Gardenhose to her Existing Pump and Headgate System to water the Cottonwood Tree. In addition to this idea, he stated that the Tree might just get additional water from the other neighbor's water runoff if we were lucky, but he wasn't sure. When I finally asked him, as the Design Engineer, "How much water would he calculate that tree would require per day to be pumped?" Once again, he did not have a definitive answer and instead referred me to Bookcliff Gardens located in Grand Junction.

So, I next contacted Bookcliff Gardens ([970-242-7766](tel:970-242-7766)) and spoke with an individual named "Dennis". Based on the Cottonwood Trees estimated numbers that I gave him (~30ft Diameter, +60ft Height & 100-150ft Radius Root System) he calculated that, during the summer months with less precipitation, it might require close to 3000 Gallons of Water per Day. Using the calculation with following factors (1/2" Garden Hose, 40psi, 100ft Hose length) averages out to 360 gallons per hour. This would require around 8 hours per day of constant pump activity or 240 hours per month (not considering mechanical failures or cost of electricity and overhead etc.)

The Proposal: Finally, I spoke with Kamie Long (Grand Junction District Forester [970-248-7325](tel:970-248-7325)) and she agreed that lining the canal would most likely be a slow death sentence to the life of the Cottonwood Tree located on 694 26 Road in Grand Junction, Colorado. I have attached a letter of concern that Kamie wrote for your consideration.

It is our Families Comments (Patricia Noble, Kathleen & Steve Haney and James & Kelly Noble) that, in agreement with the recommendations of Kamie Long (District Forester) a portion of the Canal which runs through my Mothers Property and adjacent to the Cottonwood Trees Root System, be exempt from the Canal Lining Proposal.

Let's Save this Beautiful Cottonwood Tree!: Please review and forward these comments to the appropriate departments and reply me back to answer any questions or clarifications. I look forward to reviewing any conclusions that are made in relation to this email.

Respectfully,

James Noble



Grand Junction District  
2764 Compass Drive Suite 101  
Grand Junction, CO 81506  
(970) 248-7325

November 20, 2017

To whom it may concern:

I am writing about the large cottonwood tree at 694 26 Road in Grand Junction, Colorado. This mature cottonwood tree is located adjacent to 26 Road and has been accessing water from the irrigation canal located to the east of the tree. This tree is approximately 86 inches in diameter, 60+ feet tall, and at least 80 years old. It has been providing oxygen, shade, wildlife habitat, and beauty to the Grand Valley for decades and has a value beyond just dollars.

A tree this size will have a root system that extends at least 100 feet out from the tree in a circle (radius). Any change in grading, trenching, or water availability within this zone will have a significant and negative impact on the tree's overall health. Cottonwood are highly dependent on the hydrology in which they evolved. Lining the canal adjacent to this tree will be a slow death sentence. The tree will slowly begin to decline, with large branches dying as the tree reduces its canopy due to the significant change in water availability. As this tree is located next to 26 Road, dead branches represent a serious risk to vehicles, bicyclists, and pedestrian traffic. Lining the canal will make an abrupt change in the water table and water availability in the summer, and as I have stated, this will be very detrimental to the tree. We have observed this happen to other cottonwood trees in the Grand Valley when the ditches and canals have been lined.

My recommendation is to hold off on lining the ditch near the tree until the tree dies naturally. The unlined portion should be approximately 60-70 feet total in length, but cover both up and down stream. If the irrigation company is unwilling to postpone the lining, the tree should be removed due to future safety concerns for 26 Road.

Feel free to contact me with additional questions about these recommendations.



Kamie Long  
District Forester

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## **ATTACHMENT B**

### Distribution List

All landowners adjacent to the Proposed Action Canal Lining Component  
City of Grand Junction Community Development Division  
City of Grand Junction Engineering Division  
Clifton Water District  
Charter Spectrum / Spectrum Company  
Colorado Department of Public Health & Environment  
Colorado Department of Transportation  
Colorado Parks and Wildlife  
Colorado River Water Conservation District  
Colorado Water Conservation Board  
Denver and Rio Grande Western Railway  
Grand Junction Drainage District  
Mesa Conservation District  
Mesa County Public Works  
The Daily Sentinel  
U.S. Army Corps of Engineers  
U.S. Department of Agriculture Natural Resources Conservation Service  
U.S. Fish and Wildlife Service  
Ute Water Conservancy District  
Western Colorado Congress  
Xcel Energy, Grand Junction

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## **ATTACHMENT C**

### Section 404 Clean Water Act Exemption Documentation

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On Fri, Nov 24, 2017 at 3:00 PM, Morse, W Travis CIV USARMY CESPCK (US) <[w.travis.morse@usace.army.mil](mailto:w.travis.morse@usace.army.mil)> wrote:

Hi Dawn,

Based on my understanding of your project: (1) I agree that the Grand Valley Canal, at the proposed project area, meets the definition of an irrigation ditch; and (2) I agree that your proposed activity (i.e., lining the ditch) does not satisfy the recapture test as described in RGL 07-02. Therefore, it does not appear that a CWA 404 authorization is necessary for the proposed piping project.

Please reference SPK-2017-00869 in any related correspondence.

Sincerely,

Travis Morse  
Senior Project Manager  
Colorado West Section  
U.S. Army Corps of Engineers  
400 Rood Avenue, Room 224  
Grand Junction, Colorado 81501  
(970) 243-1199 ext. 1014

Please provide us with your feedback by filling out a customer survey at [http://corpsmapu.usace.army.mil/cm\\_apex/f?p=regulatory\\_survey](http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey)

For more information about our program, you can visit our website at <http://www.spk.usace.army.mil/Missions/Regulatory.aspx>

Please note: Our out-of-office notification has been disabled. If I do not respond to your message in a few days, I may be out of the office. I will respond as soon as I am able.

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

From: Dawn Reeder [mailto:[dawn@rareearthscience.com](mailto:dawn@rareearthscience.com)]

Sent: Tuesday, November 21, 2017 2:47 PM

To: Morse, W Travis CIV USARMY CESPCK (US) <[w.travis.morse@usace.army.mil](mailto:w.travis.morse@usace.army.mil)>

Cc: Ward, Jennifer <[jward@usbr.gov](mailto:jward@usbr.gov)>; Lesley Mcwhirter <[lmcwhirter@usbr.gov](mailto:lmcwhirter@usbr.gov)>; Amanda Ewing <[aewing@usbr.gov](mailto:aewing@usbr.gov)>; Charles D. Guenther <[charlieg@sprynet.com](mailto:charlieg@sprynet.com)>; Craig Ullmann <[craigullmann@applegategroup.com](mailto:craigullmann@applegategroup.com)>

Subject: [EXTERNAL] Section 404 Exemption Verification Request (Informal) - GVIC 540 Project

Hi Travis,

As we spoke about on the phone last week, here is a brief synopsis of the upcoming Grand Valley Irrigation Company's (GVIC's) Phase 4 - Project 540 Canal Lining Project or "Proposed Action" (see attached figures). We are seeking your concurrence (informally) that this project meets the Irrigation Exemption under Section 404 of the Clean Water Act.

This Proposed Action is an agricultural irrigation salinity control project authorized by the Colorado River Basin Salinity Control Act and funded through the U.S. Department of the Interior's Bureau of Reclamation's ("Reclamation's") Colorado River Basinwide Salinity Control Program.

#### Proposed Action Description

The Proposed Action would involve installing 1.64 miles of impervious liner (PVC membrane protected by shotcrete) in the Grand Valley Irrigation Canal (GVIC) System in Grand Junction (Figure 1), and is expected to reduce salinity loading in the Colorado River basin by an estimated 2,363 tons of salt per year. Along with installation of the liner system on two segments of the canal system (Figures 2a and 2b), the Company would replace the irrigation headgates in each section with new concrete structures with punch plate trash screens. Included in the Proposed Action is an offsite habitat replacement project.

The water carried by the GVIC System is used for agricultural purposes, and the amount of water currently being diverted and conveyed through the GVIC System, will not change. The canal segments currently support a narrow margin of emergent wetland vegetation at the canal waterline. This wetland vegetation would be lost as a result of canal lining, and the loss would be compensated for with the offsite habitat replacement project.

The habitat replacement project would occur on a 7.9-acre parcel ("Habitat Replacement Site") that is part of the Reclamation-owned Grand Junction Wildlife Area and north of the Reclamation Shop in the Redlands area of Grand Junction (Figure 2c). The Habitat Replacement Site is a former agricultural field with a preponderance of non-native vegetation. The plan is to enhance the wildlife values of the parcel by seeding a mix of native grasses, forbs, and shrubs; with plantings of young native riparian trees and shrubs; and by controlling and removing noxious weeds. Replacement of an existing irrigation headgate on the Redlands Power Canal adjacent to the site would be necessary in order to deliver irrigation water to the habitat replacement project. No filling or dredging of wetlands or waters of the U.S. would occur as part of the habitat replacement plan.

#### Information in Support of the Exemption

a. Under Regulatory Guidance Letter 07-02 (RGL 07-02), the canals of the GVIC System meet the definition of an irrigation ditch because they are man-made features that convey water to an ultimate irrigation use. No part of the GVIC System involved in the Proposed Action is a natural or man-altered natural water body. The activities to be conducted under the Proposed Action, including canal lining and canal headgate replacements, and the headgate replacement on the Redlands Power Canal for the habitat replacement component, meet the definition of "construction" in that they are "ditch lining," or associated with construction or maintenance of "siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant to and functionally related to irrigation ditches."

b. The Recapture Provision of RGL 07-02 does not apply because the lining of canal sections and replacement of a headgate involved in the Proposed Action will not result in a significant discernible alteration in flow or circulation, or a reduction in reach, of waters of the U.S. The location and amount of water currently being diverted will not change. Appropriate Best Management Practices will be implemented during construction to ensure that there will be no discharge of dredged or fill material into waters of the U.S. which contains toxic pollutants as defined under Section 307 of the Clean Water

Act.

Do you agree with my determination that the above-described Proposed Action qualifies for the Section 404 Irrigation Exemption, and that the habitat replacement activities would not require a Section 404 Permit?

Thanks for your time on this, and Happy Thanksgiving!

-dr

Dawn Reeder  
Rare Earth Science



**US Army Corps of Engineers**

Sacramento District  
 1325 J Street  
 Sacramento, CA 958 14-2922

# Irrigation Exemption Summary

## FARM OR STOCK POND OR IRRIGATION DITCH CONSTRUCTION OR MAINTENANCE

Pursuant to Section 404 of the Clean Water Act (33 USC 1344) and Federal Regulations (33 CFR 323.4(a)(3)), certain discharges for the construction or maintenance of farm or stock ponds or irrigation ditches have been exempted from requiring a Section 404 permit. Included in the exemption are the construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance (but not the construction) of drainage ditches. Discharges associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant and functionally related to irrigation ditches are included in this exemption.

A Section 404 permit is required if either of the following occurs:

- (1) Any discharge of dredged or fill material resulting from the above activities which contains any toxic pollutant listed under Section 307 of the Clean Water Act shall be subject to any applicable toxic effluent standard or prohibition, and shall require a permit.
- (2) Any discharge of dredged or fill material into waters of the United States incidental to the above activities must have a permit if it is part of an activity whose purpose is to convert an area of the waters of the United States into a use to which it was not previously subject, where the flow or circulation of waters of the United States may be impaired or the reach of such waters reduced. Where the proposed discharge will result in significant discernible alterations to flow or circulation, the presumption is that flow or circulation may be impaired by such alteration. For example, a permit will be required for the conversion of a wetland from silvicultural to agricultural use when there is a discharge of dredged or fill material into waters of the United States in conjunction with construction of dikes, drainage ditches, or other works or structures used to effect such conversion. A discharge which elevates the bottom of waters of the United States without converting it to dry land does not thereby reduce the reach of, but may alter the flow or circulation of, waters of the United States.

If the proposed discharge satisfies all of the above restrictions, it is automatically exempted and no further permit action from the Corps of Engineers is required. If any of the restrictions of this exemption will not be complied with, a permit is required and should be requested using ENG Form 4345 (Application for a Department of the Army permit). A nationwide permit authorized by the Clean Water Act may be available for the proposed work. State or local approval of the work may also be required.

For general information on the Corps' Regulatory Program please check our web site at [www.spk.army.mil/regulatory](http://www.spk.army.mil/regulatory). For additional information or for a written determination regarding a specific project, please contact the Corps at the following addresses:

Sacramento Main Office-1325 J Street, Room 1480, Sacramento, CA 95814	(916) 557-5250
Redding Field Office-152 Hartnell, Redding, CA 96002	(530) 223-9534
Reno Office-300 Booth Street, Room 2103, Reno, NV 89509	(775) 784-5304
Intermountain Region Main Office-533 West 2600 South, Suite 150, Bountiful, UT 84010	(801) 295-8380
Colorado/Gunnison Basin Office-402 Rood Ave., Room 142, Grand Junction, CO 81501	(970) 243-1199
Durango Office-278 Sawyer Dr., Unit #1, Durango, CO 81301	(970) 375-9508
Frisco Office-301 W Main, Suite 202, P.O. Box 607, Frisco, CO 80443	(970) 688-9876
St. George Office-321 North Mall Drive, Suite L-101, St. George, UT 84790	(435) 986-3979

**ATTACHMENT D**  
Habitat Replacement Plan

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**Habitat Replacement Plan  
Grand Junction Wildlife Area  
Field North of Bureau of Reclamation Shop  
Grand Valley Irrigation Company Canal Grant 2015  
GS-540 (Phase IV)**



Cover Photo: West view of Field North of BOR Shop

**Prepared for:**  
Grand Valley Irrigation Company  
688 26 Road  
Grand Junction, CO 81506

**Prepared by:**  
WestWater Engineering  
2516 Foresight Circle #1  
Grand Junction, CO 81505

**October 2017**

**Certification and Acceptance of:  
GJWA Field North of BOR Shop 6.4 Acres GS-540 Habitat Replacement Plan**

Authorizations		
Action	Signature & Title	Date
Prepared By: (contractor)	Dean R. Goebel <i>Dean R. Goebel</i> Hydrogeologist WestWater Engineering	11/14/2017
Submitted By: (Irrigation Company)		
Reviewed and Accepted* By: (Reclamation)		

Scheduled completion date of implementation is fall 2018.

\*Disclaimer: Reclamation's acceptance of the Habitat Replacement Plan does not constitute technical approval of the design. This habitat replacement project is projected to create 14.7 habitat units. This scoring is an estimated projection, and is not a guarantee or a statement of habitat units available to the Grand Valley Irrigation Company.



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## I. INTRODUCTION

The Bureau of Reclamation (BOR) solicited applications for salinity control efforts in the Upper Colorado River Basin in the summer of 2015. The Grand Valley Irrigation Company (GVIC) applied, and their GS-540 (Phase IV) Lining Project (project) was selected, for funding. GVIC entered into a Cooperative Agreement (Agreement No. R16AC00014) with the Department of Interior, Bureau of Reclamation, under the authorization of the Colorado River Basin Salinity Control Act (Act) to line existing canals in the Grand Valley to control seepage. As a requirement of the Act, measures must be implemented to replace incidental fish and wildlife values lost as a result of the salinity control project. It was determined that a total of 8.78 Habitat Units need to be replaced (WestWater Engineering, 2016).

WestWater Engineering (WestWater) was requested by GVIC to perform a habitat assessment and to develop a habitat replacement plan on a 7.9-acre parcel (Parcel No. 2945-224-00-238) that is part of the 134.4-acre Grand Junction Wildlife Area (GJWA) in Grand Junction, Colorado. The GJWA, purchased by the BOR in 1995, is adjacent to the Gunnison River along its south and east border, Colorado River along the north, and the Redlands Power Canal along the lower half of the west boundary. The 7.9-acre parcel is referred to herein as the “Field North of BOR Shop”.

The habitat assessment and plan cover 6.4 acres of the 7.9-acre parcel. A Habitat Quality Score (HQS) was established for the existing habitat on Field North of BOR Shop (Figure 1), using the *Basinwide Salinity Control Program: Procedures for Habitat Replacement* (March 2013). Areas excluded from the assessment include those to the south where the BOR shop and surrounding lay-down yard used to store equipment and supplies is located, and an approximately 40-foot buffer area in the north where the site abuts privately owned land occupied by a residence and outbuildings.

In order to replace lost habitat values from the canal lining project, a habitat replacement plan has been prepared for the Field North of BOR Shop that will increase the area’s existing habitat value by a minimum of the amount lost from the lining project. The habitat replacement plan involves eradicating existing weeds on the site prior to seeding and planting the site to increase plant diversity with herbaceous plants, shrubs, and trees. As proposed plantings become established the existing Russian olive trees will be thinned up to 50 percent. This habitat replacement plan is expected to yield 14.7 habitat units.

### A. Background

GVIC is a privately owned, non-profit, mutually funded irrigation company. The company holds a 640 cubic feet per second (cfs) direct flow water right from the Colorado River near Palisade, Colorado for irrigation of approximately 34,000 acres. The company service area is located along the north side of the Colorado River within the Grand Valley.

## II. RESPONSIBLE PARTIES

Responsible Party	Primary Contact	Address	Phone Number and E-mail Address
Grand Valley Irrigation Company	Charles Guenther, Assistant Superintendent	688 26 Road Grand Junction, CO 81506	970-242-2762 charlieg@sprynet.com
Bureau of Reclamation (Land Owner)	Melissa Werkmeister, Land and Recreation Manager	445 West Gunnison Ave., Suite 221 Grand Junction, CO 81501	970-248-0636 mwerkmeister@usbr.gov v
Bureau of Reclamation (SCP Habitat Replacement)	Amanda Ewing, Biologist	445 West Gunnison Ave., Suite 221 Grand Junction, CO 81501	970-248-0631 aewing@usbr.gov
WestWater Engineering (Preparer of habitat replacement plan)	Dean Goebel, Hydrogeologist/ Environmental Scientist	2516 Foresight Circle #1 Grand Junction, CO 81505	970-241-7076 drg@westwaterco.com

## III. PROJECT LOCATION

GJWA is located east of 25 ¾ Road in Grand Junction, Colorado in Section 21 and 22, Township 1 South, Range 1 West, Ute Meridian (Figure 1). The 7.9-acre site is located in the southwestern portion of the parcel north of the Gunnison River and immediately east of the Redlands Power Canal that borders the habitat replacement site along its lower west boundary.

## IV. EXISTING SITE CONDITONS

The Field North of BOR Shop habitat replacement site is a former agricultural field that was part of the defunct Clymer Dairy operation prior to being purchased and incorporated as part of the Grand Junction Wildlife Area. The surrounding areas are comprised of agricultural areas, wildlife conservation areas, and residential areas.

Habitat types present along the canal and agricultural field provide nesting, foraging and cover for various wildlife species including: migratory bird species, small mammal species, and big game.

### A. Vegetation

Existing vegetation consists largely of intermediate wheatgrass (*Thinopyrum intermedium*) in the central portion of the site with smooth brome (*Bromus inermis*) in an area north of the BOR shop and in the eastern site area and inland saltgrass (*Distichlis spicata*) in the western portion of site outside the influence of discharged seep water from the Redlands Power Canal. Along

the Redlands Power Canal a riparian corridor exists consisting of Russian olive (*Elaeagnus angustifolia*), cottonwood (*Populus* spp.) and Siberian elm (*Ulmus pumila*) with an understory of common reed (*Phragmites australis*). Russian olive and greasewood (*Sarcobatus vermiculatus*) are present in the southeastern corner of the parcel. Sedges (*Carex* spp.) and cattail (*Typha latifolia*) are present in a small area within an existing waste drainage ditch. The north portion of the field has some nuisance weedy species present and scattered whitetop (*Cardaria draba*), a State of Colorado listed noxious weed (Figure 2).

