

# RECLAMATION

*Managing Water in the West*

## **Environmental Assessment Hancock-State Road Salinity Reduction Project Uintah and Duchesne Counties, Utah**

**PRO-EA-011-006**

**Provo Area Office  
Upper Colorado Region  
Provo, Utah**



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

**February 2012**

## **Mission Statements**

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

# Environmental Assessment Hancock-State Road Salinity Reduction Project Uintah and Duchesne Counties, Utah

PRO-EA-011-006

*prepared by*

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# Contents

	Page
<b>Chapter 1: Purpose and Need for the Proposed Action .....</b>	<b>1</b>
1.1 Introduction and Background .....	1
1.2 Purpose and Need for the Proposed Action .....	1
1.3 Background .....	1
1.3.1 Colorado River Basin Salinity Control Program .....	1
1.3.2 Hancock Canal, Martin Lateral, and State Road Canal Salinity Control Project .....	2
1.4 Decision to be Made .....	5
1.5 Permits and Authorizations .....	5
1.6 Relationship to Other Projects .....	6
<b>Chapter 2: Alternatives .....</b>	<b>7</b>
2.1 Introduction .....	7
2.2 No Action Alternative .....	7
2.3 Action Alternative .....	8
2.3.1 Pipeline Construction Procedures .....	10
2.3.1 Trench Excavation .....	11
2.3.1.3 Pipe and Appurtenance Installation .....	11
2.3.1.4 Quality Control Procedures .....	11
2.3.2 Construction Staging Areas .....	11
2.3.3 Land Disturbance .....	14
2.3.4 Transportation Requirements .....	14
2.3.5 Standard Operating Procedures .....	14
<b>Chapter 3: Affected Environment and Environmental Consequences .....</b>	<b>15</b>
3.1 Introduction .....	15
3.2 Resources Eliminated from Analysis .....	15
<b>3.3 Affected Environment .....</b>	<b>17</b>
3.3.1 Air Quality .....	17
3.3.2 Water Resources .....	17
3.3.3 Water Quality .....	17
3.3.4 Upland Vegetation Resources .....	17
3.3.5 Wetlands and Riparian Resources .....	18
3.3.6 Fish and Wildlife Resources .....	18
3.3.7 Special Status Species .....	19
3.3.7.1 Federally Listed Species .....	19
3.3.7.2 State Sensitive Species .....	24
3.3.7.3 Special Concern Species .....	24
3.3.8 Cultural Resources .....	24

3.3.9 Paleontological Resources .....	27
3.3.10 Soil Sedimentation and Erosion.....	27
3.3.11 Indian Trust Assets .....	28
3.3.12 Environmental Justice.....	28
3.3.13 Public Safety, Access, and Transportation .....	29
3.4 Environmental Consequences.....	29
3.4.1 Air Quality .....	29
3.4.2 Water Resources .....	29
3.4.3 Water Quality.....	30
3.4.4 Upland Vegetation Resources.....	30
3.4.5 Wetlands and Riparian Resources .....	31
3.4.6 Fish and Wildlife Resources .....	32
3.4.7 Special Status Species.....	33
3.4.8 Cultural Resources .....	34
3.4.9 Paleontological Resources .....	34
3.4.10 Soil, Erosion and Sedimentation.....	35
3.4.11 Indian Trust Assets (ITAs).....	35
3.4.12 Environmental Justice.....	35
3.4.14 Transportation.....	36
3.4.15 Summary of Environmental Consequences .....	37
<b>Chapter 4: Environmental Commitments .....</b>	<b>39</b>
<b>Chapter 5: Consultation and Coordination.....</b>	<b>41</b>
5.1 Introduction.....	41
5.2 Native American Consultation.....	41
5.3 Paleontological Resources .....	41
5.4 Utah State Historic Preservation Office.....	41
<b>Chapter 6: Preparers.....</b>	<b>43</b>
<b>Chapter 7: References .....</b>	<b>45</b>
<b>Appendix A - Wetland Report</b>	
<b>Appendix B - Biological Assessment</b>	
<b>Appendix C – UGS Letter</b>	
<b>Appendix D – SHPO Concurrence</b>	
<b>Appendix E – Public Comments</b>	

# **Chapter 1: Purpose and Need for the Proposed Action**

## **1.1 Introduction and Background**

This document is an Environmental Assessment (EA) analyzing the potential effects of the Hancock-State Road Salinity Reduction Project, located in Uintah and Duchesne Counties, Utah. The Federal action being considered in this document is whether the Bureau of Reclamation should authorize the use of Federal funds to replace the existing Hancock Canal, Martin Lateral, and State Road Canal with a pipeline.

This EA has been prepared as required by the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) and the U.S. Department of the Interior (Department) regulations implementing NEPA. This EA will analyze the potential impacts of the proposed action. As required by the NEPA implementing regulations, if potentially significant impacts to the environment are identified, an Environmental Impact Statement (EIS) will be prepared. If no significant impacts are identified, a Finding of No Significant Impact (FONSI) will be issued by Reclamation.

## **1.2 Purpose and Need for the Proposed Action**

The purpose of the proposed action is to replace the Hancock Canal, Martin Lateral, and State Road Canal with new pipelines. These pipelines would reduce seepage from the unlined portions of the existing canals and laterals. This seepage dissolves salts in the soils and eventually carries the salts to the Upper Colorado River Basin. The proposed action is needed to reduce the salinity contributions to the Upper Colorado River Basin that result from the existing Hancock Canal, Martin Lateral, and State Road Canal, consistent with the purposes of the Colorado River Basin Salinity Control Program.

## **1.3 Background**

### **1.3.1 Colorado River Basin Salinity Control Program**

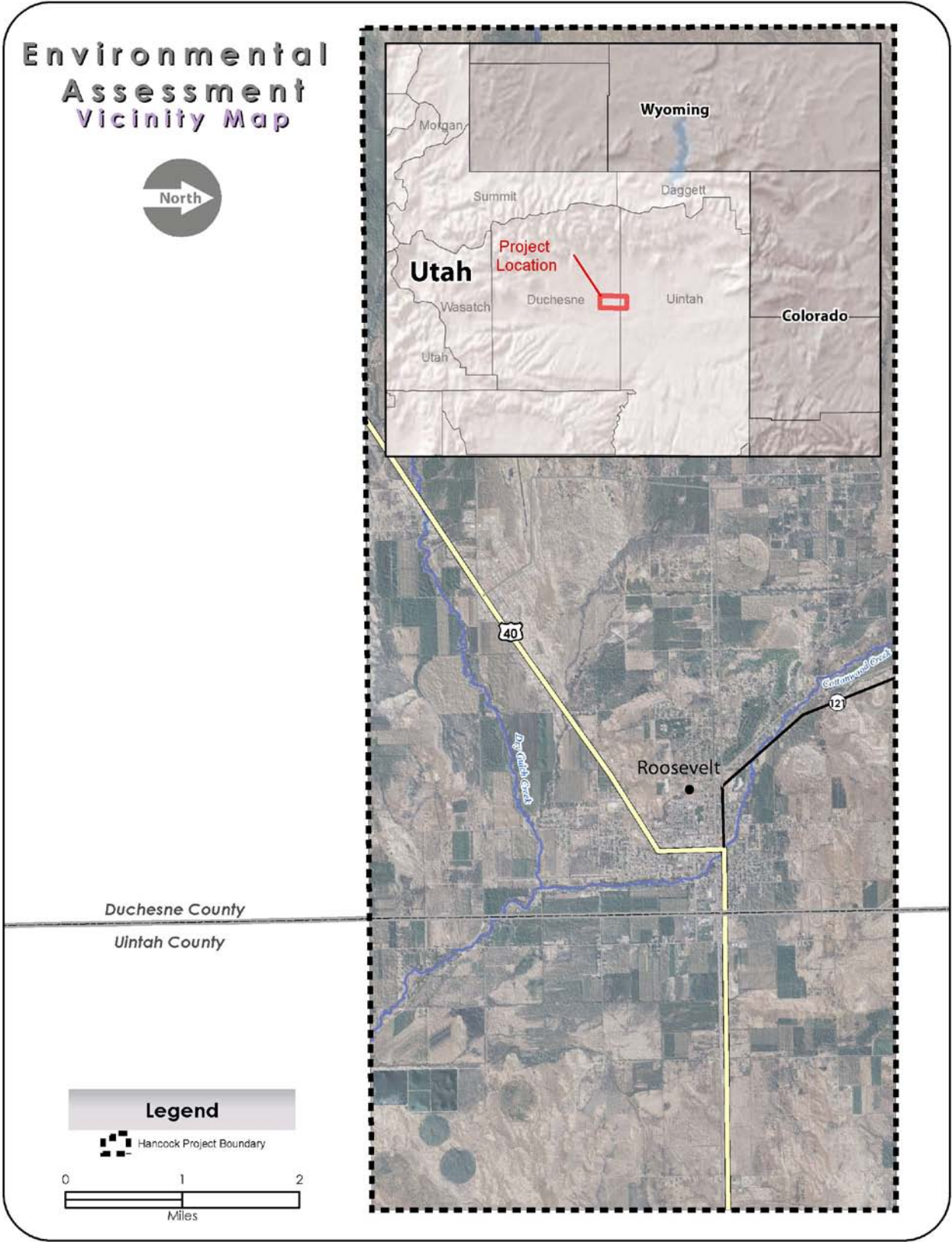
Controlling the salinity of the Colorado River remains one of the most important challenges facing Reclamation. The Colorado River provides water for more than 23 million people and irrigation for more than 4 million acres of land in the United States, as well as water for about 2.3 million people and 500,000 irrigated acres in the Republic of Mexico. High salinity levels in the river disrupt

agricultural production by making it difficult to grow vegetable and fruit crops. Furthermore, the salt corrodes municipal lines and household pipes. Salinity damages in the United States portion of the Colorado River Basin range between \$500 million to \$750 million per year, and could exceed \$1.5 billion per year if future increases in salinity are not controlled. The purpose of the Colorado River Basin Salinity Control Program is to protect and improve the water quality in the Colorado River ([www.usbr.gov/uc/progact/salinity/](http://www.usbr.gov/uc/progact/salinity/)).