## B. Hydrology

Site vegetation is hydrologically supported by groundwater discharge from the Redlands Power Canal. Hydrology supporting fringe vegetation also stems from surface water conveyed in a waste drainage ditch that collects storm water from a private residence located west of the Redlands Power Canal. Water in this ditch along with water formerly carried in a remnant tailwater ditch along the east property line enters a culvert in the northeast corner of the site that crosses under 25 ¾ Road and eventually discharges to the Gunnison River.

## C. Soils

Table 1 and Figure 2 depict the Natural Resources Conservation Service (NRCS) soil map units for the Field North of the BOR Shop (NRCS 2017).

**Table 1. Soil Types within Field North of BOR Shop.**

NRCS Map Unit Name	Texture(s)	Description
Massadona silty clay loam (Ba), 0 to 2 percent slopes	0-2" Silty Clay Loam 2-24" Silty Clay 24-60" Silty Clay Loam to Fine Sandy Loam	Found as fan remnants at an elevation range between 4,500 to 4,900 feet. Parent material consists of alluvium derived from clayey shale. Not prime farmland.
Turley clay loam (Tr), 0 to 2 percent slopes	0-10" Clay Loam 10-20" Fine Sandy Loam 20-30" Clay Loam 30-60" Silty Clay Loam	Found as fan remnants at an elevation range between 4,500 to 4,900 feet. Parent material consists of alluvium derived from sandstone and shale. Prime farmland if irrigated.
Green River clay loam (Gm), 0 to 2 percent slopes	0-10" Silty Clay Loam 10-52" Fine Sandy Loam 52-60" Very Cobbly Sand	Found on terraces and floodplains at an elevation range between 4,430 to 4,820 feet. Parent material clayey alluvium over coarse-loamy alluvium derived from sandstone and shale. Prime farmland if irrigated and drained.

## V. EXISTING SITE CONDITONS

The habitat assessment was completed using the protocols outlined in the *Basinwide Salinity Control Program: Procedures for Habitat Replacement* (Habitat Replacement Procedures) document prepared by the Bureau of Reclamation and U.S. Fish and Wildlife Service (USFWS, BOR 2013). Field work was performed by WestWater biologists on March 16<sup>th</sup> and April 4<sup>th</sup>, 2017 to determine the existing HQS score at the site. Photographs were taken of the habitat and biological features found during the survey (Appendix A).

There are 10 evaluation criteria used to determine the HQS and replacement Habitat Units for the site. Table 2 lists the scores given to this project site for each criterion, the HQS, and the Habitat Units for existing conditions.

**Table 2. Habitat Quality Score for Existing Conditions of Field North of BOR Shop.**

Evaluation Criteria	Score	Rationale
Vegetative Diversity	3	Low diversity present consisting of large areas dominated by either inland saltgrass, smooth brome, or intermediate wheatgrass.
Stratification	6	This is a former agricultural field planted with grass species, but not actively being utilized as such. However, the site is functioning as it was designed. Greasewood and Russian Olive have begun to establish along the outer edges of the site.
Native Species vs. Nonnative Species	4	Approximately 40% of the species present are native and 60% are nonnative. Nonnative species include common reed, intermediate wheatgrass, and Russian olive.
Noxious Weeds	4	Russian olive is present along the Redlands Power Canal and along the western edge of the site. Scattered whitetop is present throughout the site. Noxious weeds cover approximately 15% of the site.
Overall Vegetative Condition Health	6	30% of the pasture grass species are stressed due to lack of water, but no disease or infestation is apparent.
Interspersion of Open Water	1	Low interspersion of open water with the vegetation since vegetation is located linear to the canal.
Connectivity	10	Within a wildlife habitat conservation area. Wildlife may utilize the agricultural fields adjacent to the canal and Gunnison River.
Uniqueness or Abundance	4	Exhibits medium value for wildlife. Tree species are present along eastern and western edges, providing some habitat for bird and mammal species. Agricultural field available for foraging. Fencing present in general area, but doesn't inhibit wildlife use. Relatively close to the Gunnison River.

<b>Evaluation Criteria</b>	<b>Score</b>	<b>Rationale</b>
Water Supply	2	Water supply is not from a natural flowing stream but would be dependent on irrigation delivery systems, seepage from the Redlands Power Canal, and high water tables. Currently irrigation is not supplied to the site.
Alteration	6	30% of the land has been developed/altered.
<b>Total Habitat Value</b>	<b>46</b>	
<b>Habitat Quality Score</b>	<b>4.6</b>	
<b>Total Acres</b>	<b>6.4</b>	
<b>Habitat Units</b>	<b>29.4</b>	

## **VI. HABITAT REPLACEMENT PLAN OBJECTIVES**

This habitat replacement plan identifies the objectives and methodologies for improving wildlife habitat for the purpose of replacing 8.78 habitat units lost as a result of the canal lining project. The desired site conditions attained through this habitat replacement plan include increased plant diversity, multi-layer stratification in understory and canopy, and decrease noxious weed cover.

The overall objectives of this plan are: expand the riparian corridor near the Redlands Power Canal and reclaim the former agricultural field to a more natural state through the development of woodland and shrubland communities. This will be accomplished by removing Russian olive and elm trees, planting multi-canopy layers of trees and shrubs, seeding forbs and grasses, creating a more reliable water source, and controlling noxious weeds. The habitat replacement plan for Field North of BOR Shop will improve the existing riparian community along Redlands Power Canal and create an additional 2.7+ acre of riparian community. The remaining portions of the habitat replacement site will be revegetated with woodland and shrubland species, which will enhance bird and other wildlife habitat of the site.

Habitat units expected to be created by implementing this habitat replacement plan were determined using the Habitat Replacement Procedures. After implementation of this habitat replacement plan and once the habitat area is fully functional, the area is expected to yield 14.7 habitat units. These units will offset the 8.78 habitat units lost as a result of the canal lining project. Rationale for the 14.7 habitat unit gain is provided in Table 3.

All components of the habitat replacement plan will be implemented during late summer 2018, followed by multi-year monitoring until vegetation has established and is sustainable. GVIC is

responsible for preparing and implementing the habitat replacement plan, monitoring, maintenance and adaptive management strategies through the term of their cooperative agreement with the BOR, assuming the habitat project has been fully implemented and is meeting project objectives.

**Table 3. Habitat Quality Score Comparison of Existing Conditions vs. Projected Conditions following Implementation of the Habitat Replacement Plan**

<b>Evaluation Criteria</b>	<b>Existing Score</b>	<b>Existing Score</b>	<b>Projected Score</b>	<b>Projected Score</b>
Vegetative Diversity	3	Low diversity present consisting of large areas dominated by either inland saltgrass, smooth brome, or intermediate wheatgrass.	7	Seed for native (upland) grasses to increase herbaceous species diversity and plant shrubs and tree canopy in designated areas.
Stratification	6	This is a former agricultural field planted with grass species, but not actively being utilized as such. However, the site is functioning as it was designed. Greasewood and Russian Olive have become established along the outer edges of the site.	10	Add shrub and tree canopy in designated areas. All appropriate layers are present and functioning
Native Species vs. Nonnative Species	4	Approximately 40% of the species present are native and 60 % are nonnative. Nonnative species include common reed, intermediate wheatgrass, and Russian olive.	8	Decrease nonnative species by adding additional grass species in areas dominated by intermediate wheatgrass and removal of at least 50% of the Russian olive. Approximately 80% of the species

<b>Evaluation Criteria</b>	<b>Existing Score</b>	<b>Existing Score</b>	<b>Projected Score</b>	<b>Projected Score</b>
Noxious Weeds	4	Russian olive is present along the Redlands Power Canal and along the western edge of the site. Scattered whitetop is present throughout the site. Noxious weeds cover approximately 15% of the site.	8	Spray areas of concentrated whitetop. Removal of over 50% of the Russian olive present on the site.
Overall Vegetative Condition Health	6	30% of the pasture grass species are stressed due to lack of water, but no disease or infestation is	8	Seed and plant species that will not require regular irrigation once established.
Interspersion of Open Water	1	Low interspersion of open water with the vegetation since vegetation is located linear to the canal.	1	No change
Connectivity	10	Within a wildlife habitat conservation area. Wildlife may utilize the agricultural fields adjacent the	10	No change
Uniqueness or Abundance	4	Exhibits medium value for wildlife. Tree species are present along eastern and western edges,	5	Increase species diversity and add additional canopy layers.
Water Supply	2	Water supply is not from a natural flowing stream but would be dependent on irrigation delivery systems,	6	Increase water availability by replacing existing irrigation headgate.
Alteration	6	30% for the land has been developed/altered.	6	No Change



<b>Evaluation Criteria</b>	<b>Existing Score</b>	<b>Existing Score</b>	<b>Projected Score</b>	<b>Projected Score</b>
<b>Total Habitat Value</b>	<b>46</b>		<b>69</b>	
<b>Habitat Quality Score</b>	<b>4.6</b>		<b>6.9</b>	
<b>Total Acres</b>	<b>6.4</b>		<b>6.4</b>	
<b>Habitat Units</b>	<b>29.44</b>		<b>44.16</b>	

## **VII. HABITAT REPLACEMENT WORK PLAN**

Project tasks and the responsible parties are outlined below. The schedule of tasks and costs are identified in Table 4.

**Table 4. Project Schedule and Cost per Task.**

<b>Task</b>	<b>Scheduled Completion Date</b>	<b>Approximate Cost</b>
<b>1.</b> Establish photo points and take before photos.	Completed June 2017	Included in price of Habitat Replacement Plan
<b>2.</b> Spray areas of concentrated whitetop.	Spring 2018	\$3,590
<b>3.</b> Removal of Russian olive and elm along the Redlands Power Canal.	Fall 2018	\$18,000 to \$20,0000
<b>4.</b> Repair existing headgate for irrigation.	Fall 2018	\$6,000
<b>5.</b> Seed approximately 3.6 acres with the native seed mix.	Fall 2018	\$13,275
<b>6.</b> Plant 225 riparian tree and shrubs species and a total of 30 juniper and pinyon pine trees.	Fall 2018	\$11,730.00 for plant material (\$40.00 ea) \$10,000 to \$12,000 for labor for delivery, layout,
<b>7.</b> Take after photos of the site.	Fall 2018	Included in the price of the Habitat Replacement Plan
<b>8.</b> Annual monitoring of the site.	Fall. Spring and possibly Summer 2019 and 2020	\$1,500

1. Establish photo point(s) and take before photos.

This task was completed by WestWater Engineering (WestWater) on June 21, 2017. Photo point established at coordinates 39.05125 N and -108.57638 W is displayed on Figure 1 and photos are found in Appendix A.

2. Spray areas of concentrated whitetop to discourage spreading during seeding procedures.

This will be completed by fall 2018

3. Removal of elm and Russian olive trees and saplings along the Redlands Power Canal.

Removal of these invasive tree species will be completed by GVIC or their designated contractors. Excess cut material will be chipped and shredded or removed from the site.

4. Repair or replace existing headgate to reestablish irrigation to the site.

Install an adequate delivery system designed by the BOR.

This will be completed by GVIC or their designated contractor, upon approval from the BOR.

5. Seed approximately 3.6 acres with the native seed mix.

GVIC will use their designated contractor, Julius Equipment, to seed the site. Julius Equipment will provide the equipment and will acquire the seed mix provided in Methods for Establishing the Desired Plan Community section. Seeding will include seedbed preparation, if determined necessary. See Methods for Establishing the Desired Plant Community section of this document of seeding methods and planting locations

6. Plant tree and shrub species.

Riparian trees and shrubs will be planted by GVIC's designated contractor, Bookcliff Gardens. A total of 225 tree and shrubs in 5 to 20 gallon containers will be placed in clusters of 3 or 5 in a drift pattern. An additional 30 juniper and pinyon pine will be offset along a planting center line. See Methods for Establishing the Desired Plant Community section of this document of planting methods and planting locations.

7. Take after photos of the site.

This task will be completed by GVIC or their designated contractor at the designated photo point upon completion of the planting. Photos and descriptions will be provided to the BOR.

8. Annual Monitoring

Monitoring will consist of 2 to 3 visits in 2019 and 2020. A minimum of 2 site visits (spring and fall) and potentially a third visit in the summer to monitor progress will be completed by GVIC or their designated contractor.

## VIII. METHODS FOR ESTABLISHING THE DESIRED PLANT COMMUNITY

### A. Vegetation Selection Criteria

The main goal of the habitat replacement plan is to improve wildlife habitat value by reestablishing native vegetation communities, expanding the riparian community, and establishing an adjacent woodland-shrubland communities.

Additional goals for selecting plant species and revegetation techniques include soil stabilization and erosion control, to improve water quality, and aesthetics. The following plant selection criteria were developed to fulfill the project goals.

1. Plants must be appropriate for the environmental conditions at the site.
2. Plants should increase wildlife habitat value by reestablishing native biodiversity.
3. Plants must provide adequate multi-layer canopy cover.
4. Plants must establish quickly, reducing future maintenance activities, and must be available from native plant sources in the area.

### B. Recommended Plant Species

Several species of tree and shrubs have been selected and are found in Tables 5 and 6. Plants will be purchased as potted plants from Bookcliff Gardens in Grand Junction, Colorado. Factors for determining included species are as follows:

1. Multiple canopy layers.
2. Benefits to bird species, including nesting, cover and foraging potential.
3. Benefits to other wildlife species, including cover and foraging.

**Table 5. Selected Containerized Riparian Tree and Shrub Species that will be planted in Field North of BOR Shop.**

Common Name	Scientific Name	Mature Plant Height (feet)	Estimated Number of Potted Plants
Boxelder	<i>Acer negundo</i>	60 feet	15
Cottonwood	<i>Populus fremontii</i>	40 to 110 feet	25
Mulberry	<i>Morus</i> spp.	40 to 60 feet	15
<b>Total Large Tree Species</b>			<b>55</b>
Silver buffaloberry	<i>Shepherdia argentea</i>	6 to 20 feet	15
Black locust or New Mexico locust	<i>Robinia pseudoacacia</i> or <i>Robinia neomexicana</i>	15 to 30 feet	15
<b>Total Small to Medium Tree Species</b>			<b>30</b>
Chokecherry	<i>Prunus virginiana</i>	30 feet	20
New Mexico privet (Stretchberry)	<i>Forestiera pubescens</i>	12 to 15 feet	30

Common Name	Scientific Name	Mature Plant Height (feet)	Estimated Number of Potted Plants
Skunkbush	<i>Rhus trilobata</i>	2 to 8 feet	30
Woods' rose	<i>Rosa woodsia</i>	2 to 10 feet	30
Golden currant	<i>Ribes aureum</i>	3 to 8 feet	30
<b>Total Shrub Species</b>			<b>140</b>
<b>Total Riparian Species</b>			<b>225</b>

**Table 6. Selected Containerized Upland Tree Species that will be planted in Field North of BOR Shop.**

Common Name	Scientific Name	Mature Plant Height (feet)	Estimated Number of Potted Plants
Juniper	<i>Juniperus</i> spp.	9 to 18 feet	15
Pinyon Pine	<i>Pinus edulis</i>	20 to 30 feet	15
<b>Total Upland Tree Species</b>			<b>30</b>

In addition to containerized trees and shrub species the site will also be seeded for a variety of grass, forb, and shrub species. The seed mix found in Table 7 was determined using several factors, including:

1. Multiple canopy layers.
2. Benefits to bird species, including nesting, cover and foraging potential.
3. Benefits to other wildlife species, including cover and palatability.
4. Benefits to insect and pollinator species, which are food sources for birds and small animals.
5. Inclusion of species tolerant of dry conditions.
6. Addition of several species tolerant of dry to moist conditions, since irrigation at the site is available.

**Table 7. PLS lbs/ac Seeding Rate to Achieve Desired % of Mix.**

Common Name	Scientific Name	Number seeds/lb	% of Mix	Required PLS lbs/acre*
Switchgrass	<i>Panicum virgatum</i>	389,000	10	0.56
Nuttall alkaligrass	<i>Puccinellia nuttalliam</i>	2,788,700	10	0.08
Great Basin wildrye	<i>Leymus cinereus</i>	130,000	10	1.68
Goldenrod	<i>Solidago rigida</i>	771,800	10	0.28
Arrowleaf balsamroot	<i>Balsamorhiza sagittata</i>	55,000	10	3.96
Narroleaf Indian paintbrush	<i>Castilleja linariifolia</i>	4,915,000	10	0.04
White yarrow	<i>Achillea millefolium</i>	2,770,000	10	0.08
Globemallow	<i>Sphaeralcea coccinea</i>	500,000	10	0.44

Common Name	Scientific Name	Number seeds/lb	% of Mix	Required PLS lbs/acre*
Fourwing saltbush	<i>Atriplex canescens</i>	52,000	5	2.09
Rubber rabbitbrush	<i>Ericameria nauseosa</i>	400,000	5	0.27
Mexican cliffrose	<i>Purshia mexicana</i>	15,000	5	7.26
Winterfat	<i>Krascheninnikovia lanata</i>	123,000	5	0.89
<b>Total</b>		<b>12,909,500</b>	<b>100</b>	<b>17.63</b>

\*Based on 50 pure live seeds (PLS) per ft<sup>2</sup>, drill seeded. Double this rate (100 PLS per ft<sup>2</sup>) if broadcast or hydroseeded.

### C. Planting Locations

Riparian trees and shrubs will be planted in two locations (Figure 3). These sites were chosen for their proximity to existing water features and groundwater. During the site visits on March 16<sup>th</sup> and April 4<sup>th</sup>, 2017 it was determined that there were two locations in which the water table was near the soil surface based on species composition and observations.

Riparian Location 1 is located adjacent the Redlands Power Canal and is dominated by Russian olive, cottonwood, and elm trees. This area contributes approximately 1.3 acres of the total site.

Riparian Location 2 is dominated by smooth brome and abuts an existing Russian olive stand. During the initial site visit, this area had soils which were moist to wet to the soil surface.

Therefore, riparian species are believed to at least have saturation to near the soil surface during peak flows. This area will contribute up to 1.4 acres to the site.

The remaining upland area of the site is dominated by intermediate wheatgrass, inland saltgrass, and other weedy species. Greasewood has established to the north. Approximately 3.6 acres will be seeded with various grass, forb, and shrub species, including species tolerant of dry conditions and species tolerant of dry to moist conditions (Figure 3). Juniper and pinyon pine will be planted within the seeded upland area (Figure 3).

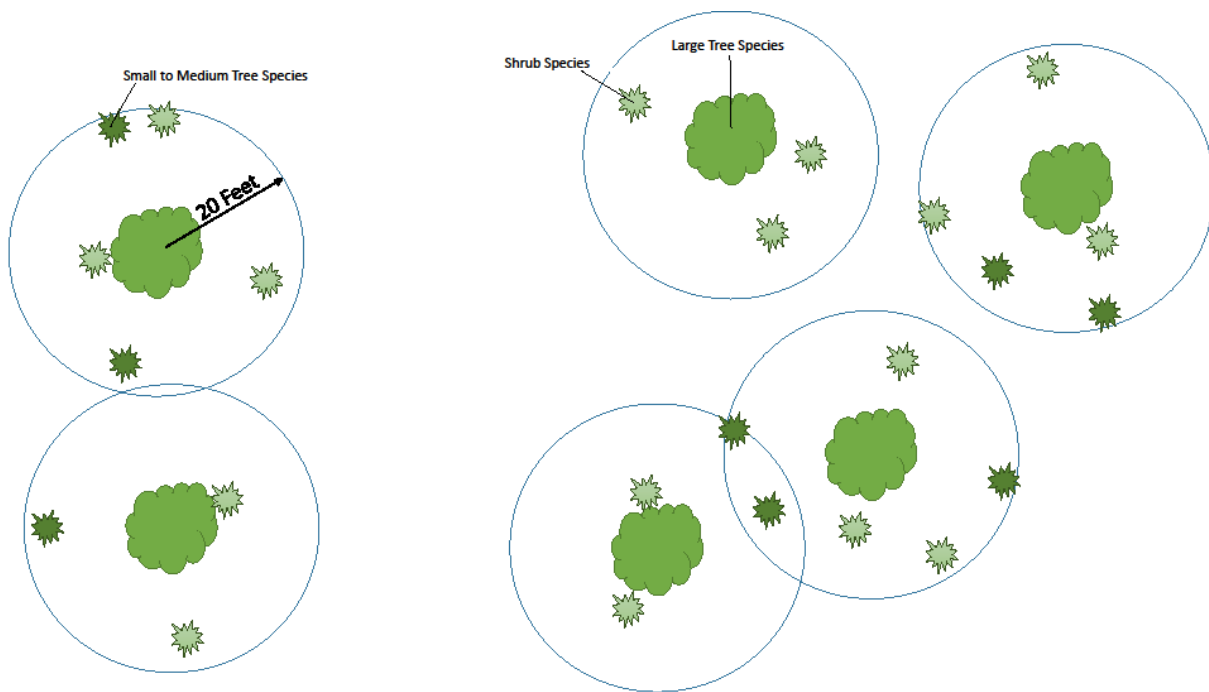
### D. Planting Methods

Currently, smooth brome, intermediate wheatgrass, and inland salt grass are dominant at the site. Approximately 3.6 acres of former agricultural field will be seeded with the seed mix provided in Table 7 to diversify the site. Proposed seeding and planting will be conducted by 3rd party professional contractors that will be provided a copy of this report in order to adhere to planting methods herein. Plant cages and or fencing will be implemented around container plants to prohibit wildlife impacts from browsing.

The objective of seeding the site is not to eradicate the site of the current dominant grass species, but to introduce additional grass and forb species and develop additional canopy layers to increase the wildlife quality. Currently, the site is stable with bunch and rhizomatous grass species, and should not require seedbed preparation. Drill seeding the site is recommended to maximize the seed to soil contact. The seed mix will be applied using a range drill seeder. The seeded areas will be mulched and mechanically crimped using certified straw bales to keep an adequate moisture level in the seedbed to promote germination. Seeding will be conducted in the fall to take advantage of the cooler weather and lower evapotranspirative demands.

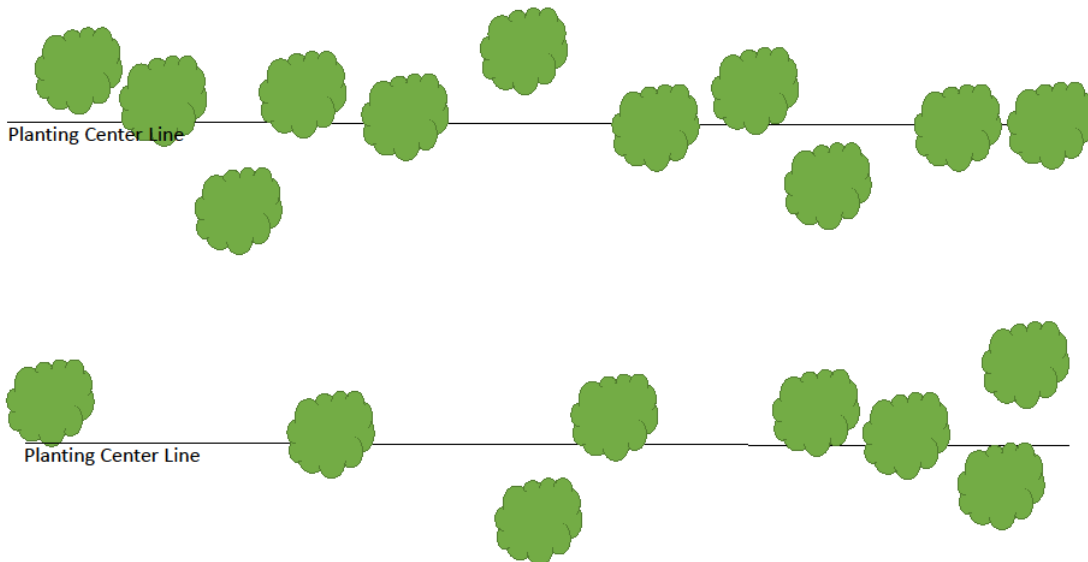
Riparian Location 1 along the Redlands Power Canal will be planted by a professional landscape contractor using 30 large tree species, 30 small to medium tree species, and 80 shrub species (Figure 4). Riparian Location 2 will be planted with 25 large tree species, 20 small to medium tree species, and 40 shrub species. A buffer of 30 to 50 feet from the canal should be provided to prevent damage to the canal banks by large tree root systems. Perpendicular from the buffer, the riparian area should extend approximately 60 to 150 feet, widening on the southern edge (Figure 3). There is no determined riparian/upland boundary and the boundary drawn for the riparian planting locations are just for reference. Best professional judgement should be used during planting when deciding placement of containerized plants. Trees and shrubs can encroach into the seeding area.

Riparian potted plants should be placed in clusters of 3 or 5 in a drift pattern, rather than in a linear fashion, to replicate natural establishment (Figure 5). The larger tree species (cottonwood, boxelder, and mulberry) should be placed no closer than 30 feet apart with small to medium tree species (silver buffaloberry, chokecherry, and locust) and shrubs randomly placed within a 15 to 20 foot radius of the larger tree (Figure 4).



**Figure 4. Proposed spacing and grouping for large to small tree species and shrubs.**

Juniper and pinyon pine will be placed along three linear rows, approximately 10 per row in the seeded upland area of the site (Figure 1). Juniper and pinyon pine should be planted offset along the center line to reduce the appearance of being planted in a linear row. Trees should be placed no closer than 30 feet apart (Figure 4).



**Figure 5. Juniper and pinyon pine planting array in an offset center line to simulate natural conditions.**

Potted shrubs will be hand planted by either by using hand trowels and shovels or a power auger that should be done in the fall. The auger is available through coordination with the BOR. The hole should be dug or augered two times wider than the root ball or container. Plants should be placed 1 to 2 inches lower than the surrounding ground and backfilled with soil from the hole, and then watered. Holes should not be cone-shaped, which allows air pockets in the bottom of the holes and may cause plant mortality (CNAP 1998).

Immediately upon completion of planting the potted shrubs a shallow trough will be dug around the shrub and the shrubs will be watered once using 5 gallon buckets with water collected from the canal, or watered via watering tank. Mulching around the shrubs using wood chips will help conserve moisture around the base of the shrub and control emergent weeds.

### **E. Supplemental Watering**

The BOR is committed to working with the Redland Power Canal Company to reestablish irrigation to the site. GVIC will install or repair the existing headgate in coordination with the BOR. The BOR will contact the Redlands Power Canal Company to achieve an adequate irrigation water delivery system to the improved site. Site irrigation and supplemental watering will be at the discretion of the BOR.

## **F. Prevention and Assessment of Noxious Weed Infestations**

Weed management is costly and heavy infestations may exceed the economic threshold for practical treatment. GVIC will coordinate with a spray contractor for the initial noxious weed treatment with follow-up treatments handled by the BOR. The spray contractor proposes to use Escort, Telar or Cimarron herbicide applied as soon as the weeds emerge in spring. Prevention is especially valuable in the case of noxious weed management. Several simple practices should be employed to prevent most weed infestations. The following practices should be adopted for any activity to reduce the costs of noxious weed control through prevention:

- Prior to delivery to the site, equipment should be thoroughly cleaned of soils remaining from previous construction sites which may be contaminated with noxious weeds.
- If working in sites with weed seed contaminated soil, equipment should be cleaned of potentially seed bearing soils and vegetative debris at the infested area prior to moving to uncontaminated terrain.
- All maintenance vehicles should be regularly cleaned of soil.
- Avoid driving vehicles through areas where weed infestations exist.

## **IX. PERFORMANCE STANDARDS**

The main objective of the habitat replacement plan is to improve wildlife habitat value by reestablishing riparian and native vegetation communities and increase the habitat value by a minimum of 14.7 habitat units.

The following criteria have been established to determine if habitat replacement objectives have been met for this site.

1. At least 75% survival of the potted plants (i.e., 191 surviving plants of the 255 total trees and shrubs planted) will have lived through the end of the following growing season. Should mortality of the planted shrubs exceed this number, GVIC will provide the BOR with additional shrubs for planting at locations determined by the BOR, or will replant the shrubs lost in Field North of BOR Shop. GVIC is responsible for ensuring the project is meeting objectives; therefore, if mortality of plantings exceed 25%, GVIC will oversee replanting until terms of the cooperative agreement are met and BOR assumes maintenance responsibility.
2. A visual assessment of the seeding area will be completed by qualified GVIC contractor. Species richness, the number of species present at a site, will be recorded. The presence, or lack, of seeded species will be noted. GVIC and or their designated contractor will develop a worksheet to document germination percent is at least 90% for the seed mix with an expected 15% increase in plant diversity/density in the first year and 20% increase in the second year.
3. A visual assessment of noxious weed presence is approximately 1-2% of total plant coverage with a concentrated area in the northwest area of the site (Figure 2). Noxious weed presence (Russian olive and whitetop) should decrease by 50% of existing



conditions. GVIC will oversee the whitetop sprayed area and work with spray contractor to meet performance standards by decreasing noxious weeds by 50%. Recourse for additional spaying will be based on these recorded observations.

## **X. MAINTENANCE PLAN**

Containerized trees and shrubs are expensive and are labor intensive to establish. All efforts should be made to ensure the survival of these species. Supplemental watering is cheaper and requires less labor than replanting. If needed, the site can be reseeded once these containerized plants have established.

Maintenance by GVIC personnel will include monitoring of the site and replanting, if necessary, through the term of the cooperative agreement between GVIC and the BOR.

## **XI. MONITORING REQUIREMENTS**

GVIC will monitor and document potential problems including, but not limited to, the establishment or re-establishment of non-native invasive species, acts of nature, erosion, foraging by wildlife, lack of vigor in introduced plants, and unexpected successional changes (CNAP 1998). It is recommended that a minimum of two site visits (spring and fall) are conducted annually for the first year following planting.

If the vegetation does not meet the performance standards, GVIC will re-evaluate and revegetate the area as needed. Monitoring will be conducted by a designated person from GVIC through the term of the cooperative agreement between GVIC and BOR.

Monitoring will include evaluating the vegetation. This will be accomplished by a visual assessment of the site, taking photos at the permanent photo points, and inspecting the area for noxious weeds and other issues such as excessive erosion. Potential problems will immediately be reported to the BOR and corrective actions will be determined.

Permanent photo points have been established within Field North of BOR Shop. Before photos have been taken and are found in Appendix A. Photo points have been placed so that all portions of the site are clearly visible and progress can be accurately documented. The photo point location and the azimuth of the photo are indicated on Table 8 and displayed on Figure 1.

**Table 8. Photo Point Location and Azimuth.**

<b>Photo Point</b>	<b>Latitude N</b>	<b>Longitude W</b>	<b>Photo Direction Azimuth</b>
Photo Point 1	39.05125	-108.57638	N 0°
Photo Point 2	39.05125	-108.57638	E 90°
Photo Point 3	39.05125	-108.57638	S 180°
Photo Point 4	39.05125	-108.57638	W 270°

## **XII. ADAPTIVE MANAGEMENT PLAN**

Should unexpected issues arise during the 2018 growing season significant enough to impede or halt advancement towards meeting the performance standards, GVIC will evaluate and implement measures for corrective actions. This will include but is not limited to actions such as replanting trees and shrubs, caging containerized plants to deter defoliation by wildlife, and discussion with the BOR about adjusting the watering regime. The BOR will be responsible for implementing adaptive management measures following the termination of the cooperative agreement between GVIC and the BOR.

## **XIII. REFERENCES**

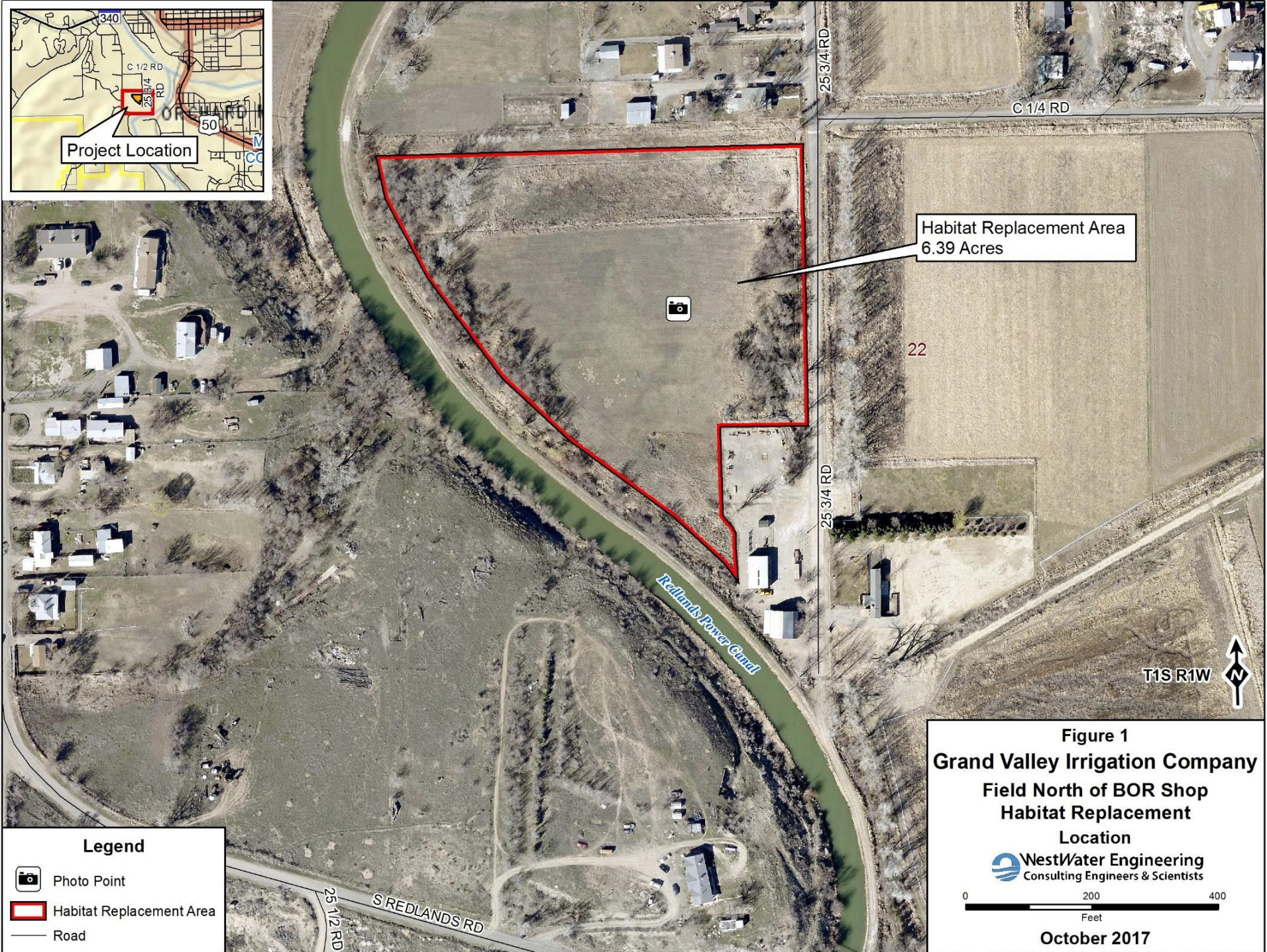
BOR. 2013. Basinwide Salinity Control Program: Procedures for Habitat Replacement. March 2013. Bureau of Reclamation and U.S. Fish and Wildlife Service.

CNAP. 1998. Native Plant Revegetation Guide for Colorado. Colorado Natural Areas Program. October 1998.

NRCS. 2017. Web Soil Survey U.S. Department of Agriculture, Natural Resources Conservation Service. Available online at <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

WestWater Engineering. Grand Valley Irrigation Company Canal Lining Phase 4-540 Project Canal Improvement Grant 2015 Habitat Assessment, September, 2016

## **XIV. FIGURES**



Project Location

Habitat Replacement Area  
6.39 Acres

22



Redlands Power Canal

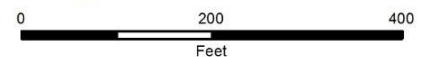
T1S R1W



**Legend**

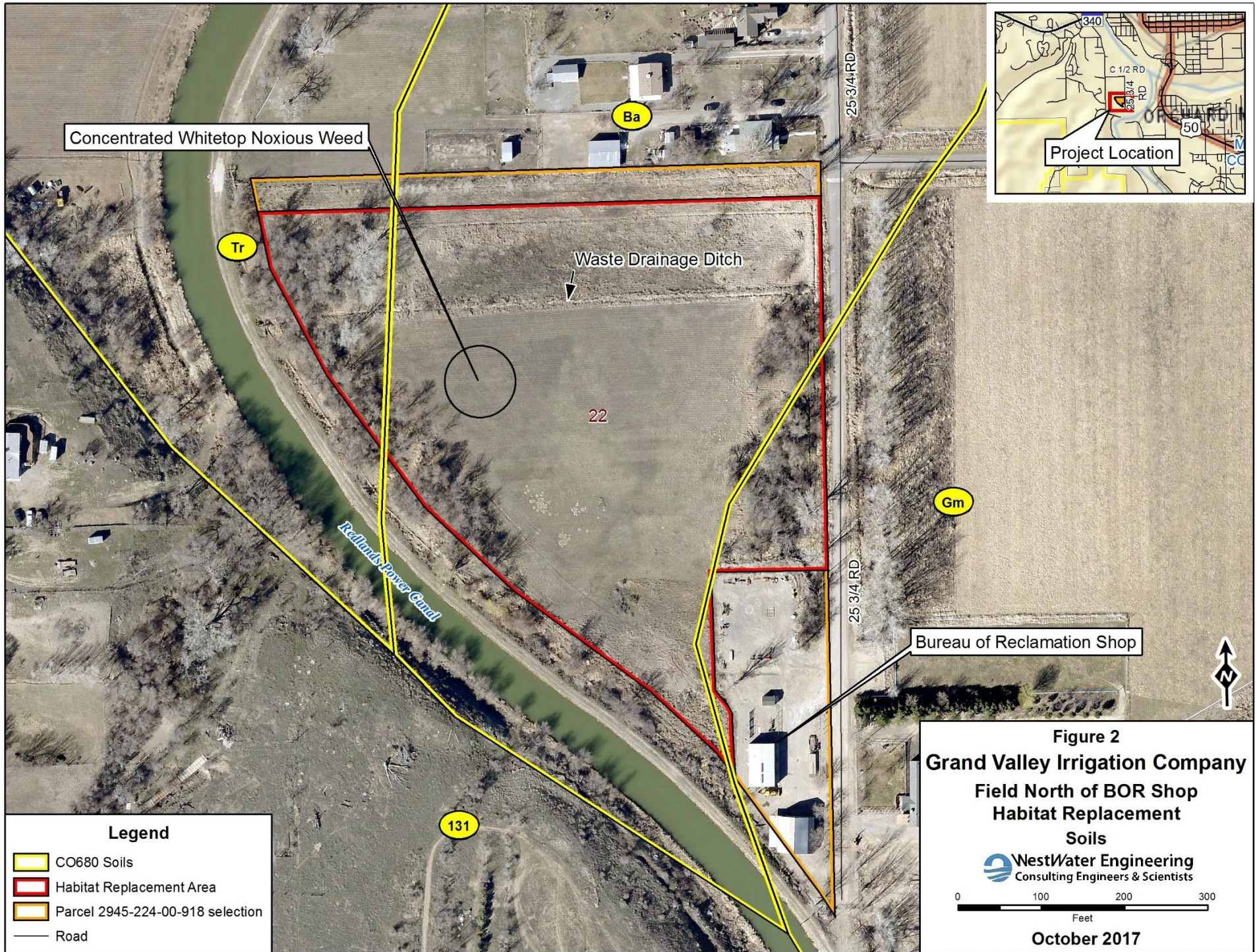
-  Photo Point
-  Habitat Replacement Area
-  Road