### **1.3.2 Hancock Canal, Martin Lateral, and State Road Canal Salinity Control Project**

The project is located in Uintah and Duchesne Counties, Utah, in the town of Roosevelt and the surrounding area (Figure 1.1: Project Location). The project area lies within the Uintah Basin Subsection of the Colorado Plateau. The area is east of the Wasatch Mountains and south of the Uinta Mountains. The climate in the Basin is semi-arid, with occasionally severe cold winter temperatures. Due to the climate, the growing season ranges from 150 to 190 days with crops primarily consisting of grass, pasture, and alfalfa.

The Hancock Canal, Martin Lateral, and State Road Canal are owned and operated by the Dry Gulch Irrigation Company, founded in 1905. In the 1930s the irrigation company became a member of the Moon Lake Water Users Association (Association). The Dry Gulch Irrigation Company is comprised of approximately 1,100 shareholders, who irrigate more than 53,000 acres of farmland within the Uintah Basin. The irrigation company manages 74 miles of pipelines and 120 miles of open canals. The Lake Fork River and the Uintah River serve as the primary source of irrigation water, with some irrigation water coming from the Yellowstone River, Garfield Creek, and Shale Creek. The Association owns storage rights in Reclamation's Moon Lake Reservoir, Big Sand Wash Reservoir, and Browns Draw Reservoir, which have storage capacities of 35,800; 24,100; and 5,900 acre-feet of water, respectively.



**Figure 1.1: Project Location**



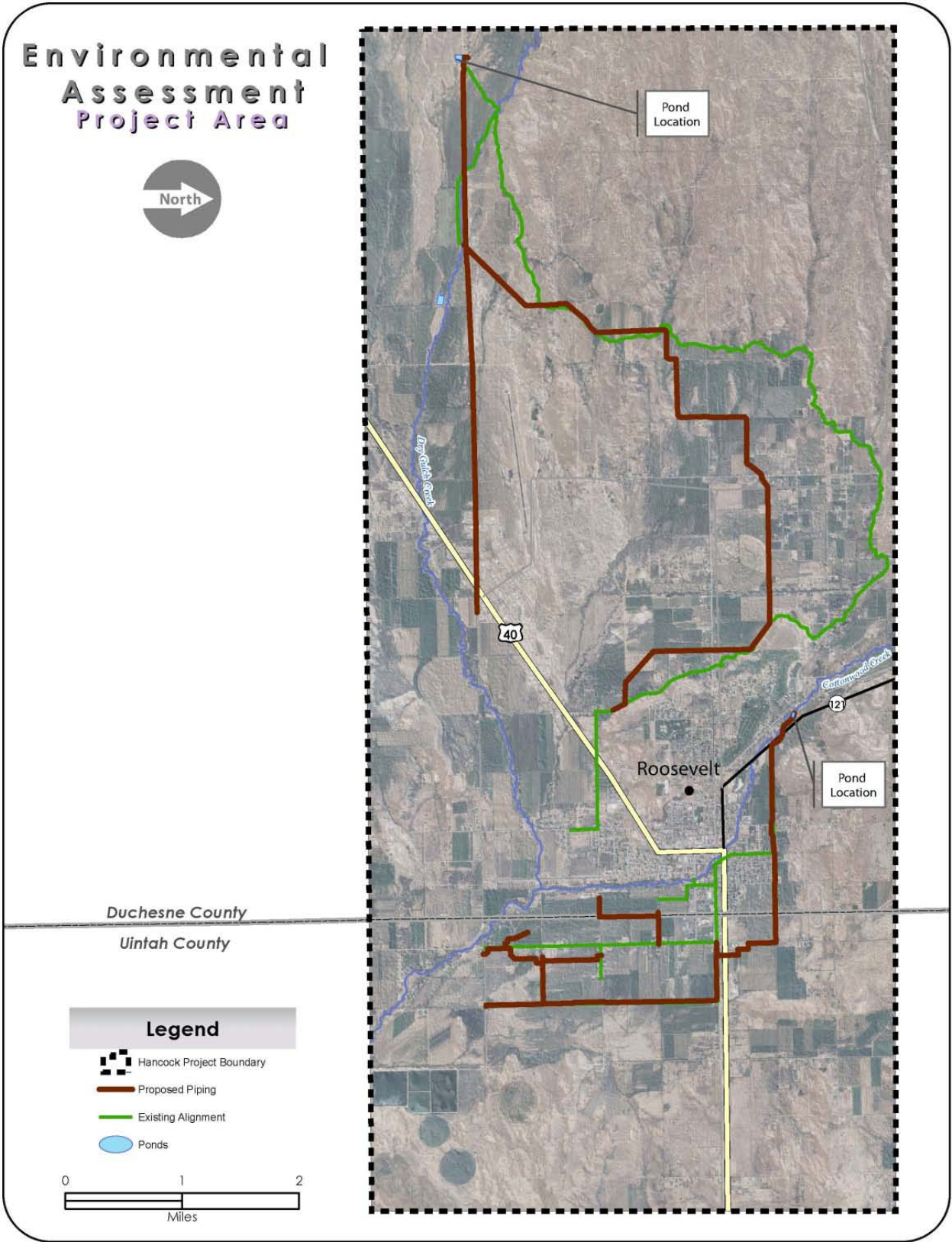


Figure 1.2: Project Area

## 1.4 Decision to be Made

Reclamation must decide whether to authorize use of Federal Salinity Control Program funds by the Dry Gulch Irrigation Company, for the replacement of the Hancock, Martin and State Road laterals with pipelines.

## 1.5 Permits and Authorizations

If the proposed action is approved, the following permits would be required prior to project implementation:

- 404 Permit - This permit would be issued to the applicant by the U.S. Army Corps of Engineers and complies with Section 404 of the Clean Water Act for actions on waters of the United States and jurisdictional wetlands.
- Stream Alteration Permit – This permit would be issued to the applicant by the Utah Department of Environmental Quality and would comply with Section 404 of the Clean Water Act for small projects not affecting wetlands.
- Utah Pollution Discharge Elimination Permit – This permit (if required) would be issued to the applicant by the Utah Division of Water Quality and would comply with Section 402 of the Clean Water Act for actions disturbing more than 1 acre of ground or any discharge.
- Easements with landowners – Easements would be obtained to allow the Dry Gulch Irrigation Company to construct, operate, and maintain the proposed pipelines.

Compliance with the following laws and Executive Orders are also required prior to and during project implementation:

### Natural Resource Protection Laws

- Endangered Species Act of 1973 as amended, (16 U.S.C. 1531-1544, 87 Stat. 884)
- Clean Water Act of 1972 as amended (33 U.S.C. 1251 *et seq.*)
- Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712)
- Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668c)
- Comprehensive Environmental Response Compensation and Liability Act of 1980 (42 U.S.C. 9601)
- Superfund Amendments and Reauthorization Act of 1986 (6 U.S.C. Public Law 107-296)

- Resource Conservation and Recovery Act of 1979 (42 U.S.C. 9601)

### **Cultural Resource Laws**

- National Historic Preservation Act of 1966 (16 U.S.C. 470 *et seq.*)
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-470mm *et seq.*)
- Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (48 FR 44716)

### **Native American Laws**

- American Indian Religious Freedom Act (AIRFA) of 1978 (42 U.S.C. 1996 and 1996a)
- Enhancing the Intergovernmental Partnership (Executive Order 12875, October 26, 1993 [58 Federal Register 58093])
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001 *et seq.*)
- Consultation and Coordination with Indian Tribal Governments (Executive Order 13084, May 14, 1998 [63 Federal Register 27655])
- Indian Sacred Sites (Executive Order 13007, May 24, 1996 [61 Federal Register 26771])

### **Paleontological Resource Laws**

Paleontological Resources Preservation Act of 2009 (Section 6301-6312 of the Omnibus Land Management Act of 2009 [Public Law 111-11 123 Stat. 991-1456]).

## **1.6 Relationship to Other Projects**

There are no known related actions in the project area.

# **Chapter 2: Alternatives**

## **2.1 Introduction**

The proposed action analyzed in this EA, is Reclamation's authorization for use of Federal funds for the enhancement deemed most suitable for the laterals under the present conditions, including the execution of any easements for required land acquisition as described in Section 2.3. This EA will be used to determine the potential effects on the human and natural environment, and will serve to guide Reclamation's decision, along with other pertinent information about whether or not to implement the proposed action. The proposed action (Action Alternative) is analyzed in comparison to a No Action Alternative in order to determine potential effects.