**Figure 1**  
**Grand Valley Irrigation Company**  
**Field North of BOR Shop**  
**Habitat Replacement**  
**Location**



**October 2017**

Map Source: Z:\Miscellaneous Environmental\Grand Valley Irrigation Company\GS-530 Mitigation Block 7 - 2.8\2017\GIS\Figure 1.mxd 10/12/2017 rbb



Concentrated Whitetop Noxious Weed

Ba

Tr

Waste Drainage Ditch

22

Redlands Power Canal

Gm

25 3/4 RD

Bureau of Reclamation Shop

131

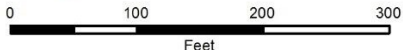
**Legend**

- CO680 Soils
- Habitat Replacement Area
- Parcel 2945-224-00-918 selection
- Road



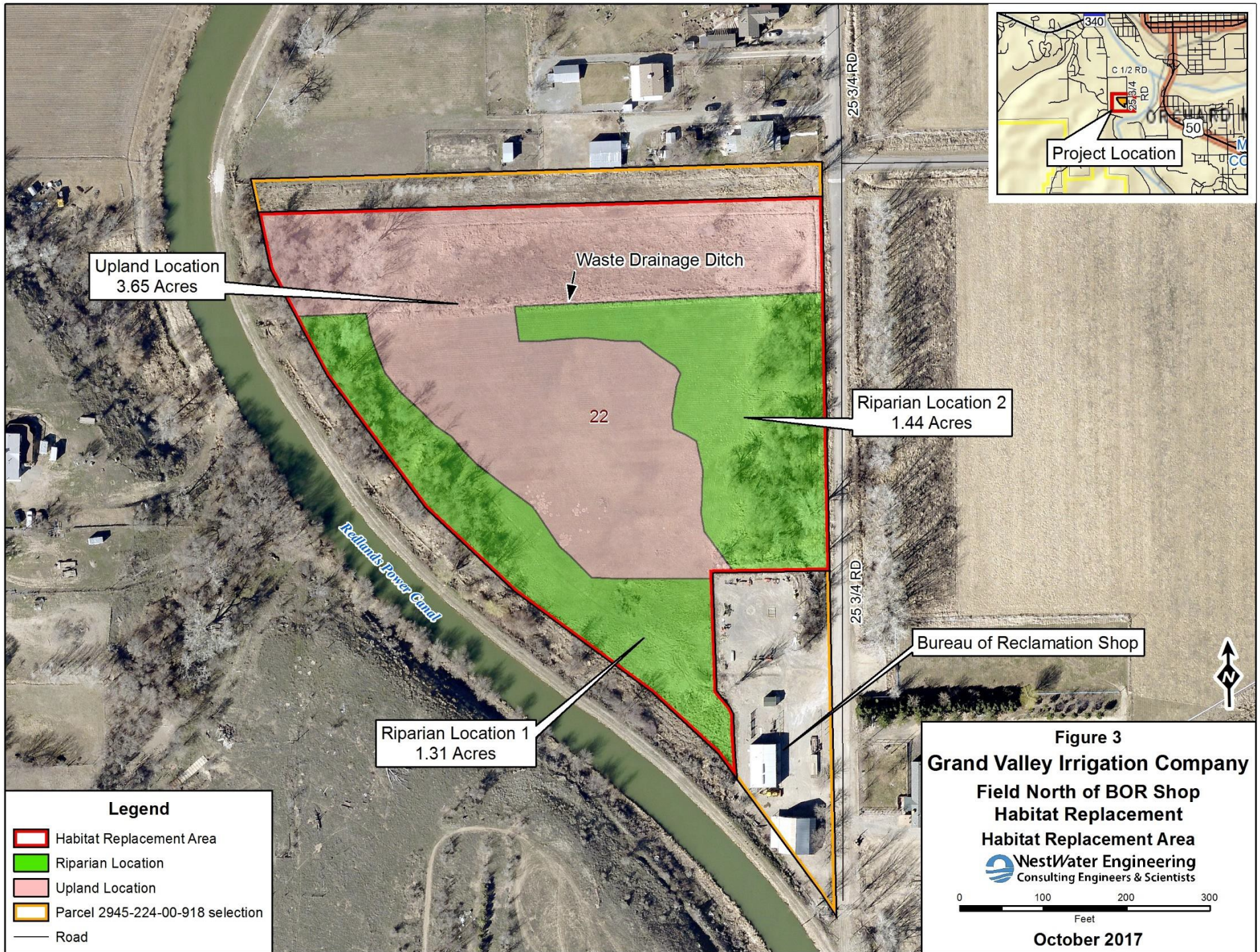
**Figure 2**  
**Grand Valley Irrigation Company**  
**Field North of BOR Shop**  
**Habitat Replacement**  
**Soils**

**WestWater Engineering**  
 Consulting Engineers & Scientists



October 2017

Map Source: Z:\Miscellaneous Environmental\Grand Valley Irrigation Company\GS-530 Mitigation Block 7 - 2.6\2017\GIS\Figure 2.mxd 11/10/2017 rbb



Upland Location  
3.65 Acres

Waste Drainage Ditch

22

Riparian Location 2  
1.44 Acres

*Redlands Power Canal*

Riparian Location 1  
1.31 Acres

Bureau of Reclamation Shop

**Legend**

- Habitat Replacement Area
- Riparian Location
- Upland Location
- Parcel 2945-224-00-918 selection
- Road

**Figure 3**  
**Grand Valley Irrigation Company**  
**Field North of BOR Shop**  
**Habitat Replacement**  
**Habitat Replacement Area**  
**WestWater Engineering**  
 Consulting Engineers & Scientists

0 100 200 300  
Feet

**October 2017**

## **XV. APPENDIX A: Site Photos**

Prior to Shrub Planting, Taken on June 21, 2017



**Photo Point 1. North View Azimuth 0°**



**Photo Point 1. East View Azimuth 90°**



**Photo Point 1. South View Azimuth 180°**



**Photo Point 1. South View Azimuth 270°**



## **XVI. APPENDIX B: Contracts**

## Wild West Consulting Service

1179 17 Road.  
 Fruita, Colorado 81521  
 307-899-0529  
 October 19, 2017

RE: Bid Number: 2017-25

West Water Engineering, Bid proposal to control Whitetop on Grand Valley Irrigation property located on 25 ¾ Road Grand Junction.

For: The best method for control of Whitetop or hoary cress (*Cardaria draba*) is by mowing the infested field followed by an herbicide application on regrowth. This has been the most feasible method of control. **Escort, Telar** or **Cimarron** have shown the best results for control of Whitetop. Escort has been proven to be the most recommended and has shown to deliver the best results.

Date of Service	Project Code	Description of Service	Cost
Early Spring	2017-25	Mow existing patches of Whitetop and other weeds ( If needed)	\$ 940.00
		Spray herbicide as soon as plants emerge, with Escort. 2 oz. per acre	\$ 1,325.00
		Second application of herbicide 15-30 days after first application,	\$ 1,325.00
		If third application is needed price would be the same.	
		<b>Total Costs</b>	<b>\$ 3,590.00</b>

Applicators License #30991

Thank You

If you have any questions, please feel free to give me a call.

Signature:

Seven Mazzone

PO BOX 265  
 Collbran, CO 81624  
 Office (970)487-0260  
 Cell (970)250-6587



Date 10/19/17

For: Dean Goebel

**Proposal for:**

Grand Valley irrigation company  
 Dean Goebel  
 West Water Engineering  
 (970)241-7076 CELL (970)314-5677

Quantity	Description	Unit price	Amount	Location
8	semi Mob all equipment in / out	\$ 160.00	\$ 1,280.00	mobilize
24	Bales certified straw	\$ 70.00	\$ 1,680.00	mulching
4	ground prep	\$ 350.00	\$ 1,400.00	seed bed
4	drill seeding	\$ 350.00	\$ 1,400.00	drill seed
4	Mulch application	\$ 350.00	\$ 1,400.00	mulching
4	mechanical Crimping	\$ 350.00	\$ 1,400.00	crimp
4	site safety supervisor	\$ 85.00	\$ 340.00	safety
5	seed mix per acre (drill rate)	\$ 875.00	\$ 4,375.00	material
<b>Subtotal</b>			<b>\$ 13,275.00</b>	

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**ATTACHMENT E**  
Habitat Assessment Report

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**Grand Valley Irrigation Company**

**Canal Lining Phase 4 -540 Project**

**Canal Improvement Grant 2015 Habitat Assessment**



Cover Photo: View of Section C along the Grand Valley Canal

**Prepared for:**  
Grand Valley Irrigation Company  
688 26 Road  
Grand Junction, CO 81506

and

Bureau of Reclamation  
Western Colorado Office  
445 West Gunnison, Suite 221  
Grand Junction, CO 81501

**Prepared by:**  
WestWater Engineering  
2516 Foresight Circle #1  
Grand Junction, CO 81505

**September 2016**





## **INTRODUCTION**

WestWater Engineering (WestWater) was requested by Grand Valley Irrigation Company (GVIC) to perform a habitat assessment along portions of the Grand Valley Canal located in Grand Junction, Colorado. GVIC plans to line 8,688 feet of the canal as part of their Canal Lining Phase 4 -540 Project. As required by the Salinity Control Act, mitigation is required for incidental fish and wildlife values lost as a result of salinity control improvement projects. The purpose of the habitat assessment is to establish a Habitat Quality Score (HQS) of the habitat that will be lost because of project activities. The HQS will be used to determine the Habitat Credits that will need to be replaced in order to offset lost habitat values. WestWater determined total Habitat Credits needing to be replaced are 8.78.

## **PROJECT LOCATION**

The Canal Lining Phase 4 -540 Project is located in Sections 34 and 35, Township 1 North, Range 1 West; Section 2, Township 1 South, Range 1 West; and Section 9, Township 1 South, Range 1 East, Ute Meridian (Figures 1 through 3). This project is located along the Grand Valley Canal and is situated in two locations in the Grand Valley. One section of this project intersects the I-70 Business Loop, east of 30 Road. The other section crosses both G Road and 26 Road, south of I-70.

## **EXISTING CONDITIONS**

Existing vegetation communities consist largely of emergent wetland at varying widths along the canal fringe. Some scrub-shrub wetland dominated by narrowleaf willow and riparian tree species were present, although in much smaller quantities than the emergent wetland communities.

The surrounding areas are composed of agricultural areas, commercial development, and residential areas.

Habitat types present along the canal provide nesting, foraging and cover for various wildlife species including: waterfowl and other migratory bird species, small mammal species, and big game.

## **METHODS**

Habitat was assessed using the protocols outlined in the Basin Wide Salinity Control Program: Procedures for Habitat Replacement document prepared by the Bureau of Reclamation (BOR) and U.S. Fish and Wildlife Service (USFWS) (BOR 2013). Field work was performed by WestWater biologists on July 14, 2016 to determine the total acres of wetland/riparian vegetation that would be impacted by the project.

All survey field data was recorded using handheld Global Positioning System (GPS) receivers. GPS points were taken at locations where vegetation communities changed or the average width of vegetation along the canal bank changed. Photographs were taken of the habitat and biological features found during the survey.

The 8,688 linear feet of canal was divided into 3 sections (Section A, B, and C) based on vegetation communities, surrounding land use, and distance between lining areas (Figures 1 through 3). Approximately 4.3 miles separate Sections A and B from Section C. There were very distinct vegetation community differences between Section A and B based on surrounding land use.

Scores for the evaluation criteria for each section were determined by averaging the total score of each bank of the canal. Since Section C is 5,088 linear feet and vegetation communities differed in some areas, Section C was broken down into 3 subsections. Within Section C, 26 Road and G Road served as a break in vegetation along the canal, creating the boundaries for the 3 subsections. Averages of each bank of each subsection were used to determine the overall score for Section C. Criteria for each of the 3 sections were totaled to determine the HQS and Habitat Credits then combined to determine the final Habitat Credits needing replacement for the overall project.

## **RESULTS**

Wetland/Riparian vegetation along the Grand Valley Canal totaled 2.39 acres. Figures 1 through 3 display the average vegetation widths along the bank of the Grand Valley Canal, which varied.

Section A, located east of the I-70 Business loop, is 1,911 linear feet and dissects irrigated agricultural fields (Figure 1). Vegetation is approximately 5 feet wide on its south bank and 8 feet wide on its north bank. Vegetation species observed in Section A of the Grand Valley Canal are listed in Table 1. General site conditions are displayed in Photo 1.

**Table 1. Vegetation Species Observed in Section A of the Grand Valley Canal Lining Phase 4 -540 Project.**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>Scientific Name</b>
Arctic rush	<i>Juncus arcticus</i>	Johnsongrass	<i>Sorghum halepense</i>
Broadleaf cattail	<i>Typha latifolia</i>	Kochia	<i>Bassia scoparia</i>
Canada thistle*	<i>Cirsium arvense</i>	Lamb’s quarters	<i>Chenopodium album</i>
Canadian horseweed	<i>Conyza canadensis</i>	Reed canarygrass	<i>Phalaris arundinacea</i>
Common burdock*	<i>Arctium minus</i>	Russian knapweed*	<i>Acroptilon repens</i>
Common plantain	<i>Plantago major</i>	Russian olive*	<i>Elaeagnus angustifolia</i>
Common reed	<i>Phragmites australis</i>	Scouring horsetail	<i>Equisetum hyemale</i>
Common threesquare	<i>Shoenoplectus pungens</i>	Showy milkweed	<i>Asclepias speciosa</i>
Foxtail barley	<i>Hordeum jubatum</i>	Tall wheatgrass	<i>Thinopyrum ponticum</i>
Inland saltgrass	<i>Distichlis spicata</i>	Whitetop*	<i>Cardaria draba</i>

\*Colorado State listed noxious weeds



**Photo 1. Section A of the Grand Valley Canal Lining Phase 4 -540 Project**

Section B, located west of the I-70 Business loop, is 1,689 linear feet (Figure 2). Commercial development abuts the canal on the south bank and residential development on the north bank. Vegetation is approximately 2 feet wide on both banks. Vegetation species observed in Section B of the Grand Valley Canal are listed in Table 2. General site conditions are displayed in Photo 2.

**Table 2. Vegetation Species Observed in Section B of the Grand Valley Canal Lining Phase 4 -540 Project.**

Common Name	Scientific Name	Common Name	Scientific Name
American speedwell	<i>Veronica americana</i>	Kochia	<i>Bassia scoparia</i>
Annual rabbitsfoot grass	<i>Polypogon monspeliensis</i>	Lamb’s quarters	<i>Chenopodium album</i>
Bermuda grass	<i>Cynodon dactylon</i>	Prickly lettuce	<i>Lactuca serriola</i>
Common plantain	<i>Plantago major</i>	Reed canarygrass	<i>Phalaris arundinacea</i>
Common threesquare	<i>Shoenoplectus pungens</i>	Russian knapweed*	<i>Acroptilon repens</i>
Foxtail barley	<i>Hordeum jubatum</i>	Scouring horsetail	<i>Equisetum hyemale</i>
Inland saltgrass	<i>Distichlis spicata</i>	Showy milkweed	<i>Asclepias speciosa</i>
Johnsongrass	<i>Sorghum halepense</i>		

\*Colorado State listed noxious weeds



**Photo 2. Section B of the Grand Valley Canal Lining Phase 4 -540 Project**

Section C, located south of I-70 and in the vicinity of G Road and 26 Road, is 5,088 linear feet (Figure 3). Residential development abuts both banks. Vegetation along the bank varies in width from approximately 4 feet to 8 feet wide. Vegetation species observed in Section C of the Grand Valley Canal are listed in Table 3. General site conditions are displayed in Photos 3 and 4.

**Table 3. Vegetation Species Observed in Section C of the Grand Valley Canal Lining Phase 4 -540 Project.**

Common Name	Scientific Name	Common Name	Scientific Name
Annual rabbitsfoot grass	<i>Polypogon monspeliensis</i>	Lamb’s quarters	<i>Chenopodium album</i>
Arctic rush	<i>Juncus arcticus</i>	Narrowleaf willow	<i>Salix exigua</i>
Broadleaf cattail	<i>Typha latifolia</i>	Prickly lettuce	<i>Lactuca serriola</i>
Canadian horseweed	<i>Conyza canadensis</i>	Reed canarygrass	<i>Phalaris arundinacea</i>
Common threesquare	<i>Shoenoplectus pungens</i>	Russian knapweed*	<i>Acroptilon repens</i>
Foxtail barley	<i>Hordeum jubatum</i>	Russian olive*	<i>Elaeagnus angustifolia</i>
Inland saltgrass	<i>Distichlis spicata</i>	Scouring horsetail	<i>Equisetum hyemale</i>
Johnsongrass	<i>Sorghum halepense</i>	Showy milkweed	<i>Asclepias speciosa</i>
Kochia	<i>Bassia scoparia</i>		

\*Colorado State listed noxious weeds



**Photo 3. Section C of the Grand Valley Canal Lining Phase 4 -540 Project**



**Photo 4. Section C of the Grand Valley Canal Lining Phase 4 -540 Project**

### **HABITAT QUALITY SCORE and HABITAT REPLACEMENT CREDITS**

There are 10 evaluation criteria used to determine the HQS and replacement Habitat Credits for the site. Tables 4 through 6 lists the scores given to each of the three sections of this project for each criterion, the HQS, and the Habitat Credits lost as a result of this project.

Total Habitat Credits needing to be replaced for all three sections combined are **8.78**. GVIC has 0.48 Habitat Credits left over from a diversion construction project at the Orchard Mesa Wildlife Area. GVIC is also expected to have 2.54 Habitat Credits remaining following their tree thinning and shrub planting project at the Grand Junction Wildlife Area.

**Table 4. Habitat Quality Score and Habitat Credits to be Replaced for Section A**

<b>Evaluation Criteria</b>	<b>Score</b>	<b>Rationale</b>
Vegetative Diversity	5	Moderate diversity present consisting of several wetland/riparian species (Table 1). This section is not dominated by one or two species. Several weedy species present (i.e. kochia, prickly lettuce, and lamb's quarters).
Stratification	1	Herbaceous layer present with scattered Russian olive.
Native Species vs. Nonnative Species	5	Approximately 50% of the species present are nonnative. Nonnative species include species such as reed canarygrass, Bermuda grass, Johnsongrass, common reed and Canadian horsetweed.

<b>Evaluation Criteria</b>	<b>Score</b>	<b>Rationale</b>
Native Species vs. Nonnative Species	5	Approximately 50% of the species present are nonnative. Nonnative species include species such as reed canarygrass, Bermuda grass, Johnsongrass, common reed and Canadian horsetail.
Noxious Weeds	5	Scattered Russian knapweed, Canada thistle, and whitetop are present. Noxious weeds contribute between 10 and 15% of the total cover.
Overall Vegetative Condition/Health	10	No visible signs of disease/infestation, 100% of plants healthy.
Interspersion of Open Water	1	Low interspersion of open water with the vegetation since vegetation is located linear to the canal.
Connectivity	3	Adjacent to wildlife habitat with no agreement. Wildlife may utilize the agricultural fields adjacent the canal.
Uniqueness or Abundance	2	Site does not provide special or critical habitat or exhibit unique or valuable attributes for wildlife. Exhibits medium to low value for wildlife and is relatively abundant.
Water Supply	6	Water supply is not from a natural flowing stream but is dependent on irrigation delivery systems. Water is present seasonally and supply is uncertain.
Alteration	0	80% or more of land has been heavily developed or altered.
<b>Total Habitat Value</b>	<b>38</b>	
<b>Habitat Quality Score</b>	<b>3.8</b>	
<b>Total Acres</b>	<b>0.61</b>	
<b>Habitat Credits</b>	<b>2.32</b>	

**Table 5. Habitat Quality Score and Habitat Credits to be Replaced for Section B**

<b>Evaluation Criteria</b>	<b>Score</b>	<b>Rationale</b>
Vegetative Diversity	4	Moderate diversity present consisting of several wetland/riparian species (Table 2). This section is not dominated by one or two species. Several weedy species present (i.e. kochia, prickly lettuce, and lamb's quarters).
Stratification	0	Herbaceous layer present only.
Native Species vs. Nonnative Species	4	Approximately 60% of the species present are nonnative. Nonnative species include species such as reed canarygrass, Bermuda grass, Johnsongrass, kochia and Canadian horsetweed.
Noxious Weeds	6	Scattered Russian knapweed contributes 10% of total cover.
Overall Vegetative Condition/Health	9	10% of species appear stressed, 90% of plants healthy.
Interspersion of Open Water	1	Low interspersion of open water with the vegetation since vegetation is located linear to the canal.
Connectivity	0	Site is isolated from other wildlife areas due to commercial activities in the area.
Uniqueness or Abundance	0	Site does not provide special or critical habitat or exhibit unique or valuable attributes for wildlife. Exhibits very low wildlife value regardless of abundance or scarcity.
Water Supply	6	Water supply is not from a natural flowing stream but is dependent on irrigation delivery systems. Water is present seasonally and supply is uncertain.
Alteration	0	80% or more of land has been heavily developed or altered.
<b>Total Habitat Value</b>	<b>30.0</b>	
<b>Habitat Quality Score</b>	<b>3.0</b>	
<b>Total Acres</b>	<b>0.17</b>	
<b>Habitat Credits</b>	<b>0.51</b>	

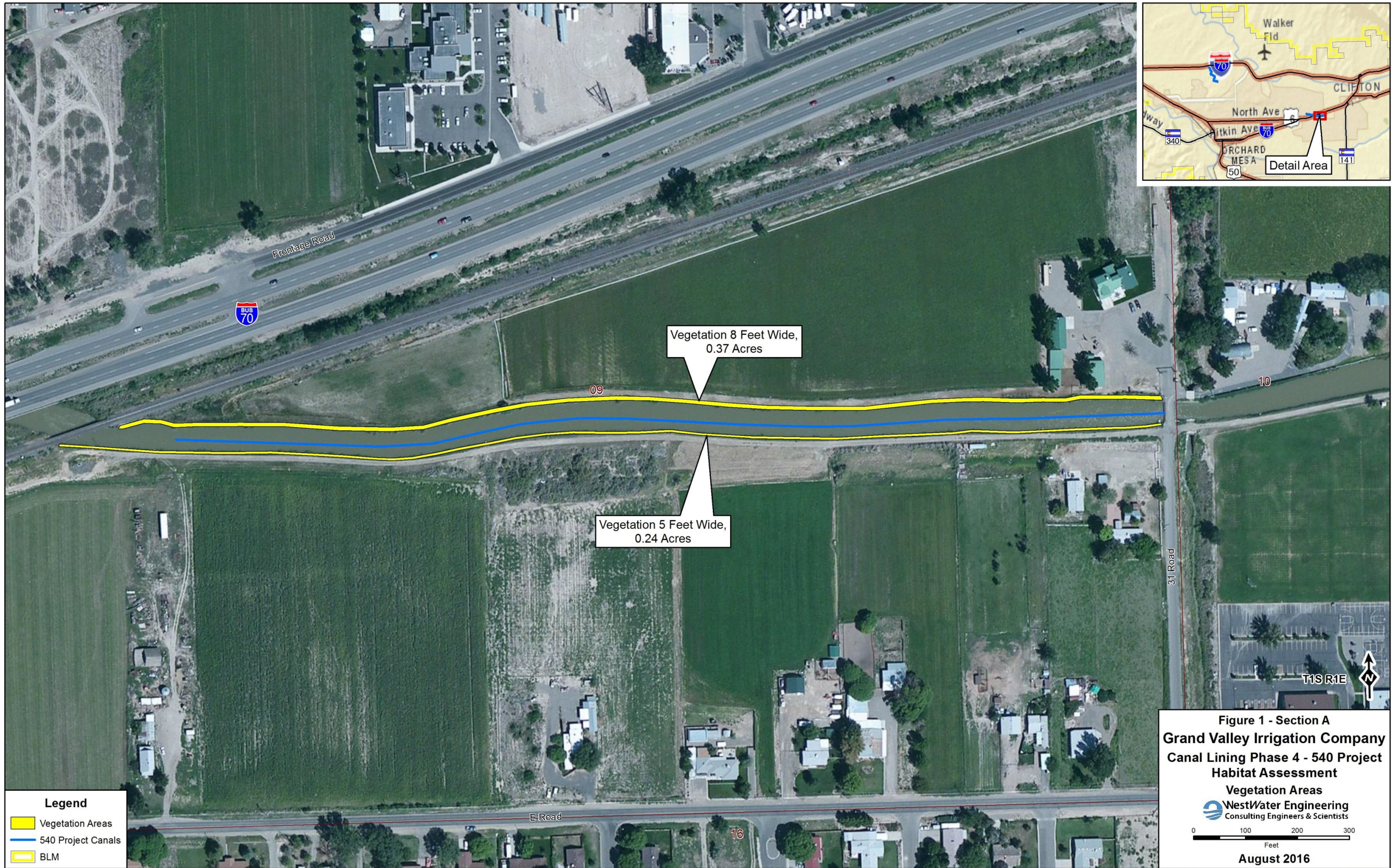


**Table 6. Habitat Quality Score and Habitat Credits to be Replaced for Section C**

<b>Evaluation Criteria</b>	<b>Score</b>	<b>Rationale</b>
Vegetative Diversity	4	Moderate diversity present consisting of several wetland/riparian species (Table 3). This section is not dominated by one or two species. Several weedy species present (i.e. kochia, prickly lettuce, and lamb's quarters).
Stratification	1	Section C contained areas with 2 vegetation stratum, but largely consisted of herbaceous stratum only.
Native Species vs. Nonnative Species	4	Approximately 60% of the species present are nonnative. Nonnative species include species such as reed canarygrass, Bermuda grass, Johnsongrass, kochia and Canadian horsetail.
Noxious Weeds	8	Scattered Russian knapweed and Russian olive contributes 5% of total cover.
Overall Vegetative Condition/Health	10	No visible signs of disease/infestation, 100% of plants healthy.
Interspersion of Open Water	1	Low interspersion of open water with the vegetation since vegetation is located linear to the canal.
Connectivity	1	Site is isolated from other wildlife areas due to residential uses in the area and travel corridors area limited.
Uniqueness or Abundance	2	Site does not provide special or critical habitat or exhibit unique or valuable attributes for wildlife. Exhibits medium to low value for wildlife and is relatively abundant.
Water Supply	6	Water supply is not from a natural flowing stream but is dependent on irrigation delivery systems. Water is present seasonally and supply is uncertain.
Alteration	0	80% or more of land has been heavily developed or altered.
<b>Total Habitat Value</b>	<b>37</b>	
<b>Habitat Quality Score</b>	<b>3.7</b>	
<b>Total Acres</b>	<b>1.61</b>	
<b>Habitat Credits</b>	<b>5.95</b>	

**REFERENCES**

BOR. 2013. Basinwide Salinity Control Program: Procedures for Habitat Replacement. March 2013. Bureau of Reclamation and U. S. Fish and Wildlife Service.



**Figure 1 - Section A**  
**Grand Valley Irrigation Company**  
**Canal Lining Phase 4 - 540 Project**  
**Habitat Assessment**  
**Vegetation Areas**  
 NestWater Engineering  
 Consulting Engineers & Scientists

0 100 200 300  
 Feet

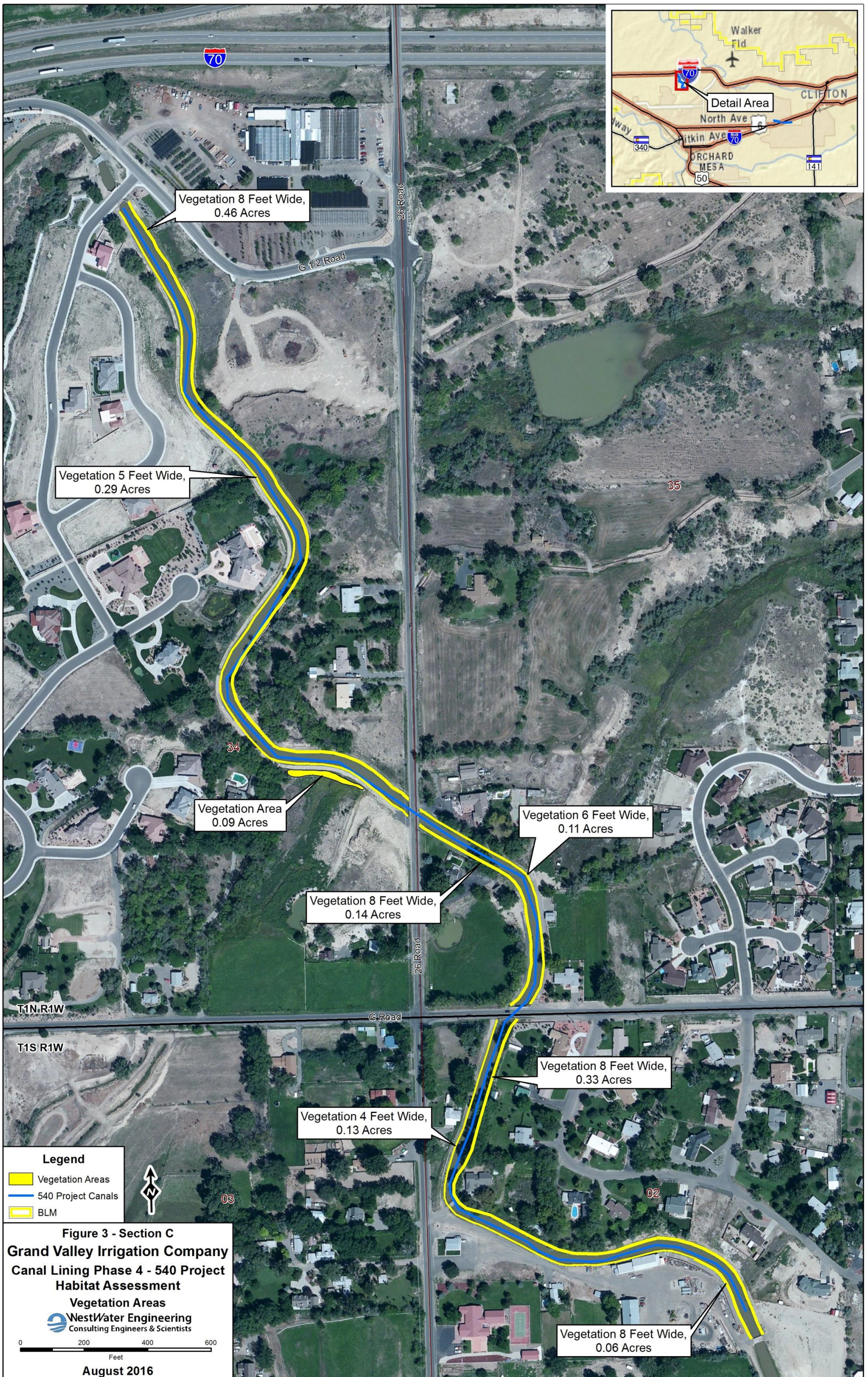
August 2016

Map Source: Z:\Miscellaneous Environmental\Grand Valley Irrigation Company\Canal Lining Phase 4 - 540 Project\2016\GIS\Figure 1.mxd 8/11/2016 rbb



**Figure 2 - Section B**  
**Grand Valley Irrigation Company**  
**Canal Lining Phase 4 - 540 Project**  
**Habitat Assessment**  
**Vegetation Areas**  
 NestWater Engineering  
 Consulting Engineers & Scientists  
 0 100 200 300  
 Feet  
**August 2016**

Map Source: Z:\Miscellaneous Environmental\Grand Valley Irrigation Company\Canal Lining Phase 4 - 540 Project\2016\GIS\Figure 2.mxd 8/11/2016 rbb



## **ATTACHMENT F**

### Endangered Species Act Compliance Documents

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United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Ecological Services  
764 Horizon Drive, Building B  
Grand Junction, Colorado 81506-3946

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	B Norman
	T. Strach
	S. McCall
	S. Meyer

IN REPLY REFER TO:  
ES/GJ-6-CO-99-F-033-CP20

February 4, 2002

Memorandum

To: Technical Services Division Manager, Bureau of Reclamation, Western Colorado Area Office, Grand Junction, Colorado

From: Assistant Colorado Field Supervisor, Fish and Wildlife Service, Ecological Services, Grand Junction, Colorado *Allan R. Pfister*

Subject: Endangered Species Act Consultation for the Grand Valley Irrigation Company Diversion Dam Fish Passage and Screen

In accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), and the Interagency Cooperation Regulations (50 CFR 402), the Fish and Wildlife Service transmits this correspondence to serve as the final biological opinion for the Grand Valley Irrigation Company Diversion Dam Fish Passage and Screen.

The Bureau of Reclamation, acting on behalf of the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin is constructing a fish preclusion structure (fish screen) on the Grand Valley Irrigation Company Canal to prevent endangered fishes from entering the canal located on the Colorado River just south of the Town of Palisade, Mesa County, Colorado. The Grand Valley Irrigation Company's facilities deplete approximately 58,515 acre-feet/year.

A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin was initiated on January 22, 1988 (Public Law 106-392 recently extended the Recovery Program through 2011). The Recovery Program was intended to be the reasonable and prudent alternative for individual projects to avoid the likelihood of jeopardy to the endangered fishes from depletions from the Upper Colorado River Basin. In order to further define and clarify the process in the Recovery Program, a section 7 agreement was implemented on October 15, 1993, by the Recovery Program participants. Incorporated into this agreement is a Recovery Implementation Program Recovery Action Plan (RIPRAP) which identifies actions currently believed to be required to recover the endangered fishes in the most expeditious manner.

On December 20, 1999, the Service issued a final programmatic biological opinion for Bureau of Reclamation's Operations and Depletions, Other Depletions, and Funding and Implementation of Recovery Program Actions in the Upper Colorado River above the Confluence with the

Gunnison River. The Service has determined that projects that fit under the umbrella of the Colorado River PBO would avoid the likelihood of jeopardy and/or adverse modification of critical habitat for depletion impacts. The Colorado River PBO states that in order for actions to fall within the umbrella of the PBO and rely on the Recovery Implementation Program Recovery Action Plan to offset its depletion, the following criteria must be met.

1. A Recovery Agreement must be offered and signed prior to conclusion of section 7 consultation.
2. A fee to fund recovery actions will be submitted as described in the proposed action for new depletion projects greater than 100 acre-feet/year. The 2002 fee is \$15.25 per acre-foot and is adjusted each year for inflation.
3. Reinitiation stipulations will be included in all individual consultations under the umbrella of this programmatic.
4. The Service and project proponents will request that discretionary Federal control be retained for all consultations under this programmatic.

The Recovery Agreement was signed by the Service and the Water User. The depletions associated with this project are historic depletions which do not make contributions to fund recovery actions. The Bureau of Reclamation has agreed to condition its approval documents to retain jurisdiction should section 7 consultation need to be reinitiated. Therefore, the Service concludes that the subject project meets the criteria to rely on the Recovery Implementation Program Recovery Action Plan to offset depletion impacts and is not likely to jeopardize the continued existence of the species and is not likely to destroy or adversely modify designated critical habitat.

#### REINITIATION NOTICE

This concludes formal consultation on the subject action. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and under the following conditions.

- a. The amount or extent of take specified in the incidental take statement for the Colorado River PBO is exceeded. The Service has determined that no incidental take, including harm, is anticipated to occur as a result of the depletions contemplated in this opinion because of the implementation of recovery actions. The implementation of the recovery actions contained in the Colorado River PBO will further decrease the likelihood of any take caused by depletion impacts.



b. New information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in the Colorado River PBO. In preparing the Colorado River PBO, the Service describes the positive and negative effects of the action it anticipates and considered in the section of the opinion entitled “Effects of the Action.” New information would include, but is not limited to, not achieving a “positive response” or a significant decline in population, as described in Appendix D of the Colorado River PBO. Significant decline shall mean a decline in excess of normal variations in population (Appendix D). The current population estimate of adult Colorado pikeminnow in the Colorado River is 600 individuals, with a confidence interval of  $\pm 250$ . Therefore, with the criteria established in Appendix D, a negative population response would trigger reinitiation if the population declined to 350 adults. The Recovery Program is currently developing recovery goals for the four endangered fishes. If a population meets or exceeds the numeric goal for that species, it will be considered to exhibit a positive response. The Service retains the authority to determine whether a significant decline in population has occurred, but will consult with the Recovery Program’s Biology Committee prior to making its determination. In the event of a significant population decline, the Service is to first rely on the Recovery Program to take actions to correct the decline. If nonflow recovery actions have not been implemented, the Service will assess the impacts of not completing these actions prior to reexamining any flow related issues.

New information would also include the lack of a positive population response by the year 2015 or when new depletions reach 50,000 acre-feet/year. According to the criteria outlined in Appendix D of the Colorado River PBO, a positive response would require the adult Colorado pikeminnow population estimate to be 1,100 individuals ( $\pm 250$ ) in the Colorado River (Rifle, Colorado to the confluence with the Green River). When the population estimate increases above 1,100, a new population baseline is established at the higher population level.

c. The Recovery Action Plan actions listed as part of the proposed action in the Colorado River PBO are not implemented within the required time frames. This would be considered a change in the action subject to consultation; section 7 regulations (50 CFR 402.16 (c)) state that reinitiation of consultation is required if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion. The Recovery Action Plan is an adaptive management plan because additional information, changing priorities, and the development of the States’ entitlement may require modification of the Recovery Action Plan. Therefore, the Recovery Action Plan is reviewed annually and updated and changed when necessary and the required time frames include changes in timing approved by means of the normal procedures of the Recovery Program, as explained in the description of the proposed action. In 2003 and every 2 years thereafter, for the life of the Recovery Program, the Service and Recovery Program will review implementation of the Recovery Action Plan actions to determine timely compliance with applicable schedules.

d. The Service lists new species or designates new or additional critical habitat, where the level or pattern of depletions covered under the Colorado River PBO may have an adverse impact on

the newly listed species or habitat. If the species or habitat may be adversely affected by depletions, the Service will reinitiate consultation on the Colorado River PBO as required by its section 7 regulations. The Service will first determine whether the Recovery Program can avoid such impact or can be amended to avoid the likelihood of jeopardy and/or adverse modification of critical habitat for such depletion impacts. If the Recovery Program can avoid the likelihood of jeopardy and/or adverse modification of critical habitat no additional recovery actions for individual projects would be required, if the avoidance actions are already included in the Recovery Action Plan. If the Recovery Program is not likely to avoid the likelihood of jeopardy and/or adverse modification of critical habitat then the Service will reinitiate consultation and develop reasonable and prudent alternatives.