If Reclamation decides to implement the Action Alternative, the Dry Gulch Irrigation Company would be authorized to proceed with the proposed piping of the Hancock Canal, Martin Lateral, and the State Road Lateral in order to reduce the salinity contributions to the Upper Colorado River Basin.

If authorized to proceed, the Dry Gulch Irrigation Company would construct, operate, and maintain these new pipelines in place of the existing open canals and pipelines associated with Hancock Canal, the Martin Lateral, and the State Road Canal. The new pipelines, existing, and newly acquired easements are not associated with an existing Reclamation project and would, therefore, be owned by the Dry Gulch Irrigation Company.

## **2.2 No Action Alternative**

Under the No Action Alternative, Reclamation would not authorize use of Federal funds for the piping of the Hancock Canal, the Martin Lateral, and the State Road Canal.

Under the No Action Alternative, the existing open laterals and exiting pipelines would continue to be used for delivering irrigation water with no proposed improvements for reducing or eliminating seepage. Currently, approximately 50 percent of irrigation water traveling through these laterals is lost to seepage. The seepage leads to the dissolving of salts in the sandy soils, which ultimately leads to an increase in salinity of the Colorado River. Under the No Action Alternative, 2,359 tons of salt would continue to reach the Colorado River every year. In addition, the loss of water due to seepage requires far greater than necessary water appropriation for agricultural use, due to the inefficiency of the existing unlined canal system.

## 2.3 Action Alternative

Under the proposed Action Alternative, Reclamation would authorize the use of Federal funds to replace the existing Hancock Canal, the Martin Lateral, and the State Road Lateral with pipelines. The proposed Action Alternative would abandon and replace approximately 18 linear miles of existing open unlined earthen laterals with approximately 16.72 linear miles of new pipeline (Figure 1.2: Project Area). The new pipeline would connect to approximately 12 linear miles of piped segments of the existing irrigation lines. Ninety percent (or approximately 27 linear miles) of the abandoned laterals would be vacated in place, and no vegetation clearing or earthwork would occur in the established laterals. The vacated laterals would incur supplemental hydrology from tail waters originating from irrigation waters received at higher elevations adjacent to the proposed project. Portions of the abandoned laterals would function as roadway swales for stormwater detention. This proposed Action Alternative is anticipated to reduce the salinity loading of the Colorado River Basin by a total of 2,359 tons annually. Replacing these open unlined earthen canals with buried HDPE pipe, would also improve the efficiency of the water delivery system in the project service area. Piping these laterals would also reduce the amount of water lost through seepage, making more water available for irrigation. Additionally, piping these laterals would reduce the amount of ongoing system maintenance. Ongoing maintenance includes: removing the debris from the channels, clearing overgrown vegetation, and replacing outdated valves and gates.

The proposed project contains four phases, including three Hancock Lateral piping phases (Phases 1-3) and the State Road Lateral piping project (Phase 4). The Hancock Phase 1 initiates off of a new diversion point along the Class D Canal. The start of this project is located in the NW  $\frac{1}{4}$  of sec. 33, T. 2 S., R. 2 W., and ends in the SW  $\frac{1}{4}$  sec. 13, T. 2 S., R. 2 W., Uintah Special Base and Meridian. The Hancock Phase 1 would eliminate the need for the existing Hancock Lateral, that initiates immediately downstream of the diversion structure off of Dry Gulch Creek, which is situated immediately downstream of the confluence of the Class D Canal into Dry Gulch Creek. Due to easement availability, the pipe alignment of this phase would cross Dry Gulch Creek in one location, the Martin Lateral in one location, and the Hancock Canal in two locations. Details of canal crossings are discussed below. This phase would install approximately 4.89 miles of HDPE pipe that ranges in size between 30 and 42 inches in diameter. The Hancock Phase 1 would deliver irrigation water to a total 20 turnouts and should reduce the annual salt allocation by 600 tons per year, compared to the existing conditions associated with the open, unlined laterals.

Hancock Phase 2 begins at the end of Phase 1 in Sec. 13 and ends in the SE  $\frac{1}{4}$  of Sec. 20, T. 2 S., R. 1 W. It would replace approximately 8.2 miles of the Hancock Canal and Sterling Lateral, with 3.7 miles of HDPE pipe ranging from 8 to 30 inches. Phase 2 delivers to 17 turnouts and would reduce the annual salt

allocation by 796 tons. No locations along the existing Hancock Canal would be disturbed by the Phase 2 Pipe Project.

Hancock Phase 3 splits off of Phase 1 on Pole Line Road in the northwest corner of Sec. 35 in order to replace 3.1 miles of the Martin Lateral with a 24-inch HDPE pipe. It ends in the NW  $\frac{1}{4}$  of sec. 32, T. 2 S., R. 1 W. Approximately 2.9 miles of the Martin Lateral would be filled in with the pipe. It is likely that a small drainage swale would be left in its place to accommodate roadside drainage. Locations along the canal containing large trees would be left generally undisturbed. Phase 3 delivers to three turnouts and would reduce the annual salt load by 262 tons.

The State Road Phase is not physically connected to the Hancock Phases. It begins in the NW  $\frac{1}{4}$  of sec. 16, T. 2 S., R. 1 W. and ends in the SW  $\frac{1}{4}$  of sec. 26 of the same township and range. It would replace 8.75 miles of the State Road Lateral with 4.7 miles of HDPE ranging between 18 and 34 inches. The alignment of the pipe would generally stay south or west of the tree lines on the existing canal, thus leaving the existing canals relatively undisturbed. Due to easement needs, the pipe alignment would cross the northern section of the canal in two locations and then it would cross the canal again just south of Highway 40. Two more canal crossings would be necessary along the eastern-most canal in order to service water users. The State Road Pipe project would deliver to approximately 46 turnouts and would reduce the annual salt load by 701 tons.

The proposed action would also include the construction of a settling pond at the beginning of the Hancock Canal, and the construction of a settling basin at the start of the State Road Lateral. These facilities would be approximately 530 by 450 feet and 200 by 400 feet, respectively. Excavated material would be used as fill wherever possible. Embedment would be needed wherever rocky subsurface conditions exist. It is roughly estimated, that approximately 25,000 tons of embedment (mostly sand), would need to be imported from sites near the construction. Most of this embedment would be taken from the two new pond sites.

The aforementioned canal crossings would occur through open excavation through the canal and would result in the removal of all trees and vegetation within 15 feet on either side of the crossing. The top of the pipe would not extend higher than the bank of the canal, such that any drainage water within the canal would stay in the canal and continue downstream.

The large majority of earthwork would be done using a trackhoe. All surfaces will be restored to existing conditions, excluding reseeding. All phases are planned to be constructed during the non-irrigation period beginning as early as December 2011, and with project completion expected by April 2012. Construction activities may extend until April 2013, if necessary. Irrigation for

2012 would occur via the pipe project where possible, and via the existing canal wherever the pipe system has not been completed.

### **Easements**

New easements would be required for the proposed pipeline alignments. The majority of these easements would be on private property through open agricultural fields. In some locations (e.g. along Pole Line Road) that are apparent on the map, existing city or county right-of-ways may be used. The dedication of individual water rights would remain unaltered post project implementation. All acquired easements would be in the name of the Dry Gulch Irrigation Company. Where deviation from the existing alignment occurs, a 50 foot wide permanent easement would be needed for operation and maintenance of the pipeline. Additionally, a 100 foot wide temporary easement is required for construction in all areas.

### **Turnouts, Drains, Services and Meters**

The proposed project would install new turnout structures within the laterals that would include trash cleaning capability using an intake screen system. A flow measurement instrument would be installed at the beginning of each pipeline, by means of an external ultrasonic flow meter. Flow measurement instruments would also be installed at each of the irrigation service locations. This would provide distribution and allocation of the delivered water for improvements of on-farm irrigation water management.

Drains would be installed at the end of each pipeline and at key locations to facilitate the draining of the laterals. Irrigation services would consist of pipes being stubbed across the property line with a valve. The aforementioned flow meter is included to control and monitor the flow. If the land owner uses flood irrigating exclusively, riprap and an additional control structure would be provided.

### **2.3.1 Pipeline Construction Procedures**

Construction of the pipeline would likely occur in the following sequence:

- Flagging of the construction zone
- Mobilization of the construction equipment
- Delivery of pipe to construction site
- Excavation of the trench
- Fusing of pipe
- Placement of pipe within the trench
- Backfill around pipe and compaction of backfill
- Clean up and restoration of areas disturbed by construction
- Planting and reseeded of disturbed areas for re-vegetation

### **2.3.1 Trench Excavation**

Trenches approximately 5 feet wide would be excavated for pipe installation. The trenches would be approximately 8 feet deep in the existing laterals. Excavation would be performed with the use of appropriately sized construction equipment to minimize disturbance to the surrounding area. All excavated material would be stockpiled to the side of the trenches, and be used as backfill after pipe installation. In critical areas, such as established agricultural lands and wetlands, top soil would be separated from other material in order to preserve it to be placed as the last layer.