For purposes of any future reinitiation of consultation, depletions have been divided into two categories.

Category 1:

- a) existing depletions, both Federal and non-Federal as described in the project description, from the Upper Colorado River Basin above the confluence with the Gunnison River that had actually occurred on or before September 30, 1995 (average annual depletion of approximately 1 million acre-feet/year);
- b) depletions associated with the total 154,645 acre-feet/year volume of Green Mountain Reservoir, including power pool (which includes but is not limited to all of the 20,000 acre-feet contract pool and historic user's pool), the Colorado Big-Thompson replacement pool; and
- c) depletions associated with Ruedi Reservoir including Round I sales of 7,850 acre-feet, Round II sales of 6,135 acre-feet/year as discussed in the Service's biological opinion to Reclamation dated May 26, 1995, and as amended on January 6, 1999, and the Fryngpan Arkansas Project replacement pool as governed by the operating principles for Ruedi Reservoir but excluding 21,650 acre-feet of the marketable yield.

Category 1 depletions shall remain as Category 1 depletions regardless of any subsequent change, exchange, or abandonment of the water rights resulting in such depletions. Category 1 depletions associated with existing facilities may be transferred to other facilities and remain in Category 1 so long as there is no increase in the amount of total depletions attributable to existing depletions. However, section 7 consultation is still required for Category 1 depletion projects when a new Federal action occurs which may affect endangered species except as provided by the criteria established for individual consultation under the umbrella of the Colorado River PBO. Reinitiation of this consultation will be required if the water users fail to provide 10,825 acre-feet/year on a permanent basis.

Category 2:

Category 2 is defined as all new depletions up to 120,000 acre-feet/year, this includes all depletions not included in Category 1 that occur after 1995 regardless of whether section 7 consultation has been completed. This category is further divided into two 60,000 acre-feet/year blocks of depletions.

The recovery actions are intended to avoid the likelihood of jeopardy and/or adverse modification of critical habitat and to result in a positive response as described in Appendix D of the Colorado River PBO for both 60,000 acre-feet blocks of depletions in Category 2. However, prior to depletions occurring in the second block, the Service will review the Recovery Program's progress and adequacy of the species response to the Recovery Action Plan actions. According to the criteria outlined in Appendix D, a positive response would require the adult Colorado pikeminnow population estimate to be maintained at approximately 1,100 individuals in the Colorado River (Rifle, Colorado to the confluence with the Green River), unless the criteria in Appendix D is changed because of new information. If the adult Colorado pikeminnow population is maintained at approximately 1,100 adults or whatever is determined to be the recovery goal in the Colorado River, a new population baseline would be established to determine a positive or negative population response.

When population estimates for wild adult humpback chub are finalized, they will also be used to determine population response. As outlined in Appendix D, Colorado pikeminnow and humpback chub population estimates will serve as surrogates for razorback sucker and bonytail to assess the status of their populations for 10 years. Recovery goals for all four species are expected to be completed in the year 2001. If a population meets or exceeds the numeric goal for that species, it will be considered to exhibit a positive response. However, short of reaching a specific recovery goal, trends in certain population indices provide an interim assessment of a species' progress toward recovery. This review will begin when actual depletion levels from the first depletion block reach 50,000 acre-feet/year or the year 2015, whichever comes first.

Calculation of actual depletions is to be accomplished using Cameo gage records and State Division of Water Resources data (Appendix B of the Colorado River PBO). The review will include a determination if all the recovery actions have been satisfactorily completed, that all ongoing recovery actions are continuing, and the status of the endangered fish species. If it is determined that the recovery actions have all been completed and the status of all four endangered fish species has improved (based on criteria in Appendix D), then the Service intends that the Colorado River PBO would remain in effect for new depletions up to 120,000 acre-feet/year (total of both 60,000 acre-feet blocks of Category 2 depletions).

Monitoring, as explained in Appendix D, will be ongoing to determine if a population estimate of 1,100 ( $\pm$  one confidence interval) adult Colorado pikeminnow is maintained. If it is not maintained, this would be considered new information and section 7 would have to be reinitiated. Population baselines will be adjusted as population estimates change. If the adult Colorado

pikeminnow population estimates increase, a new population baseline will be established to determine a positive or negative population response. If the population estimate for Colorado pikeminnow in the year 2015 is greater than 1,100 adults, then the higher number will be used to establish a new population baseline. These numeric values may be revised as new information becomes available. Revisions will be made to Appendix D as needed.

If the 50,000 acre-foot or 2015 review indicates that either the recovery actions have not been completed or the status of all four fish species has not sufficiently improved, the Service intends to reinitiate consultation on the Recovery Program to specify additional measures to be taken by the Recovery Program to avoid the likelihood of jeopardy and/or adverse modification of critical habitat for depletions associated with the second 60,000 acre-feet/year block. Any additional measures will be evaluated every 5 years. If other measures are determined by the Service or the Recovery Program to be needed for recovery prior to the review, they can be added to the Recovery Action Plan according to standard procedures, outlined in that plan. If the Recovery Program is unable to complete those actions which the Service has determined to be required for the second 60,000 acre-feet/year, consultation on projects with a Federal nexus may be reinitiated in accordance with Endangered Species Act regulations and this opinion's reinitiation requirements. The Service may also reinitiate consultation on the Recovery Program if fish populations do not improve according to the criteria in Appendix D or if any positive response achieved prior to the 50,000 acre-foot or the year 2015 is not maintained. Once a positive response is achieved, failure to maintain it will be considered a negative response.

If the Service reinitiates consultation, it will first provide information on the status of the species and recommendations for improving population numbers to the Recovery Program. The Service will reinitiate consultation with individual projects only if the Recovery Program does not implement recovery actions to improve the status of the listed fish species. The Service will reinitiate consultation first on Category 2 projects and second on Category 1 projects. The Service will only reinitiate consultations on Category 1 depletions if Category 2 depletion impacts are offset to the full extent of the capability of the covered projects as determined by the Service, and the likelihood of jeopardy to the listed fishes and/or adverse modification of critical habitat still cannot be avoided. The Service intends to reinitiate consultations simultaneously on all depletions within the applicable category.

If new information becomes available, if a new species becomes listed, if incidental take occurs, if the total average annual amount of water depleted by this project changes, or if any other project element changes which alters the operation of the project from that which is described in your correspondence and which may affect any endangered or threatened species in a manner or to an extent not considered in this biological opinion (see 50 CFR 402.16), formal section 7 consultation should be reinitiated. The Bureau of Reclamation has agreed to condition its approval documents to retain jurisdiction should section 7 consultation need to be reinitiated.

If you have any questions regarding this consultation or would like to discuss it in more detail, please contact Patty Schrader Gelatt at (970) 245-3920 or 243-6209, extension 26.

Page 7

Attachment

cc: FWS/UCREFRP, Denver  
FWS/ES, Lakewood

PGelatt:GVICPBO2.wpd:020402

Grand Valley Irrigation Corp

## RECOVERY AGREEMENT

This RECOVERY AGREEMENT is entered into this 8<sup>th</sup> day of January, 2007 by and between the United States Fish and Wildlife Service (USFWS) and Grand Valley Irrigation Company, a Colorado nonprofit corporation (Water User).

WHEREAS, in 1988 the Secretary of Interior, the Governors of Wyoming, Colorado and Utah, and the Administrator of the Western Area Power Administration signed a Cooperative Agreement to implement the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program); and

WHEREAS, the Recovery Program is intended to recover the endangered fish while providing for water development in the Upper Basin to proceed in compliance with state law, interstate compacts and the Endangered Species Act; and

WHEREAS, the Colorado Water Congress has passed a resolution supporting the Recovery Program; and

WHEREAS, on December 20, 1999, USFWS issued a programmatic biological opinion (1999 Opinion) concluding that implementation of specified elements of the Recovery Action Plan (Recovery Elements), along with existing and a specified amount of new depletions, are not likely to jeopardize the continued existence of the endangered fish or adversely modify their critical habitat in the Colorado River subbasin within Colorado, exclusive of the Gunnison River subbasin; and

WHEREAS, the 1999 Opinion in the section entitled "Reinitiation Notice" divided depletions into Category 1 or Category 2 for reinitiation purposes; and

WHEREAS, Water User is the owner and operator of The Grand Valley Diversion Structure, Grand Valley Canal and all related and associated facilities and structures (Water Project), which causes or will cause depletions to the Colorado River subbasin within Colorado, exclusive of the Gunnison River subbasin; and

WHEREAS, Water User desires certainty that its depletions can occur consistent with Section 7 and Section 9 of the Endangered Species Act (ESA);

WHEREAS, USFWS has requested a commitment from Water User to the Recovery Program so that the Program can actually be implemented to recover the endangered fish and to carry out the Recovery Elements; and

WHEREAS, USFWS, Water User and the U.S. Bureau of Reclamation have entered into agreements for the construction and operation, maintenance and repair of a Fish Passage Facility and Fish Screen Facility on the Water Project with the intent and purpose that such agreements be and constitute Water User's compliance with the 1999 Opinion and this Recovery Agreement.

NOW THEREFORE, Water User and USFWS agree as follows<sup>1</sup>:

1. USFWS agrees that implementation of the Recovery Elements specified in the 1999 Opinion will avoid the likelihood of jeopardy and adverse modification under Section 7 of the ESA, for depletion impacts caused by Water User's Water Project. Any consultations under Section 7 regarding Water Project's depletions are to be governed by the provisions of the 1999 Opinion. USFWS agrees that, except as provided in the 1999 Opinion, no other measure or action shall be required or imposed on Water Project to comply with Section 7 or Section 9 of the ESA with regard to Water Project's depletion impacts or other impacts covered by the 1999 Opinion. Water User is entitled to rely on this Agreement in making the commitment described in paragraph 2.

2. Water User agrees not to take any action which would probably prevent the implementation of the Recovery Elements. To the extent implementing the Recovery Elements requires active cooperation by Water User, Water User agrees to take reasonable actions required to implement those Recovery Elements; provided, USFWS acknowledges that Water User's agreements regarding the Fish Passage Facility and Fish Screen Facility constitute Water User's reasonable actions to implement the Recovery Elements outlined in the 1999 Opinion. Water User will not be required to take any action that would violate its decrees or the statutory authorization for Water Project, or any applicable limits on Water User's legal authority. Water User will not be precluded from undertaking good faith negotiations over terms and conditions applicable to implementation of the Recovery Elements.

3. If USFWS believes that Water User has violated paragraph 2 of this Recovery Agreement, USFWS shall notify both Water User and the Management Committee of the Recovery Program. Water User and the Management Committee shall have a reasonable opportunity to comment to USFWS regarding the existence of a violation and to recommend remedies, if appropriate. USFWS will consider the comments of Water User and the comments and recommendations of the Management Committee, but retains the authority to determine the existence of a violation. If USFWS reasonably determines that a violation has occurred and will

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<sup>1</sup>Individual Recovery Agreement may be changed to fit specific circumstances.

not be remedied by Water User despite an opportunity to do so, the USFWS may request reinitiation of consultation on Water Project without reinitiating other consultations as would otherwise be required by the "Reinitiation Notice" section of the 1999 Opinion. In that event the Water Project's depletions would be excluded from the depletions covered by 1999 Opinion and the protection provided by the Incidental Take Statement.

4. Nothing in this Recovery Agreement shall be deemed to affect the authorized purposes of Water User's Water Project or USFWS' statutory authority.

5. The signing of this Recovery Agreement does not constitute any admission by Water User regarding the application of the ESA to the depletions of Water User's Water Project. The signing of this Recovery Agreement does not constitute any agreement by either party as to whether the flow recommendations for the 15-mile reach described in the 1999 Opinion are biologically or hydrologically necessary to recover the endangered fish.

6. This Recovery Agreement shall be in effect until one of the following occurs:

a. USFWS removes the listed species in the Upper Colorado River Basin from the endangered or threatened species list and determines that the Recovery Elements are no longer needed to prevent the species from being relisted under the ESA; or

b. USFWS determines that the Recovery Elements are no longer needed to recover or offset the likelihood of jeopardy to the listed species in the Upper Colorado River Basin; or

c. USFWS declares that the endangered fish in the Upper Colorado River Basin are extinct; or

d. Federal legislation is passed or federal regulatory action is taken that negates the need for [or eliminates] the Recovery Program.

7. Water User may withdraw from this Recovery Agreement upon written notice to USFWS. If Water User withdraws, USFWS may request reinitiation of consultation on Water Project without reinitiating other consultations as would otherwise be required by the "Reinitiation Notice" section of the 1999 Opinion.



GRAND VALLEY IRRIGATION COMPANY

By Robert Raymond  
Robert Raymond, President

12/6/01  
Date

By John A. Blawie  
**Deputy** Regional Director, Region 6  
U.S. Fish and Wildlife Service

1/8/02  
Date

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**ATTACHMENT G**  
Cultural Resources Compliance Documents

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**MEMORANDUM OF AGREEMENT  
BETWEEN  
THE WESTERN COLORADO AREA OFFICE, BUREAU OF RECLAMATION  
AND THE COLORADO STATE HISTORIC PRESERVATION OFFICER  
REGARDING THE UPPER MAINLINE OF THE GRAND VALLEY CANAL  
LINING PROJECT, GRAND VALLEY PROJECT, COLORADO**

**WHEREAS**, the Bureau of Reclamation (Reclamation) and the Grand Valley Irrigation Company (GVIC) plan to line a segment of the Upper Mainline of the Grand Valley Canal (Project); and

**WHEREAS**, Reclamation plans to fund GVIC to line a segment of the Upper Mainline of the Grand Valley Canal to reduce salt loading in the Colorado River, as allowed for by the Basinwide Salinity Control Program, thereby making the Project an undertaking subject to review under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f, and its implementing regulations, 36 CFR Part 800; and

**WHEREAS**, Reclamation has defined the undertaking's area of potential effect (APE) as contained within a 100-ft. corridor along the identified segment of the Upper Mainline of the Grand Valley Canal, as described in Attachment A; and

**WHEREAS**, Reclamation as lead Federal agency has determined that the Project will have an adverse effect on the segment of the Upper Mainline of the Grand Valley Canal (5ME4680.61) This cultural resource has been determined by Reclamation, in consultation with the Colorado State Historic Preservation Officer (SHPO), to be eligible for inclusion on the National Register of Historic Places under Criterion C; and

**WHEREAS**, the GVIC is the sponsor of the Project, has participated in the consultation, and has been invited to sign the Memorandum of Agreement (MOA); and

**WHEREAS**, in accordance with 36 CFR § 800.6(a)(1), Reclamation has notified the Advisory Council on Historic Preservation (Council) of its adverse effect determination providing the specified documentation, and the Council has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii);

**NOW, THEREFORE**, pursuant to Section 106 of the NHPA, Reclamation and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect on historic properties.

**STIPULATIONS**

Reclamation shall ensure that the following measures are carried out:

- I.** Prior to any modification of the segment of the Upper Mainline of the Grand Valley Canal (5ME4680.61), Reclamation will ensure that this property will be recorded in accordance with the guidance for Level I Documentation found in

“Historic Resource Documentation, Standards for Level I, II, and III Documentation” (Office of Archaeology and Historic Preservation Publication 1595, March 2013). The documentation will be of archival quality, and will include mapping of the property and photographic documentation of the portion of the historic property to be included in the lining project. Photographs will be black and white archival quality (4” x 6”) prints. Features will be plotted on the maps with GPS waypoints and will be extensively described and indexed in the report.

- II. Reclamation will supplement the Level I Documentation with a descriptive and historical narrative. The narrative will synthesize the existing documentation on 5ME4680.61, and describe the lateral in the context of the development and history of the Grand Valley area. The narrative will include photographs of the landscape features taken during the cultural resources survey. A Summary Report for the recorded segment, which includes the Level I Documentation and the narrative, will be prepared.
- III. The Summary Report will be prepared within one year of the execution of this MOA, and will be subject to SHPO approval.

#### IV. DURATION

This MOA will expire if its terms are not carried out within five (5) years from the date of its execution. Prior to such time, Reclamation may consult with the other signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation VIII below.

#### V. POST-REVIEW DISCOVERIES

If potential historic properties are discovered or unanticipated effects on historic properties found, the GVIC shall implement the discovery plan included as Attachment B of this MOA.

#### VI. MONITORING AND REPORTING

The signatories may monitor activities pursuant to this MOA, and the Council will review such activities if so requested by a party to this MOA. Reclamation will cooperate with the signatories in carrying out their review and monitoring responsibilities.

#### VII. DISPUTE RESOLUTION

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, Reclamation shall consult with such party to resolve the objection. If Reclamation determines that such objection cannot be resolved, Reclamation will:

- a. Forward all documentation relevant to this dispute, including Reclamation's proposed resolution, to the ACHP. The ACHP shall provide Reclamation with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, Reclamation shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. Reclamation will then proceed according to its final decision.
- b. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, Reclamation may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, Reclamation shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.
- c. Reclamation's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

#### **VIII. AMENDMENTS**

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

#### **IX. TERMINATION**

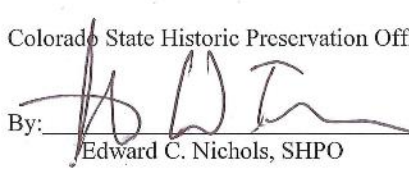
If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation VIII, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, Reclamation must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. Reclamation shall notify the signatories as to the course of action it will pursue.

Execution of this MOA by Reclamation and SHPO and implementation of its terms evidence that Reclamation has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

**SIGNATORIES:**

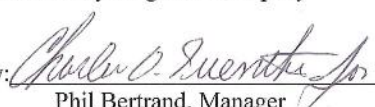
Colorado State Historic Preservation Officer

By:  Date: 3/12/15  
Edward C. Nichols, SHPO

Bureau of Reclamation, Western Colorado Area Office

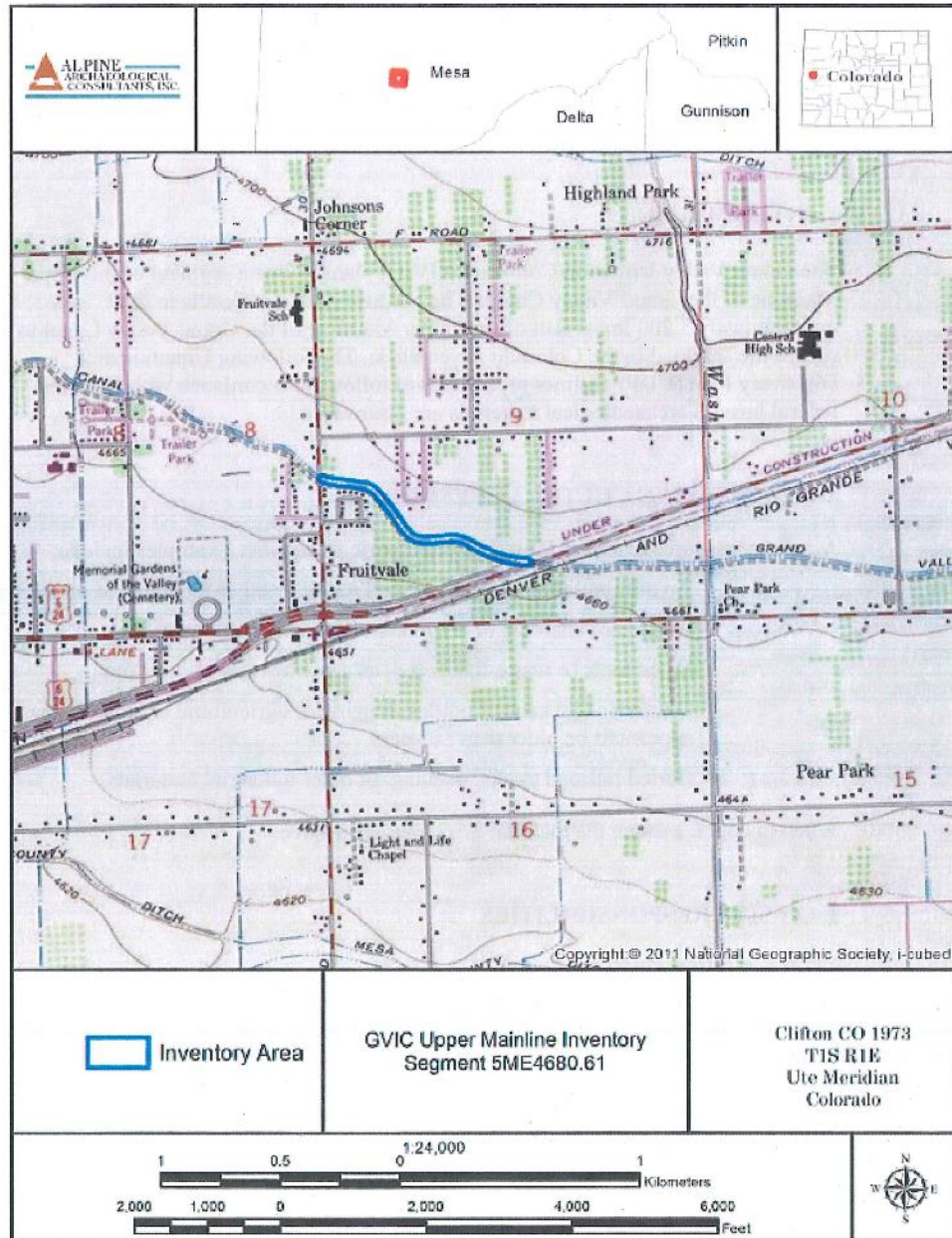
By:  Date: 3/2/15  
Ed Warner, Area Manager

Grand Valley Irrigation Company

By:  Date: 2/23/15  
Phil Bertrand, Manager



ATTACHMENT A – AREA OF POTENTIAL EFFECT



## ATTACHMENT B – UNANTICIPATED DISCOVERY PLAN

### PLAN AND PROCEDURES FOR THE UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES

#### THE UPPER MAINLINE OF THE GRAND VALLEY CANAL LINING PROJECT, MESA COUNTY, COLORADO

### 1. INTRODUCTION

The Grand Valley Irrigation Company (GVIC) plans to line a segment of the Upper Mainline of the Grand Valley Canal. The purpose of this project is to line approximately 3,200 linear feet of the Upper Mainline of the Grand Valley Canal to reduce the salt load in the Colorado River Basin. The following Unanticipated Discovery Plan (UDP) outlines procedures to follow, in accordance with state and federal laws, if archaeological materials are discovered.

### 2. RECOGNIZING CULTURAL RESOURCES

A cultural resource discovery could be prehistoric or historic. Examples include:

- An accumulation of shell, burned rocks, or other food related materials
- An area of charcoal or very dark stained soil with artifacts,
- Stone tools or waste flakes (i.e. an arrowhead, or stone chips),
- Clusters of tin cans or bottles, logging or agricultural equipment that appears to be older than 50 years,
- Buried railroad tracks, decking, or other industrial materials.

When in doubt, assume the material is a cultural resource.

### 3. ON-SITE RESPONSIBILITIES

STEP 1: STOP WORK. If any GVIC employee, contractor or subcontractor believes that he or she has uncovered a cultural resource at any point in the project, all work adjacent to the discovery must stop. The discovery location should be secured at all times.

STEP 2: NOTIFY MONITOR. If there is an archaeological monitor for the project, notify that person. If there is a monitoring plan in place, the monitor will follow its provisions. If there is not an archaeological monitor, notify the project manager.

STEP 3: NOTIFY BUREAU OF RECLAMATION. Contact the Project Overseer at the Bureau of Reclamation:

Project Manager:  
Mr. Phil Bertrand  
(970)-242-2762  
give@sprynet.com

Reclamation Project Overseer:  
Jennifer Ward  
970-248-0651  
jward@usbr.gov

The Project Manager or the Reclamation Project Overseer will make all other calls and notifications.

If human remains are encountered, treat them with dignity and respect at all times. Cover the remains with a tarp or other materials (not soil or rocks) for temporary protection in place and to shield them from being photographed. Do not call 911 or speak with the media.

#### **4. FURTHER CONTACTS AND CONSULTATION**

##### **A. Project Manager's Responsibilities:**

- Protect Find: The GVIC Project Manager is responsible for taking appropriate steps to protect the discovery site. All work will stop in an area adequate to provide for the total security, protection, and integrity of the resource. Vehicles, equipment, and unauthorized personnel will not be permitted to traverse the discovery site. Work in the immediate area will not resume until treatment of the discovery has been completed following provisions for treating archaeological/cultural material as set forth in this document.
- Direct Construction Elsewhere On-site: The GVIC Project Manager may direct construction away from cultural resources to work in other areas prior to contacting the concerned parties.
- Contact CR Manager: If the CR Program Manager has not yet been contacted, the Project Manager will do so.
- Contact Project Overseer: If the Project Overseer at the Bureau of Reclamation has not yet been contacted, the Project Manager will do so.
- Identify Find: The Project Manager will ensure that a qualified professional archaeologist examines the find to determine if it is archaeological.
  - If it is determined not archaeological, work may proceed with no further delay.

- If it is determined to be archaeological, the Project Manager will continue with notification.
- If the find may be human remains or funerary objects, the Project Manager will ensure that a qualified physical anthropologist examines the find. If it is determined to be human remains, the procedure described in Section 5 will be followed.

#### B. Project Overseer's Responsibilities

- Notify SHPO: The Project Overseer will notify the Colorado State Historic Preservation Office (SHPO).

Colorado State Historic Preservation Office:

Mr. Edward C. Nichols  
State Historic Preservation Officer  
Colorado Historical Society  
1200 Broadway  
Denver CO, 80203  
(303)-866-3355

#### C. Further Activities

- Archaeological discoveries will be documented as described in Section 6.
- Construction in the discovery area may resume as described in Section 7.

### 5. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL MATERIAL

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect.

Because the project is a Federal undertaking, the provisions of the Native American Graves Protection and Repatriation Act of 1990 apply, and the Project Overseer will follow its provisions.

In the event possible human skeletal remains are discovered, GVIC will comply with applicable state and federal laws, and the following procedure:

#### A. Notify Law Enforcement Agency or Coroner's Office:

In addition to the actions described in Sections 3 and 4, the Project Manager will immediately notify the local law enforcement agency or coroner's office.

The coroner (with assistance of law enforcement personnel) will determine if the remains are human, whether the discovery site constitutes a crime scene, and will notify SHPO.

Mesa County Coroner  
(970)-256-6462

**B. Further Activities:**

When consultation and documentation activities are complete, construction in the discovery area may resume as described in Section 7.

**6. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS**

Archaeological deposits discovered during construction will be assumed eligible for inclusion in the National Register of Historic Places under Criterion D until a formal Determination of Eligibility is made.

The Project Manager will ensure the proper documentation and assessment of any discovered cultural resources in cooperation with the Bureau of Reclamation, SHPO, affected tribes, and a contracted consultant (if any). All prehistoric and historic cultural material discovered during project construction will be recorded by a professional archaeologist in accordance with all state and federal laws.

**7. PROCEEDING WITH CONSTRUCTION**

Project construction outside the discovery location may continue while documentation and assessment of the cultural resources proceed. A professional archaeologist must determine the boundaries of the discovery location. In consultation with SHPO and affected tribes, the Project Manager and Project Overseer will determine the appropriate level of documentation and treatment of the resource.

Construction may continue at the discovery location only after the process outlined in this plan is followed and GVIC and the Bureau of Reclamation determine that compliance with state and federal laws is complete.

*Received by SHPO 10/10/17  
Sent by Reclamation 10/10/17*

**MEMORANDUM OF AGREEMENT  
BETWEEN  
THE WESTERN COLORADO AREA OFFICE, BUREAU OF RECLAMATION,  
GRAND VALLEY IRRIGATION COMPANY, AND THE  
COLORADO STATE HISTORIC PRESERVATION OFFICER  
REGARDING PHASE IV OF THE GRAND VALLEY IRRIGATION COMPANY  
LINING PROJECT, SALINITY CONTROL PROGRAM,  
MESA COUNTY, COLORADO**

**WHEREAS**, the Bureau of Reclamation (Reclamation) and the Grand Valley Irrigation Company (GVIC) plan to line a total of 1.34 miles of the Grand Valley Canal system (Project); and

**WHEREAS**, Reclamation plans to fund GVIC to line a 0.38-mile long segment of the Upper Mainline of the Grand Valley Canal and a 0.97-mile long segment of the Highline of the Grand Valley Canal, as allowed for by the Basinwide Salinity Control Program, thereby making the Project an undertaking subject to review under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f, and its implementing regulations, 36 CFR Part 800; and

**WHEREAS**, Reclamation has defined the undertaking's area of potential effect (APE) as contained within a 100-foot-wide corridor centered on the segments of the existing Upper Mainline of the Grand Valley Canal and the Highline of the Grand Valley Canal, totaling 16.33-acres on private land, as described in Attachment A; and

**WHEREAS**, Reclamation as lead Federal agency has determined that the Project will have an adverse effect on the Grand Valley Canal system/5ME4680.1, including segments 5ME4680.66 and .67. This cultural resource has been determined by Reclamation, in consultation with the Colorado State Historic Preservation Officer (SHPO), to be eligible for inclusion on the National Register of Historic Places under Criteria A and C; and

**WHEREAS**, the GVIC is the sponsor of the Project, has participated in the consultation, and has been invited to sign the MOA; and

**WHEREAS**, in accordance with 36 CFR § 800.6(a)(1), Reclamation has notified the Advisory Council on Historic Preservation (Council) of its adverse effect determination providing the specified documentation, and the Council has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii);

**WHEREAS**, Reclamation has notified Tribes on other irrigation ditch lining projects in the area, and the Tribes have chosen not to participate in the consultation; and

**NOW, THEREFORE**, pursuant to Section 106 of the NHPA, Reclamation and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect on historic properties

## STIPULATIONS

Reclamation shall ensure that the following measures are carried out:

- I. Prior to any modification of the recorded segments of the Grand Valley Canal system (5ME4680.66 and .67), Reclamation will ensure that these properties will be recorded in accordance with the guidance for Level I Documentation found in “Historic Resource Documentation, Standards for Level I, II, and III Documentation” (Office of Archaeology and Historic Preservation Publication 1595, March 2013). The documentation will be of archival quality, and will include mapping of the properties and photographic documentation of the portions of the historic properties to be included in the project. Photographs will be black and white archival quality (4” x 6”) prints. Features will be plotted on the maps with GPS waypoints and will be extensively described and indexed in the report.
- II. Stipulation I must be satisfied prior to construction and/or any earth disturbances within the APE.
- III. Reclamation will submit a copy of the Level I Documentation to the SHPO within one (1) year of the execution of this MOA. The SHPO shall review and provide comments within thirty (30) calendar days of receipt. Once accepted by SHPO, SHPO shall receive a minimum of one archivally stable copy of the final recordation for its files and provide documentation of acceptance. The activities prescribed by the stipulations of this MOA shall be carried out by or under the direct supervision of a person or persons meeting, at minimum, the Secretary of the Interior Profession Qualification Standards (48 FR 44738-39) (PQS) in the appropriate discipline. This does not preclude the use of properly supervised persons who do not meet the PQS.
- IV. A copy of the Level I Documentation will be placed on Reclamation’s Western Colorado Area Office’s cultural resource webpage. Availability of the documentation will be announced through a press release. The SHPO shall receive notification once the document is placed on the webpage.

## V. DURATION

This MOA will be null and void if its terms are not carried out within one (1) year from the date of its execution. Prior to such time, Reclamation may consult with the other signatories to reconsider the terms of the agreement. Unless terminated pursuant to Stipulation X, below, this MOA will be in effect through Reclamation’s implementation of the stipulations of this MOA, and will terminate and have no further force or effect when Reclamation, in consultation with the SHPO, determines that the terms of the MOA have been fulfilled in a satisfactory manner.

## VI. POST-REVIEW DISCOVERIES

If potential historic properties are discovered or unanticipated effects on historic properties found, the GVIC shall implement the discovery plan included as Attachment B of this MOA.

## **VII. MONITORING AND REPORTING**

Each year following the execution of this MOA until its stipulations are carried out, it expires, or is terminated, GVIC shall provide all parties to this MOA a summary report detailing work carried out pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in GVIC's efforts to carry out the terms of this MOA.

The signatories may monitor activities pursuant to this MOA, and the Council will review such activities if so requested by a party to this MOA. Reclamation will cooperate with the signatories in carrying out their review and monitoring responsibilities.

## **VIII. DISPUTE RESOLUTION**

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, Reclamation shall consult with such party to resolve the objection. If Reclamation determines that such objection cannot be resolved, Reclamation will:

- a. Forward all documentation relevant to this dispute, including Reclamation's proposed resolution, to the ACHP. The ACHP shall provide Reclamation with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, Reclamation shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. Reclamation will then proceed according to its final decision.
- b. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, Reclamation may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, Reclamation shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.
- c. Reclamation's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

## **IX. AMENDMENTS**

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

## **X. TERMINATION**

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an



amendment per Stipulation IX, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, Reclamation must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. Reclamation shall notify the signatories as to the course of action it will pursue.

**Execution** of this MOA by GVIC, Reclamation and SHPO and implementation of its terms evidence that Reclamation has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

**SIGNATORIES:**

Colorado State Historic Preservation Officer


By:  Date: 11/21/14  
Steve Turner, AIA, SHPO

Bureau of Reclamation, Western Colorado Area Office

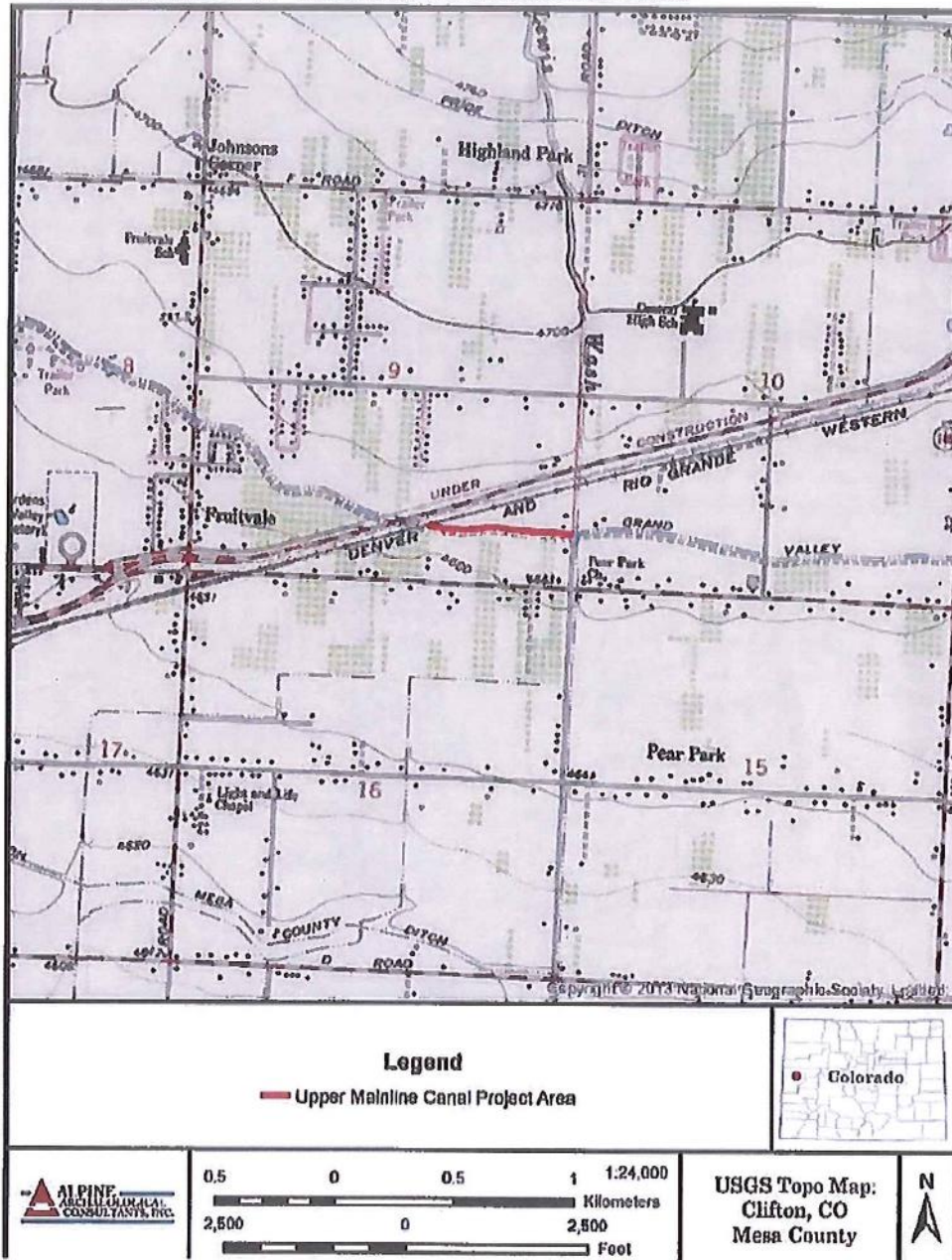
By:  Date: 11-15-16  
Ed Warner, Area Manager

**INVITED SIGNATORIES:**

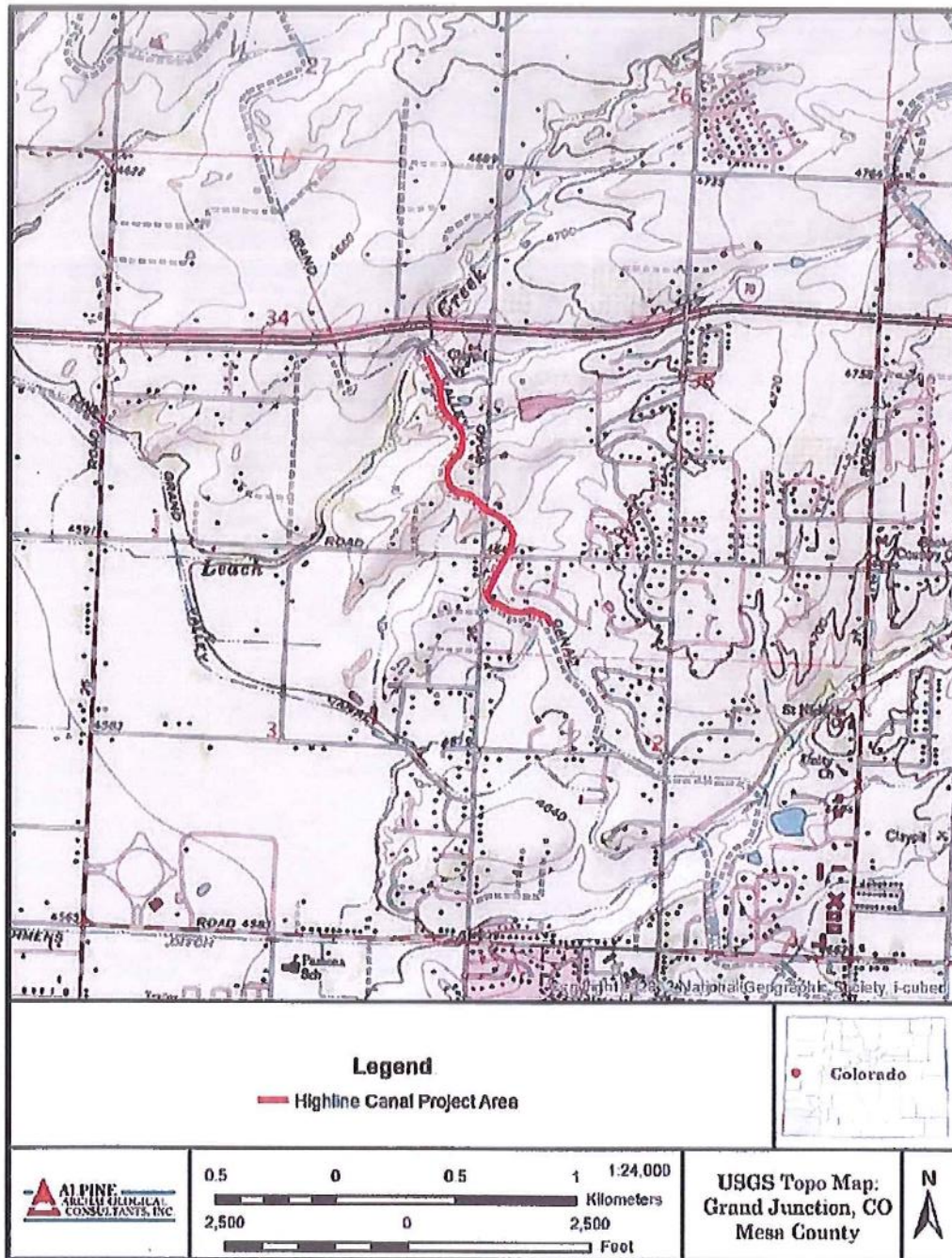
Grand Valley Irrigation Company

By:  Date: 11-7-2016  
Phil Bertrand, Manager

ATTACHMENT A – AREA OF POTENTIAL EFFECT



Map showing the Upper Mainline of the Grand Valley Canal Project Area.