#### **2.3.1.3 Pipe and Appurtenance Installation**

The pipes would be transported by a tractor-trailer from the manufacturer to the staging areas. From the staging areas, they would either be transported by a loader to the work site, or fused into longer sections and transported to the work site. Existing access roads would be used to transport pipe to the work site. Each section of pipe would be fused together with a pipe fuser and then placed in the prepared trench.

At various points determined during design, construction would be required to install drain valves, air-vacuum valves, and air-release valves. These valves would be installed to facilitate filling and operation of the system, and to allow any excess water at the end of the irrigation season to drain from the pipes. The air-vacuum valves are typically installed on top of the pipe to vent air during pipe filling and to allow air into the pipe while it drains. After installing the pipe, backfill would be placed around the pipe. In established agricultural areas, the preserved top soil would be placed last to minimize impacts and facilitate a speedy recovery. Backfill would be mechanically compacted. Soil in work areas would be spread evenly, to blend with the natural topography and maintain local drainage patterns. Stockpiled topsoil would then be spread evenly over previously vegetated areas and reseeded with native or agricultural vegetation species, as appropriate. In areas with a new alignment, the abandoned section of the laterals would be allowed to dry up naturally. In locations where there is excess or a shortage of material, a slight swale or hump would be incorporated into the cross section.

#### **2.3.1.4 Quality Control Procedures**

After completion of construction activities, the contractor would provide quality control of construction through visual inspection and hydrostatic testing. Each segment or reach of pipe would be filled with water and pressurized for hydro testing through contractor-supplied pumps to ensure that the system operates to design specifications. If the pipe leaks or breaks, it would be repaired and re-tested until it meets specifications. After testing a segment, the water may be pumped into the next segment for testing.

### **2.3.2 Construction Staging Areas**

Construction staging areas have been identified throughout the project area (Figure 2.2: Staging Areas). The staging area would be used to stockpile the pipe,



equipment, and construction vehicles. Staging areas have been assessed to determine potential project impacts during the duration of construction. This is discussed further in Section 3 of this document.

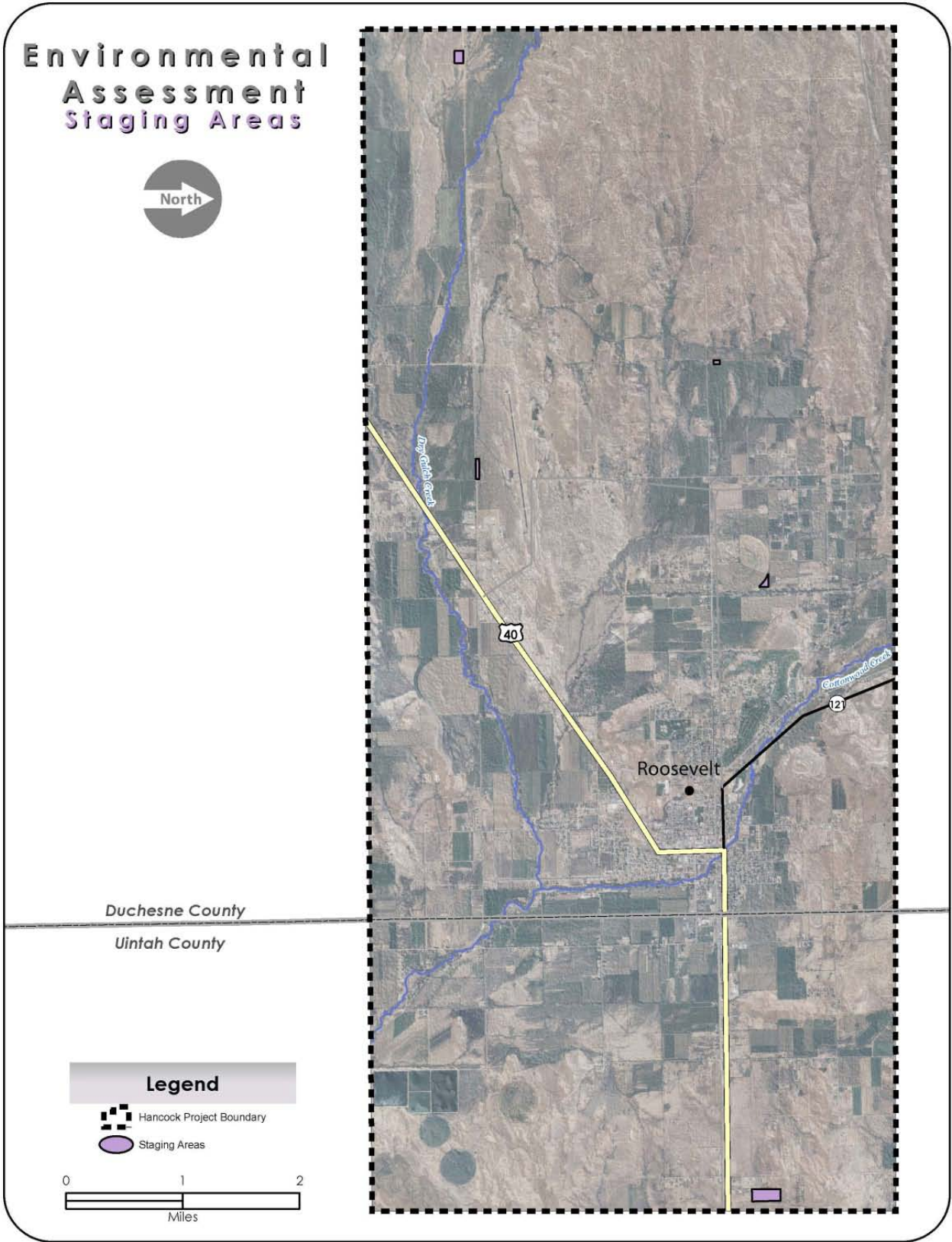


Figure 2.2: Staging Areas

### **2.3.3 Land Disturbance**

The proposed pipeline alignments described in Section 2.3, totals approximately 16.2 miles in length and would require a maximum construction width of 100 feet. Construction activities would be confined to this 100-foot width where there are existing easements. New easements for sections of the pipeline that deviate from the alignment of the existing canal would be 100-feet wide for construction and 50-feet wide for operation.

### **2.3.4 Transportation Requirements**

Transportation to the project would follow existing access roads parallel to the laterals to minimize disturbance to the existing vegetation. These roads are currently used for service access to the lateral, are already disturbed, and would be within the proposed construction easement. Temporary access roads would be necessary for construction outside the existing alignment. These temporary access roads would be recontoured and re-vegetated with native plant material following completion of construction. Permanent access roads for ongoing maintenance would also be necessary in some areas of the new alignment.

### **2.3.5 Standard Operating Procedures**

Standard Operating Procedures (SOPs) would be followed (except for under unforeseen conditions) during construction, operation, and maintenance of the proposed action to avoid or minimize adverse impacts on people and natural resources. The SOPs and features of the proposed action have been formulated to avoid or minimize adverse impacts. A preconstruction meeting with Reclamation, the contractor, and the Dry Gulch Irrigation Company's representative would be held prior to commencing construction. During construction, weekly meetings would be held to assess the progress of the work.

Specifics of restoration will be outlined in the SOPs and/or right-of-way easements. Specifics of restoration procedures include the determination of what native vegetation is appropriate for the different construction zones, reseeding rates, landscaping, re-vegetation, and noxious weed removal and control. Monitoring and treatment will continue until the success criteria are met for two successive years without human intervention. These actions will provide that disturbed areas are returned to a natural state as appropriate. Chapter 3 presents the impact analysis for resources after SOPs have been successfully implemented.

# **Chapter 3: Affected Environment and Environmental Consequences**

## **3.1 Introduction**

This chapter describes the existing environment of the project area and any potential impacts from the No Action and Action Alternatives to that environment. The following resources are examined in detail in this chapter: air quality, water resources, upland vegetation resources, wetlands and riparian resources, fish and wildlife, special status species, cultural resources, paleontological resources, soil erosion and sedimentation, Indian Trust Assets, transportation, and environmental justice. The present condition and characteristics of each resource are discussed, followed by an analysis of the predicted impacts under the No Action and Action Alternatives.

## **3.2 Resources Eliminated from Analysis**

Resources that do not exist within the project area and/or would not be impacted by the No Action or Action Alternatives were eliminated from further analysis, and are described in Table 3.1 Resources Eliminated from Further Analysis.

**Table 3.1 Resources Eliminated from Further Analysis**

<b>Resource</b>	<b>Rationale for Elimination from Further Analysis</b>
<b>Public Health</b>	There would be no negative impacts on public health from the proposed action.
<b>Recreation Resources</b>	There would be no direct effects on recreation resources found within the project area.
<b>Wilderness and Wild and Scenic Rivers</b>	There are no designated wilderness areas or Wild and Scenic Rivers within the project area; therefore, there is no impact to these resources from the proposed action.
<b>Noise</b>	There would be no long-term impacts due to increases of noise levels. Noise levels are expected to be elevated during construction, but no new noise is generated from the proposed action after construction.
<b>Prime and Unique Farmland</b>	There is no Prime and Unique Farmland within the project area and therefore, there are no impacts to this resource from the proposed action.
<b>Energy Requirements and Conservation Potential</b>	There are no impacts to energy requirements and conservation potential within the project area from the proposed action.
<b>Urban Quality and Design of the Built Environment</b>	The proposed action is located in a rural setting on public and agricultural lands; therefore, there are no impacts to urban quality and design of the built environment from the proposed action.
<b>Visual</b>	There are no impacts to visual resources within the project area from the proposed action.