Map showing the Highline of the Grand Valley Canal Project Area.

**ATTACHMENT B – UNANTICIPATED DISCOVERY PLAN****PLAN AND PROCEDURES FOR THE UNANTICIPATED DISCOVERY OF  
CULTURAL RESOURCES****GVIC PHASE IV CANAL LINING PROJECT  
SALINITY CONTROL PROGRAM,  
MESA COUNTY, COLORADO****1. INTRODUCTION**

The Grand Valley Irrigation Company (GVIC) plans to line approximately 1.34 miles of the Grand Valley Canal system. The purpose of this project is to reduce the salt load in the Colorado River Basin. The following Unanticipated Discovery Plan (UDP) outlines procedures to follow, in accordance with state and federal laws, if archaeological materials are discovered.

**2. RECOGNIZING CULTURAL RESOURCES**

A cultural resource discovery could be prehistoric or historic. Examples include, but are not limited to:

- An accumulation of shell, burned rocks, or other food related materials
- An area of charcoal or very dark stained soil with artifacts,
- Stone tools or waste flakes (i.e. an arrowhead, or stone chips),
- Clusters of tin cans or bottles, logging or agricultural equipment that appears to be older than 50 years,
- Buried railroad tracks, decking, or other industrial materials.

When in doubt, assume the material is a cultural resource.

**3. ON-SITE RESPONSIBILITIES**

**STEP 1: STOP WORK.** If any GVIC employee, contractor or subcontractor believes that he or she has uncovered a cultural resource at any point in the project, all work adjacent to the discovery must stop. The discovery location should be secured at all times.

**STEP 2: NOTIFY MONITOR.** If there is an archaeological monitor for the project, notify that person. If there is a monitoring plan in place, the monitor will follow its provisions. If there is not an archaeological monitor, notify the project manager.

**STEP 3: NOTIFY BUREAU OF RECLAMATION.** Contact the Project Overseer at the Bureau of Reclamation:

Project Manager:  
Mr. Phil Bertrand  
(970)-242-2762  
gvic@sprynet.com

Reclamation Project Overseer:  
Jennifer Ward  
970-248-0651  
jward@usbr.gov

The Project Manager or the Reclamation Project Overseer will make all other calls and notifications.

If human remains are encountered, treat them with dignity and respect at all times. Cover the remains with a tarp or other materials (not soil or rocks) for temporary protection in place and to shield them from being photographed. Do not call 911 or speak with the media.

#### 4. FURTHER CONTACTS AND CONSULTATION

##### A. Project Manager's Responsibilities:

- Protect Find: The GVIC Project Manager is responsible for taking appropriate steps to protect the discovery site. All work will stop in an area adequate to provide for the total security, protection, and integrity of the resource. Vehicles, equipment, and unauthorized personnel will not be permitted to traverse the discovery site. Work in the immediate area will not resume until treatment of the discovery has been completed following provisions for treating archaeological/cultural material as set forth in this document.
- Direct Construction Elsewhere On-site: The GVIC Project Manager may direct construction away from cultural resources to work in other areas prior to contacting the concerned parties.
- Contact CR Manager: If there is a CR Program Manager, and that person has not yet been contacted, the Project Manager will do so.
- Contact Project Overseer: If the Project Overseer at the Bureau of Reclamation has not yet been contacted, the Project Manager will do so.
- Identify Find: The Project Manager will ensure that a qualified professional archaeologist examines the find to determine if it is archaeological.
  - If it is determined not archaeological, work may proceed with no further delay.
  - If it is determined to be archaeological, the Project Manager will continue with notification.
  - If the find may be human remains or funerary objects, the Project Manager will ensure that a qualified physical anthropologist examines

the find. If it is determined to be human remains, the procedure described in Section 5 will be followed.

**B. Project Overseer's Responsibilities**

- **Notify SHPO:** The Project Overseer will notify the Colorado State Historic Preservation Office (SHPO).

Colorado State Historic Preservation Office:

Mr. Steve Turner, AIA  
State Historic Preservation Officer  
Colorado Historical Society  
1200 Broadway  
Denver CO, 80203  
(303)-866-2776

**C. Further Activities**

- Archaeological discoveries will be documented as described in Section 6.
- Construction in the discovery area may resume as described in Section 7.

**5. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL MATERIAL**

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect.

Because the project is a Federal undertaking, the provisions of the Native American Graves Protection and Repatriation Act of 1990 apply, and the Project Overseer will follow their provisions. In areas where the project extends off of Federal lands, the requirements under State Law Colorado Revised Statute (CRS) 24-80 part 13 apply. If the remains are not modern, NAGPRA and ARPA apply if they are found to be Native American. ARPA and the Unmarked Human Graves Colorado Statute (CRS 24-80-1301-1305) apply if the human remains are Native American and/or determined to be of archaeological interest.

In the event possible human skeletal remains are discovered, GVIC will comply with applicable state and federal laws, and the following procedure:

**A. Notify Law Enforcement Agency or Coroner's Office:**

In addition to the actions described in Sections 3 and 4, the Project Manager will immediately notify the local law enforcement agency or coroner's office.

The coroner (with assistance of law enforcement personnel) will determine if the remains are human, whether the discovery site constitutes a crime scene, and will notify SHPO.

Mesa County Coroner  
(970)-256-6462

**B. Further Activities:**

When consultation and documentation activities are complete, construction in the discovery area may resume as described in Section 7.

**6. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS**

Archaeological deposits discovered during construction will be assumed eligible for inclusion in the National Register of Historic Places under Criterion D until a formal Determination of Eligibility is made.

The Project Manager will ensure the proper documentation and assessment of any discovered cultural resources in cooperation with the Bureau of Reclamation, SHPO, affected tribes, and a contracted consultant (if any). All prehistoric and historic cultural material discovered during project construction will be recorded by a professional archaeologist in accordance with all state and federal laws.

**7. PROCEEDING WITH CONSTRUCTION**

Project construction outside the discovery location may continue while documentation and assessment of the cultural resources proceed. A professional archaeologist must determine the boundaries of the discovery location. In consultation with SHPO and affected tribes, the Project Manager and Project Overseer will determine the appropriate level of documentation and treatment of the resource.

Construction may continue at the discovery location only after the process outlined in this plan is followed and GVIC and the Bureau of Reclamation determine that compliance with state and federal laws is complete.



OFFICE of ARCHAEOLOGY and HISTORIC PRESERVATION

OCT 04 2017

2017 OCT 10 PM 12: 15

Ed Warner  
Area Manager  
Bureau of Reclamation  
Western Colorado Area Office  
445 West Gunnison Ave, Ste 221  
Grand Junction, CO 81501

Ward JKW

McWhirter \_\_\_\_\_

Re: Determination of Eligibility and Effect; Grand Valley Irrigation Company Phase IV Habitat Replacement Project, Salinity Control Program; Mesa County, Colorado (HC #70987)

Dear Mr. Warner:

Thank you for your correspondence dated September 25, 2017 and received on September 28, 2017 by our office regarding the consultation of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).

After review of the provided information, we do not object to the proposed Area of Potential Effects (APE) for the proposed project. After review of the provided information, we concur that segment 5ME.764.2 supports the overall eligibility of resource 5ME.764 for the National Register of Historic Places under Criteria A for its association with the Redlands Power Canal System. The above-mentioned letter states that the segment is also considered eligible under Criteria C as it currently functions as originally designed and appears essentially the same as it did at the time of construction. Although those two factors are significant to the integrity of the resource, they do not support the resource's overall eligibility under Criteria C. As such, we believe resource 5ME.764 remains eligible for the National Register of Historic Places under Criteria A but is not eligible under Criteria C.

After review of the scope of work and assessment of adverse effect, we concur with the recommended finding of *no adverse effect* [36 CFR 800.5(d)(1)] under Section 106 for resource 5ME.764, including segment 5ME.764.2 for the proposed installation of a headgate.

Should unidentified archaeological resources be discovered in the course of the project, work must be interrupted until the resources have been evaluated in terms of the National Register eligibility criteria (36 CFR 60.4) in consultation with our office pursuant to 36 CFR 800.13. Also, should the consulted-upon scope of the work change please contact our office for continued consultation under 36 CFR 800.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

If we may be of further assistance, please contact Jennifer Bryant, our Section 106 Compliance Manager, at (303) 866-2673 or [jennifer.bryant@state.co.us](mailto:jennifer.bryant@state.co.us).

Sincerely,

Steve Turner, AIA  
State Historic Preservation Officer

OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION

303-866-3392 \* Fax 303-866-2711 \* E-mail: [oahp@state.co.us](mailto:oahp@state.co.us) \* Internet: [www.historycolorado.org](http://www.historycolorado.org)

- 1 -

COLORADO HISTORICAL SOCIETY



## **ATTACHMENT H**

### Environmental Commitment Checklist

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## GVIC Canal Lining Phase IV – 540 Project Environmental Checklist

This Environmental Checklist (Checklist) has been prepared to ensure that the environmental commitments are met, as set forth in the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) completed for the GVIC Canal Lining Phase IV – 540 Project (“Project”) pursuant to the National Environmental Policy Act (NEPA). The Bureau of Reclamation is the lead federal agency with primary responsibility for complying with the NEPA on the Project, and the Grand Valley Irrigation Company (GVIC) is responsible for “implementing and/or complying with the environmental commitments contained in the NEPA/Endangered Species Act compliance documents to be developed by Reclamation for the project.” GVIC shall utilize this Checklist to document compliance with each commitment, and shall submit the relevant component of the completed Checklist to Reclamation immediately following each phase of the Project, i.e., Pre-Construction, During Construction, and Post-Construction, along with documents generated to meet environmental commitments.

<b>A. Pre-Construction Checklist</b>		
<b>#</b>	<b>COMMITMENT</b>	<b>DATE OF COMPLIANCE</b>
A.01	GVIC has coordinated and shall continue to coordinate with GVDD for work in the GVDD right-of-way for installation of underliner drain tie-ins.	
A.02	GVIC shall obtain a 20-foot easement on a private land crossing of an underliner drain in Section 3 prior to construction.	
A.03	A spill response plan shall be prepared in advance of construction by the contractor for areas of work where spilled contaminants could flow into water bodies.	
A.04	Onsite supervisors and equipment operators shall be trained and knowledgeable in the use of spill containment equipment.	
A.05	Prior to construction, brush shall be removed by mowing or chopping, and stumps shall be removed by grubbing. Vegetation materials shall either be hauled to the Mesa County Landfill, or chipped and mulched onsite.	
A.06	Equipment used at the Habitat Replacement Site shall be thoroughly cleaned of soils prior to delivery to the site.	
A.07	Memoranda of Agreement (MOAs) are in place to mitigate the Proposed Action’s adverse effects to cultural resources. The MOAs commit Reclamation to complete historic resource documentation of the canal segments prior to construction activities in accordance with the guidance for “Level I documentation,” and to post this documentation on the Reclamation Western Colorado Area Office’s cultural resources webpage.	The required Level I documentation was completed in March 2017 and posted on Reclamation’s webpage.

<b>A. Pre-Construction Checklist</b>		
<b>#</b>	<b>COMMITMENT</b>	<b>DATE OF COMPLIANCE</b>
A.08	The construction contractor shall prepare, prior to initiation of construction, a spill response plan for areas of work where spilled contaminants could flow into water bodies. All employees and workers, including those under separate contract, will be briefed and made familiar with this plan.	
A.09	Stormwater Management Plan must be submitted to the Colorado Department of Public Health and Environment (CDPHE) by the construction contractor prior to construction disturbance (a copy shall also be provided to Reclamation).	
A.10	CWA Section 402 Storm Water Discharge Permit compliant with the National Pollutant Discharge Elimination System (NPDES) must be obtained from CDPHE by the construction contractor prior to construction disturbance (regardless of whether dewatering would take place during construction). A copy of this permit shall be provided to Reclamation.	
A.11	Utility clearances must to be obtained by the construction contractor prior to construction activities from local utility companies.	
A.12	A traffic plan and City of Grand Junction Public Right-of-Way Work Permit must be obtained to implement the Proposed Action.	
A.14	A CDOT Traffic Access or Ingress/Egress Permit must be obtained to implement the Proposed Action.	
A.15	Any construction activities outside of the inventoried project area would first require additional review by Reclamation to determine if the existing surveys and information are adequate to evaluate additional impacts outside this corridor.	
A.16	Note: construction work conducted outside the planned timeframe of the Proposed Action would also require evaluation for impacts to wildlife, specifically special status species.	

<b>B. During Construction Checklist</b>		
<b>#</b>	<b>COMMITMENT</b>	<b>DATE OF COMPLIANCE</b>
B.01	Construction activities will occur in the GVIC System right-of-way (except for underliner drain connections in the GVDD right-of-way, and an underliner drain crossing on private property in Section 3 of the project area).	

## B. During Construction Checklist

#	COMMITMENT	DATE OF COMPLIANCE
B.02	Straw wattles, silt curtains, cofferdams, dikes, straw bales, or other appropriate and suitable erosion control measures shall be used, as appropriate, to prevent erosion from entering waterways during construction.	
B.03	All employees and workers, including those under separate contract, shall be briefed and made familiar with the spill response plan.	
B.04	Fuels, lubricants, hydraulic fluids, and other petrochemicals shall be stored and dispensed in an approved staging area.	
B.05	Equipment shall be inspected daily and immediately repaired as necessary to ensure equipment is free of petrochemical leaks.	
B.06	Any staging of fuel or lubricants, or fueling or maintenance of vehicles or equipment, will not be conducted within 100 feet of any live water or drainage.	
B.07	Construction equipment shall be parked, stored, and serviced only at an approved staging area.	
B.08	Portable secondary containment shall be provided for any fuel or lubricant containers staged within the Proposed Action Area.	
B.09	The construction contractor shall transport, handle, and store any fuels, lubricants, or other hazardous substances involved with the Proposed Action in an appropriate manner that prevents them from contaminating soil and water resources.	
B.10	A spill response kit, which includes appropriate-sized spill blankets, shall be easily accessible and onsite at all times.	
B.11	All spills, regardless of size, shall be cleaned up promptly, according to the spill response plan, and contaminated soil shall be disposed of at an approved facility.	
B.12	Appropriate federal and Colorado authorities shall be immediately notified in the event of any contaminant spill. Any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b.	
B.13	The use, storage and disposal of hazardous materials and wastes within the project area will be managed in accordance with all federal, state, and local standards, including the Toxic Substances Control Act of 1976, as amended (15 USC 2601, et seq., 40 CFR Part 702-799, and 40 CFR 761.1-761.193).	
B.14	Any trash or solid wastes generated during the Proposed Action will be properly disposed offsite.	
B.15	Ground disturbances shall be limited to only those areas necessary to safely implement the Proposed Action.	

<b>B. During Construction Checklist</b>		
<b>#</b>	<b>COMMITMENT</b>	<b>DATE OF COMPLIANCE</b>
B.16	Straw wattles, silt curtains, cofferdams, dikes, straw bales, or other suitable erosion control measures shall be used at the edges of ground disturbance to minimize soil erosion and prevent soil erosion from entering waterways during construction.	
B.17	Noxious weeds shall be controlled in disturbed areas according to the Mesa County Noxious Weed Plan ( <a href="http://www.mesacounty.us/WorkArea//DownloadAsset.aspx?id=21847">www.mesacounty.us/WorkArea//DownloadAsset.aspx?id=21847</a> ) and the City of Grand Junction Weed Abatement Program ( <a href="http://www.gjcity.org/siteassets/parks-and-rec/pdfs/weed-program/weed-abatement-brochure.pdf">http://www.gjcity.org/siteassets/parks-and-rec/pdfs/weed-program/weed-abatement-brochure.pdf</a> ).	
B.18	After working in weed-infested areas, equipment used at the Habitat Replacement Site shall be thoroughly cleaned prior to moving to uncontaminated terrain.	
B.19	In order to minimize and mitigate disturbances to wildlife, construction areas shall be confined to the smallest feasible area and within approved construction limits/rights-of-way.	
B.20	In order to minimize and mitigate disturbances to wildlife, construction timing shall be limited to the timeframes described in the description of the Proposed Action and in Section 4.9.	
B.21	Vegetation (tree, shrub, and dense grass) removal shall avoid the primary nesting season of migratory birds (April 1 through July 15) to prevent violations of the Migratory Bird Treaty Act.	
B.22	Non-native tree and shrub removal at the Habitat Replacement Site shall avoid the breeding season of the threatened western yellow-billed cuckoo (June 1 through September 1).	
B.23	If an active eagle or other raptor nest is discovered in in or adjacent to the construction footprint, consult Reclamation prior to conducting any activities.	
B.24	The Proposed Action (Habitat Replacement Site) lies approximately ½ mile from a mapped bald eagle winter roost. If an active bald eagle roost is discovered within ¼ mile of the Proposed Action, activity shall cease until Reclamation is consulted.	
B.25	In the event that threatened or endangered species are discovered during construction, construction activities shall halt until consultation is completed with the U.S. Fish and Wildlife Service and protection measures are implemented. Additional surveys shall be required for threatened or endangered species if construction plans or proposed disturbance areas are changed.	

## B. During Construction Checklist

#	COMMITMENT	DATE OF COMPLIANCE
B.26	If previously undiscovered cultural or paleontological resources are discovered during construction, construction activities must immediately cease in the vicinity of the discovery and Reclamation must be notified. In this event, the SHPO shall be consulted, and work shall not be resumed until consultation has been completed, as outlined in the Unanticipated Discovery Plan in the MOA.	

## C. Post-Construction Checklist

#	COMMITMENT	DATE OF COMPLIANCE
C.01	The Habitat Replacement Site must be managed and maintained per the Funding Agreement between GVIC and Reclamation following the construction of the Proposed Action.	