## **3.3 Affected Environment**

### **3.3.1 Air Quality**

Air Quality is regulated by the U.S. Environmental Protection Agency (EPA) and the Utah Division of Air Quality. The National Ambient Air Quality Standards established by the EPA under the Clean Air Act specify limits of air pollutants for carbon monoxide, particulate matter (PM 10 & PM 2.5), ozone, sulfur dioxide, lead, and nitrogen. The project area is in attainment for all measured pollutants monitored by the EPA and Utah Division of Air Quality. This designation is not anticipated to change prior to or during the construction of the proposed action.

### **3.3.2 Water Resources**

The Project Area is within the Dry Gulch Creek Watershed, a tributary of the Uintah River, which constitutes a sizeable component of the Uintah Basin, and subsequently part of the Colorado River Basin. The Dry Gulch Watershed headwaters originate in the Uintah Mountains, located in eastern Utah. Major drainages within the Dry Gulch Creek Watershed include, Dry Gulch Creek, Cottonwood Creek, and Montes Creek. These series of creeks supply the Hancock Lateral, State Road Canal, and Martin Lateral with the irrigation water used by local residents.

### **3.3.3 Water Quality**

The Hancock Canal, Martin Lateral, and State Road Lateral provide flood irrigation to agricultural users within the Dry Creek Watershed. Flood irrigation causes excessive soil moisture, which can contribute to negative impacts to a greater watershed area. As water moves down through the basin and is used for irrigation, it picks up increasing amounts of salt and causes an infiltration of shallow aquifers with excessive amounts of saline. The largest single source of irrigation return flow enters the Lower Uinta River from Dry Gulch Creek, an intermittent stream that primarily carries agricultural return flows. Seepage from the laterals within the project area, contributes an estimated 2,359 tons of salt annually to the Colorado River Basin.

### **3.3.4 Upland Vegetation Resources**

Plant communities within the project area, primarily consists of cultivated crops, assorted herbaceous vegetation, and scattered trees and shrubs. Much of the land in the project area is comprised of human-altered vegetation, primarily used for agriculture. Agricultural activities in the project area have replaced native upland vegetation with alfalfa, pasture grasses and small grain. Non-agricultural vegetation such as cheatgrass and thistle, is more common in disturbed areas along roads.

In addition to the human-altered environment, the vegetation in the project area is dominated by upland vegetation species. Upland vegetation species in the project

area include big sagebrush (*Artemisia tridentata*), a low growing shrub that is known to grow in deep, somewhat moist soils, as well as extremely dry rocky areas; rabbit-brush (*Chrysothamnus spp.*), a deciduous shrub with bright white or yellow flowers that is a member of the Asteraceae family; western wheatgrass (*Pascopyrum smithii*) a common, native grass that is the state grass of Utah; crested wheatgrass (*Agropyron cristatum*), a drought-tolerant grass species in the Poaceae family; and blue-bunch wheatgrass (*Pseudoroegneria spicata*), a tall forage grass that is found in areas with deep soils. A complete list of the observed vegetation within the project area may be found on pages 7-8 of the Wetland Report (Appendix A).

### **3.3.5 Wetlands and Riparian Resources**

The project area contains both naturally occurring riparian areas and those that have occurred, due to the presence of the existing laterals and drainage system. The majority of the wetland hydrology within the project area is derived from irrigation waters that are drawn from the Dry Gulch and Cottonwood Creeks. Several open irrigation ditches cross or parallel the proposed piping alignments. All irrigation induced waters and subsequent wetlands identified in the project study area are linked directly to the aforementioned creeks.

The species prevalent in the riparian areas include: salt grass (*Distichlis spicata*) a low growing sodgrass that occurs primarily in extremely salty and alkaline soils that are poorly drained; Baltic rush (*Juncus balticus*), a common rush that occurs most abundantly at low to mid elevations; salt cedar (*Tamarix ramosissima*) also known as tamarisk, salt cedar is a densely growing shrub with pink to white flowers; and Russian olives (*Elaeagnus angustifolia*) a small tree with fragrant small yellow flowers found commonly growing along floodplains and riverbanks.

### **3.3.6 Fish and Wildlife Resources**

Wildlife habitat in the project area can be categorized into three general categories: upland; riparian and wetland; and human-altered/agricultural environments. The upland habitat is found mostly on undeveloped lands within and adjacent to the project area. Species that may use the upland habitat areas and the human-altered/agricultural lands include California quail (*Callipepla californica*), mule deer (*Odocoileus hemionus*), coyotes (*Canis latrans*) and various small rodents. Riparian and wetland areas provide habitat for waterfowl such as the mallard duck (*Anas platyrhynchos*). No aquatic animal or fish species were identified in the laterals or canals within the project area. Habitat in the project action area can be characterized as pre-developed, since most of the project action area does not contain natural, undisturbed habitat. A large percentage of the new pipe alignment would exist in planted agricultural fields. Fish bearing habitat is not present along the pipeline alignment.

### 3.3.7 Special Status Species

#### 3.3.7.1 Federally Listed Species

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1543) protects Federally listed endangered, threatened, proposed, and candidate plant and animal species and their critical habitats. Candidate species are those for which the United States Fish and Wildlife Service (the Service) has sufficient data to list as threatened or endangered, but for which proposed rules have not yet been issued. Threatened species are those that are likely to become endangered in the foreseeable future throughout all or a significant portion of their range. The Service has identified 17 federally listed species including seven endangered, six threatened, three candidate, and one proposed species that may potentially exist within or downstream from the project area.

#### **Endangered Species**

##### Barneby ridge-cress

Barneby ridge-cress is a federally listed endangered plant that occurs only in Duchesne County, Utah. Barneby ridge-cress is a perennial herb that is a member of the mustard family. Flowering occurs in May and June, with white to cream colored flowers. The species grows in shallow fine textured soils intermixed with fragmented shale. The species is found in pinyon-juniper woodlands along semi-barren ridges at elevations ranging from 6,102 to 6,447 feet (1,860 to 1,965 meters) above sea level. Threats to the species include recreational use of off-road vehicles and oil and gas development (UDWR 2011).

##### Black-footed Ferret (*Mustela nigripes*)

The black-footed ferret is 18 to 24 inches long, and weighs 1.5 to 2.5 pounds, with males slightly larger than females. It is a slender, wiry animal with a black face mask, black feet, and a black-tipped tail. It has short legs with large front paws and claws developed for digging (USFWS Species Profile, July 2009). The black-footed ferret is known to inhabit white-tailed prairie dog towns or complexes. The species was listed as Endangered on March 11, 1967.

##### Bonytail (*Gila elegans*)

The bonytail is a large freshwater minnow, up to 2 feet, with a long, slender caudal peduncle. This warm water species appears to favor main-stem rivers regardless of turbidity, usually in or near deep swift water, in flowing pools and eddies just outside the main current. Spawning likely occurs in spring over rocky substrates. Flooded bottomland habitats appear to be important growth and conditioning areas, particularly as nursery habitats for young. The bonytail was formerly widespread through much of the Colorado River Basin but is now widely extirpated and very rare, with no known self-sustaining populations. The species was listed as Endangered on April 23, 1980 (NatureServe Comprehensive Species Report, 2009).



#### Colorado Pikeminnow (*Ptychocheilus lucius*)

The Colorado pikeminnow is a large freshwater minnow that may reach a length of 6 feet. Adults are highly mobile and prefer medium to large rivers. Young prefer small, quiet backwaters. The species makes extensive spawning migration (up to 124 miles one way) and spawning occurs in late spring. Their habitat is restricted to large rivers within the Colorado River Basin. The Colorado pikeminnow was listed as Endangered on March 11, 1967 (NatureServe Comprehensive Species Report, 2009).

#### Humpback Chub (*Gila cypha*)

The humpback chub is a large freshwater minnow with a slender caudal peduncle and a hump behind the head in large mature individuals. Spawning occurs in spring after peak water flow. Adults use various habitats, including deep turbulent currents and shaded ledges. Young prefer habitat over non-rocky substrate. The species population is restricted to the Colorado River system. The humpback chub was listed as Endangered on March 11, 1967 (NatureServe Comprehensive Species Report, 2009).

#### Razorback Sucker (*Xyrauchen texanus*)

The razorback sucker is a freshwater sucker fish with a large sharp keel on the nape. The species is usually found swimming in schools. Spawning occurs in late winter to early spring and in groups of hundreds of individuals. Habitat includes backwaters and eddies of medium to large rivers, and flood lowlands which serve as breeding areas. The species population is restricted to the Colorado River Basin. The razorback sucker was listed as Endangered on October 23, 1991 (NatureServe Comprehensive Species Report, 2009).

#### Shrubby reed-mustard

Shrubby reed-mustard is a federally listed endangered plant that is found only in the Uinta Basin in Duchesne and Uintah Counties, Utah. Shrubby reed-mustard is a perennial herb with yellow flowers that bloom from May to June. This species grows in fine textured soils mixed with fragmented shale, in mixed desert shrub and pinyon-juniper vegetative communities at elevations ranging from 5,098 to 6,700 feet (1,554 to 2,042 meters) above sea level. Threats to shrubby reed-mustard include habitat degradation resulting from grazing and resource (energy) development (UDWR 2011).

### **Threatened Species**

#### Canada lynx

The Canada lynx is normally found in dense forested areas with an abundance of windfalls, swamps and brushy thickets (Maas 1997). Lynx require heavy cover for concealment when stalking prey. In terms of their prey base, lynx depend on snowshoe hares. In addition, lynx are most likely to persist in areas that receive deep snow, for which the lynx is highly adapted (Maas 1997). In the western U.S., lynx occurrences generally are found only above 4,000 feet in elevation (McKelvey et al. 2000).

### Clay reed mustard

The clay reed-mustard is a federally listed threatened species found only in Duchesne and Uintah Counties, Utah. Clay-reed mustard is a perennial that produces white, purple veined flowers that bloom from mid-April to mid-May. This species grows in mixed desert shrub communities at elevations ranging from 4,721 to 5,791 feet (1,439 to 1,765 meters) above sea level, in substrates consisting of bedrock, scree, and fine textured soils. Threats to the species include natural gas exploration and development (UDWR 2011).

### Mexican spotted owl

The Mexican spotted owl is a federally listed threatened species that occurs in the southern and eastern parts of Utah, where it is a rare permanent resident. These owls are nocturnal and non-migratory. The spotted owl occupies steep rocky canyons. These owls tend to be opportunistic feeders, which prey on: small mammals (e.g. rabbits), birds, reptiles, and insects. Spotted owls utilize suitable naturally occurring sites and nests built by other animals. In Utah, their nests are often on cliffs. One to four eggs are brooded by the female each year. The eggs are incubated for approximately 32 days. Both parents care for and feed the young. Fledging occurs typically 36 days after the eggs hatch (UDWR 2011).

### Pariette cactus

The Pariette cactus is a federally listed threatened plant. This barrel-shaped cactus has pink barrel shaped flowers and reddish to reddish grey fruit. The range and distribution of the Pariette cactus is limited to the Pariette Draw along the Duchesne-Uintah County boundary. One population, within a 72,000 acre area, is known to exist with only a few individuals being documented in marginal habitat outside the main population area. Threats to the Pariette cactus include resource exploration of mineral and energy development, recreational off-road use, grazing, and illegal collection (USFWS 2011).

### Uinta Basin hookless cactus

The Uinta Basin hookless cactus is a federally listed threatened plant that is found exclusively in the Uinta Basin in Duchesne, Uintah and Carbon Counties, Utah. Uinta Basin hookless cactus is a perennial herb with pink flowers that bloom from April to late May. This species is found in salt desert shrub and pinyon-juniper vegetative communities along river benches, valley slopes, and rolling hills. Uinta Basin hookless cactus grows in cobbles and pebbles overlying fine textured soils, at elevations ranging from 4,462 to 6,562 feet (1,360 to 2,000 meters) above sea level. Threats to the species include habitat degradation, resulting from oil and gas exploration and development, grazing, off-road vehicle use, and stone collecting (UDWR 2011).

### Ute Ladies'-tresses (*Spiranthes diluvialis*)

Listed as a threatened species in January 1993, the Ute Ladies'-tresses is a member of the orchid family found mostly in wetlands and riparian areas. Numerous, vanilla-scented, small white or ivory colored flowers arranged in a gradual spiral are found along the length of the stem during flowering. The

species requires open habitat, and populations decline if trees and shrubs invade the habitat. They are not tolerant of permanent standing water, and do not compete well with aggressive species such as reed canary grass.

### **Candidate Species**

#### Greater Sage-grouse (*Centrocercus urophasianus*)

The greater sage-grouse is a federally listed candidate species. As the name implies, greater sage-grouse are found only in areas where sagebrush is abundant (Colorado Division of Wildlife 2009). The largest of all grouse, the greater sage-grouse is up to 30-inches long, 2 feet tall, and weighs from 2 to 7 pounds (USFWS 2010). Male greater sage-grouse have a white breast ruff, mottled gray-brown overall, a black belly, black throat and bib, and long stiff spikelike tail feathers. Females have a mottled gray-brown overall, a black belly, a white throat, and lack the yellow eye comb seen in the males. Diet consists of evergreen leaves, plain sagebrush shoots, blossoms, leaves, pods, buds, and insects (Alsop 2001). Dependent on sagebrush for food and cover, required habitat consists of relatively open flats or rolling sagebrush hills at elevations ranging from 4,000 to 9,000 feet above sea level (Colorado Division of Wildlife 2009, USFWS 2010). Land clearing and overgrazing by livestock are documented threats to this species' habitat.

#### White River penstemon

White River penstemon is a federally listed candidate species. Distribution of this species is limited to Duchesne and Uintah counties, Utah, and Rio Blanco County, Colorado. This perennial herb, a member of the figwort family, is 5.9 to 19.7 inches (15 to 50 cm) tall. The lavender to pale blue flowers bloom from late May to June. The species is found in semi-barren areas within pinyon-juniper, desert shrub, and mixed desert shrub vegetative communities at elevations ranging from 5,000 to 6,680 feet (1,524 to 2,036 meters) above sea level. White River penstemon grows within fine textured soils usually mixed with fragmented shale. The primary threat to this species is trails associated with winter grazing (UDWR 2011).

#### Yellow-billed Cuckoo (*Coccyzus americanus*)

The yellow-billed cuckoo, as the name suggests, has a yellow lower mandible. It has rufous wings, which contrast against gray-brown wing coverts and upper parts, and white under parts. Large white spots can be noted on its long black undertail. It is a neotropical migrant, which winters in South America. Breeding often coincides with the appearance of massive numbers of cicadas, caterpillars, or other large insects. Its incubation/nesting period is the shortest of any known bird, because it is one of the last neotropical migrants to arrive in North America and chicks have very little rearing time before embarking on their transcontinental migration (Alsop 2001). Yellow-billed cuckoos are considered a riparian obligate and are usually found in large tracts of cottonwood/willow habitats with dense sub-canopies. Yellow-billed cuckoos are a Candidate species.

**Proposed Species**

Graham’s beardtongue

Graham’s beardtounge is a federally listed proposed species that occurs only in the Uinta Basin, located in Carbon, Duchesne, and Uintah Counties of Utah, and in Rio Blanco County, Colorado. Graham beardtongue is a member of the figwort family, a perennial herb that has thick leathery leaves, and large tubular flowers that bloom from late May to early June. This species grows on weathered exposures of oil shale strata, on semi-barren knolls, ridges and steep slopes. The elevation range of this species extends from 4,692 to 6,759 feet (1430 to 2060 meters) above sea level, in pinyon-juniper, desert shrub and Salina wild rye communities. Threats to this species include impacts from oil and gas development and grazing (UDWR 2011).

The list of threatened, endangered or candidate species with potential habitat that may be affected by the proposed action is found in Table 3.2, Federally Listed Species with Potential Habitat in the Project Area. No occurrences of these species have been documented within the project area, and none were observed in the project area during a September 2011 site survey. For additional information about these species refer to Appendix B Biological Assessment.

**Table 3.2  
Federally Listed Species with Potential Habitat in the Project Area**

Species/Critical Habitat	Status	Document Occurrences in Project Area
Barneby ridge-cress	Endangered	No
Black-footed Ferret ( <i>Mustela nigripes</i> )	Endangered	No
Blowout Penstemon ( <i>Penstemon haydenii</i> )	Endangered	No
<u>Colorado River Fish</u>		No
Bonytail ( <i>Gila elegans</i> )	Endangered	
Colorado Pikeminnow ( <i>Ptychocheilus lucius</i> )	Endangered	
Humpback Chub ( <i>Gila cypha</i> )	Endangered	
Razorback Sucker ( <i>Xyrauchen texanus</i> )	Endangered	
Shrubby reed-mustard ( <i>Schoenocrambe suffrutescens</i> )	Endangered	No
Canada lynx ( <i>Lynx Canadensis</i> )	Threatened	No
Clay reed mustard ( <i>Schoenocrambe argillacea</i> )	Threatened	No
Mexican spotted owl ( <i>Strix occidentalis lucida</i> )	Threatened	No
Pariette cactus ( <i>Sclerocactus brevispinus</i> )	Threatened	No
Uinta Basin hookless cactus ( <i>Sclerocactus wetlandicus</i> )	Threatened	No
Ute Ladies’-tresses ( <i>Spiranthes diluvialis</i> )	Threatened	No
Greater Sage Grouse ( <i>Centrocercus urophasianus</i> )	Candidate	No
White River penstemon ( <i>Penstemon scariosus albifluvis</i> )	Candidate	No

Yellow-billed Cuckoo ( <i>Coccyzus americanus</i> )	Candidate	No
Graham's beardtongue ( <i>Penstemon grahamii</i> )	Proposed	No

### 3.3.7.2 State Sensitive Species

Section 06D of the ESA defines State Sensitive Species as those species that could become endangered or extinct within the state. No state sensitive species were identified by the Service for the project area vicinity.

### 3.3.7.3 Special Concern Species

The Utah Division of Wildlife Resources identified one species of special concern potentially occurring in project area.

#### White-tailed Prairie Dog (*Cynomys leucurus*).

The white-tailed prairie dog has a buff to gray colored body and a white tail tip with a dark brown spot above the eye and on the cheek. Young are typically born in April to May after a 30-day gestation period, and emerge during May to June. Males live apart and defend territories, allowing females entry only during the March to April breeding season.

Although the project area may provide habitat for species of concern, the field survey did not identify any special concern species within the vicinity of the project area.

### 3.3.8 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 as well as isolated artifacts or features, traditional cultural properties, Native American and other sacred places, and artifacts and documents of cultural and historic significance.

Section 106 of the National Historic Preservation Act of 1966 (NHPA), mandates that Reclamation take into account the potential effects of a proposed Federal undertaking on historic properties. Historic properties are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for, inclusion in the National Register of Historic Places (NRHP). Potential effects of the described alternatives on historic properties are the primary focus of this analysis.

The affected environment for cultural resources is identified as the Area of Potential Effects (APE), in compliance with the regulations to Section 106 of the NHPA (36 CFR 800.16). The APE is defined as the geographic area within which federal actions may directly or indirectly cause alterations in the character or use of historic properties. The APE for this proposed action includes the proposed pipeline corridors, the portions of existing canals to be abandoned, settlement/storage pond locations, and staging areas.

### **3.3.8.1 Cultural Resources Status**

A Class I literature review and a Class III cultural resource inventory were completed for the APE, defined in the Action Alternative and analyzed for the proposed action, by Baseline Data, Inc. (Baseline) between June and August 2011. A total of 388.36 acres were inventoried during the Class III inventory to determine if the proposed action would affect cultural resources. Five previously recorded sites, one new site, and one isolated feature/artifact were identified during the inventory (Nielson 2011:7).

Three of the sites identified during the Class III cultural resource inventory have been previously determined eligible for the NRHP. These sites include the Martin Lateral, Hancock Lateral, and an unnamed historic farmstead. One site, a lateral distribution ditch associated with the Montes Canal/Harding Lateral, was previously recommended ineligible for the NRHP. Another site, the State Road Lateral, was previously recommended eligible for the NRHP. The final site, representing the historic Spencer farmstead and the isolated feature/artifact, is recommended eligible for the NRHP (Nielson 2011:13).

In accordance with 36 CFR 800.4(c), the sites were evaluated for significance in terms of NRHP eligibility. The significance criteria applied to evaluate cultural resources are defined in 36 CFR 60.4 as follows:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. that are associated with the lives of persons significant in our past; or
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. that have yielded, or may be likely to yield, information important in prehistory or history.

Baseline agreed with the previous NRHP eligibility determinations or recommendations of four of the five previously recorded sites. The unnamed historic farmstead that was previously determined eligible for the NRHP has been destroyed. As a result, Baseline recommended the NRHP eligibility be changed to ineligible. Of the six sites, four sites identified during the Class III cultural

resource inventory are currently recommended eligible for the NRHP. Three of the sites, the Martin Lateral, Hancock Lateral, and State Road Lateral would be impacted by the proposed action.

The Martin Lateral is recommended eligible for the NRHP under Criterion A. The site is associated with the history of water development in Utah and the western United States. The proposed action involves replacing approximately 2.9 miles of the 3.1 mile-long Martin Lateral with pipe. The pipe would be placed within the existing open lateral prism and buried. The remaining 0.2 miles of the lateral would be abandoned. The proposed action would cause an alteration to the characteristics of the Martin Lateral which make the site eligible for the NRHP and would, therefore, have an effect on the site according to 36 CFR 800.16(i).

The Hancock Lateral is also recommended eligible for the NRHP under Criterion A for its association with the history of water development in Utah and the Western United States. The proposed action involves impacting approximately 100 feet of the 10.2 mile-long Hancock Lateral with two pipeline crossings. The remainder of the Hancock Lateral will be abandoned, but will continue to function as a water delivery system for excess storm and drainage water. The proposed action will, therefore, have no effect, as defined in 36 CFR 800.16(i), on the Hancock Lateral.

The State Road Lateral, the third site that will be impacted by the proposed action, is also recommended eligible for the NRHP under Criterion A. Approximately 0.7 miles of the 8.75 mile-long State Road Lateral, would be replaced with pipe as a result of the proposed action. The pipe would be placed within the existing open lateral prism and buried. In addition, about 150 feet of the State Road Lateral will be impacted by three pipeline crossings. The remainder of the State Road Lateral will be abandoned, but will continue to function as a water delivery system for excess storm and drainage water. The proposed action will, therefore, have no effect, as defined in 36 CFR 800.16(i), on the State Road Lateral.

Pursuant to 36 CFR 800.5, the criteria of adverse effect were applied to the Martin Lateral. An adverse effect is defined as an effect that could diminish the integrity of a historic property's location, design, setting, materials, workmanship, feeling, or association. The proposed action would result in the removal of the irrigation-related features of the lateral including headgates, measuring weirs, and concrete drop structures. In addition, the existing lateral channel will disappear and will cease to function in its historic capacity as a water delivery system. The proposed action would diminish the integrity of the Martin Lateral and would, therefore, have an adverse effect to the historic property.

In compliance with 36 CFR 800.4(d)(2) and 36 CFR 800.11(e), a copy of the Class III cultural resource inventory report and a determination of historic properties affected were submitted to the Utah State Historic Preservation Office (SHPO), the Natural Resources Conservation Service (NRCS), the Advisory Council on Historic Preservation, the Utah Department of Transportation

(UDOT), and tribes which may attach religious or cultural significance to historic properties possibly affected by the proposed action for consultation.

Pursuant to 36 CFR 800.6(c), a Memorandum of Agreement (MOA) will be developed to resolve the adverse effects to the Martin Lateral. Signatories to the MOA would include Reclamation, SHPO, and the Dry Gulch Irrigation Company.

### **3.3.9 Paleontological Resources**

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

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

The affected environment for paleontological resources is represented by the same APE that corresponds to cultural resources as described in Section 3.3.8.

#### **3.3.9.1 Paleontological Resources Status**

A paleontological file search was conducted by Martha Hayden, Paleontological Assistant for the Utah Geological Survey (UGS), for the APE. In a letter dated January 11, 2012, the UGS stated that no paleontological localities recorded in the UGS files are located in the APE. According to the UGS, Quaternary and Recent alluvial deposits that are exposed throughout much of the APE, have a low potential for yielding significant fossil localities. There may, however, also be exposures of the Eocene Duchesne River Formation in the APE that have a potential for yielding significant vertebrate fossil localities. If these units will be disturbed as a result of the proposed action, the UGS recommends that the area be evaluated by a permitted paleontologist in order to determine and mitigate and potential impacts to paleontological resources. Otherwise, unless fossils are discovered as a result of construction activities, the UGS concluded that the proposed action should have no impact on paleontological resources (Appendix C, UGS Letter).

#### **3.3.10 Soil Sedimentation and Erosion**

The information on soil composition for the portion of the project area located within Duchesne County is extremely limited due to the lack of soil surveys that have been performed and reported by the NRCS. Soils throughout the project action area are known to consist of sandy textured aridisols. The project action



area can be characterized as pre-developed, since most of the project action area does not contain natural, undisturbed habitat.

The eastern portion of the project area, located in Uintah County, is primarily composed of silty clay and clay loams with a 0 to 4 percent slope. Soils in this area are comprised of Sugun clay loam, Umbo silty clay loam, Stygee clay loam, Stygee silty clay loam, Umbo clay loam, Pariette loam, and Turzo-Umbo loam.

### **3.3.11 Indian Trust Assets**

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for federally recognized Indian tribes or individuals. The Department of the Interior's policy is to recognize and fulfill its legal obligations to identify, protect, and conserve the trust resources of federally recognized Indian tribes and tribal members, and to consult with the tribes on a Government-to-Government basis, whenever plans or actions affect tribal trust resources, trust assets, or tribal safety (please refer to the Departmental manual, 512 DM 2). Under this policy, as well as Reclamation's ITA policy, Reclamation is committed to carrying out its activities in a manner which avoids adverse impacts to ITAs when possible, and to mitigate or compensate for such impacts when it cannot. All impacts to ITAs, even those considered insignificant, must be discussed in the trust analyses in NEPA compliance documents and appropriate compensation or mitigation must be implemented.

Trust assets may include lands, minerals, hunting and fishing rights, traditional gathering grounds, and water rights. Impacts to ITAs are evaluated by assessing how the action affects the use and quality of ITAs. Any action that adversely affects the use, value, quality or enjoyment of an ITA is considered to have an adverse impact on the resources. There are no known ITAs in the project area vicinity, and no ITA concerns were identified through the tribal consultation process.

### **3.3.12 Environmental Justice**

Executive Order 12898 established environmental justice as a Federal agency priority, to ensure that minority and low income populations are not disproportionately impacted by Federal actions. The U.S. Census shows a minority population does exist within Roosevelt. According to the 2010 U.S. Census, Roosevelt has a total population of 6,046 residents. Of these residents, 4,977 (82.3 percent) identify as white, 493 (8.2 percent) as American Indian and Alaska Native, and the remaining 556 (9.5 percent) as another ethnic minority. Duchesne County has a total population of 18,607 residents. Of those living in this area, 16,589 (89.2 percent) identified themselves as white, 842 (4.5 percent) as American Indian and Alaska Native, and the remaining 1,176 (6.3 percent) are identified as ethnic minorities. Uintah County has a total population of 32,588 with a population of 28,232 (86.6 percent) identifying themselves as white, 2,509 (7.7 percent) as American Indian and Alaska Native, with the remaining 1,847 (5.7 percent) being identified as ethnic minorities.

The recent Census Data shows there is an ethnic minority population in the project area; however, there is not a known low-income minority population in the project area as shown in the median income values as reported by the American Community Survey conducted in 2009. The median income for Roosevelt is \$51,211, Duchesne County at \$51,504, and Uintah County at \$57,735, while the national median income was reported at \$51,425.

### **3.3.13 Public Safety, Access, and Transportation**

Transportation resources in the area include U.S. Highway 191 and U.S. Highway 40, State Highways 121 and 87, and local roads. U.S. Highway 40 east-west access between Vernal, Duchesne, and Park City; while U.S. Highway 191 allows for travel north-south between Green River, Duchesne, and Vernal. Local roads in the area are developed on a grid system and provide local access and mobility for residents.

## **3.4 Environmental Consequences**

The environmental consequences section discusses potential impacts to the project area resources from the No Action and Action Alternatives.

### **3.4.1 Air Quality**

#### **No Action Alternative**

Under the No Action Alternative there would be no adverse effects to air quality.

#### **Action Alternative**

Under the Action Alternative there would be no long-term impacts to local air quality. Fugitive dust generation from construction activities would have a temporary, short-term effect on the air quality in the project area. The fugitive dust would be generated by excavation activities and the movement of construction equipment on unpaved roads. Best Management Practices such as watering for dust control to minimize fugitive dust will be implemented. Impacts due to construction activities would be temporary and would cease once the project was completed.

### **3.4.2 Water Resources**

#### **No Action Alternative**

Under the No Action Alternative, water from the laterals would continue to seep into the soil and ultimately contribute to the concentrated salt loads to the Colorado River Basin. This seepage would result in the loss of approximately fifty percent of the irrigation water that runs through the Hancock Canal, Martin Laterals, and State Road Canal laterals.

#### **Action Alternative**

The Action Alternative would eliminate seepage from the Hancock Canal, Martin Laterals, and State Road Canal laterals. This would result in an estimated

50 percent increase in water traveling to agricultural users along the laterals, thereby improving the efficiency of the irrigation system.

### **3.4.3 Water Quality**

#### **No Action Alternative**

Under the No Action Alternative, there would be long-term minor to moderate adverse impacts to the water quality of the Colorado River Basin. Salt loads from the deep percolation of seepage from the Hancock Canal, Martin Laterals, and State Road Canal and associated laterals would continue to degrade water quality in the Colorado River Basin.

#### **Action Alternative**

The Action Alternative would reduce seepage from the Hancock Canal, Martin Laterals, and State Road Canal, and associated laterals. The reduced seepage will result in an estimated 2,359 fewer tons of salt from reaching the Colorado River Basin annually. This would result in minor long-term reduced salinity in the Colorado River Basin and improvement in the long-term water quality of the Colorado River.

### **3.4.4 Upland Vegetation Resources**

#### **No Action Alternative**

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

#### **Action Alternative**

Under the Action Alternative, much of the area disturbed by construction activities would be in upland and agricultural areas. Most of the areas where construction would take place are already altered from their natural state. Construction would occur outside the growing season, between October and May, and would occur within a 100-foot wide construction easement. Upland areas would experience short-term losses. Brush and grasses would be impacted during construction by the operation of construction equipment, excavation, and the staging of materials. All areas disturbed by construction activities would be re-contoured and reseeded. After completion of the re-contouring and reseeded, relatively minor native habitat would be permanently lost when compared to the current condition. Upland vegetation communities would likely be reestablished, and some previously disturbed areas may see an increase in native species compositions after reseeded. Areas that are disturbed may be more vulnerable to non-native species and noxious weed infestation. These non-native species typically recover more quickly after a disturbance than native species. To minimize impact to native vegetation, previously disturbed areas would be used for construction activities, where possible. Cultivated lands that are disturbed by construction activities will be reseeded with an appropriate agricultural mix.

Best Management Practices would be followed to reduce impacts, including placing staging and material sources outside of sensitive areas. Construction materials and equipment would be washed to remove dirt, seeds from weeds, and to reduce the possibility of infestation by non-native species. After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of invasive species. This would include seeding mixtures of desirable native species and agricultural grasses, where appropriate, and post-construction treatment to control noxious and invasive species.

### **3.4.5 Wetlands and Riparian Resources**

#### **No Action Alternative**

Riparian habitat would remain in its current condition, experiencing minor fluctuations in quantity and quality, as naturally occurring precipitation patterns vary. Routine ditch maintenance would continue to disturb these areas, and the area is likely to see an increase in the composition and infestation of noxious and non-native species, due to their ability to thrive in disturbed areas. Though periodically removed within the ditch during maintenance, these plant species would likely increase their dominance within the project area, resulting in degradation of habitat quality.

#### **Action Alternative**

Many of the wetland and riparian habitats in the project area are ditch-induced and supported by seepage from the laterals. Riparian habitat would be impacted by the piping of the laterals. These areas may see increases in non-native species including tamarisk and Russian olive; these two species may be able to out-compete native species for limited water supplies when irrigation flows cease. Piping of the lateral would result in a total loss of ditch-induced riparian habitat. Approximately 87 percent of the identified wetland or irrigation ditch encroachments are considered to be temporary impacts, because post pipe installation, the project action area will be restored to pre-construction conditions. Conversely, approximately 13 percent of the total critical areas identified are deemed to have “permanent impacts,” because the existing canal will be completely filled and reverted to an upland setting.

Under the Action Alternative, the majority of long-term project impacts to riparian resources would occur in ditch-induced wetland and riparian habitats. The construction of the new pipeline alignment is anticipated to permanently impact 0.94 acres wetlands located along the State Road Lateral and temporarily impact 3.31 acres of wetland and riparian habitat

As required by the Colorado River Basin Salinity Control Act (43 U.S.C. 1571-1599), any wildlife values lost as a result of project implementation must be replaced by the Dry Gulch Irrigation Company through habitat replacement and management plans approved by Reclamation, following coordination with Federal and state wildlife officials. Replacement habitat must be of an equal or greater value to the habitat lost by the proposed project, and must be managed to maintain its value for the life of the salinity control project (50 years). Riparian habitat will

also be managed during construction under the guidelines set forth in the Colorado River Basin Salinity Control Act and Executive Order 11990.

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

### **3.4.6 Fish and Wildlife Resources**

#### **No Action Alternative**

Under the No Action Alternative, terrestrial wildlife habitat would remain in its current condition, and there would be no gains or losses to the wildlife habitat. Salinity loading of the Colorado River drainage would continue at current rates, which may affect water quality within the drainage, thereby continuing to negatively impact the wildlife using the area.

#### **Action Alternative**

The upland wildlife habitat impacted by the proposed action would result in minor short-term impacts to all wildlife species present in the project area. There would be some upland habitat, temporarily lost due to pipeline construction but similar habitat is available in the surrounding areas.

After construction, areas disturbed by construction would be re-contoured, replanted, and reseeded with native vegetation, except in agricultural fields, where appropriate crop seeds would be used. Best Management Practices would be followed to minimize impacts, including placing staging sites and access outside of sensitive or highly valuable habitats. After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of invasive weed species. This would include seeding disturbed areas with mixtures of desirable native species, including grasses, shrubs, and forbs.

During the construction period and during pipeline maintenance, there could be a short-term displacement (approximately 3 to 6 months) of wildlife that normally occupies the immediate project area. Construction would occur from autumn through early spring to avoid disturbance during critical periods of time for nesting or fawning for many wildlife species. All construction activities would occur within a 100-foot wide area along the Proposed Pipeline Alignment. Generally, animals would move easily and find alternative areas for forage and cover, and may return after construction and maintenance operations have been completed. Some upland habitats would experience short-term disturbance until native vegetation components within these areas are restored (two to three growing seasons).

Impacts to small mammals, especially burrowing animals, could include direct mortality and displacement during construction activities. Most small mammal

species would likely experience reduced populations in direct proportion to the amount of disturbed habitat. These species and habitats are relatively common throughout the area, so the loss would be minor.

Impacts to big game would include short-term disturbance and displacement of late summer and fall incidental use during the construction period. It is anticipated, due to the minor amount of habitat disturbance, that minor to no impact to wintering big game populations would occur.

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

Those species, including avian and amphibian species, which are dependent on wetland and riparian habitats, would experience a long-term (greater than 5 years) loss of habitat as described above.

The proposed action would result in a decrease in salinity, which would improve water quality in the Colorado River and potentially indirectly benefit fish within the Colorado River System. The total habitat value that would be lost long-term would be replaced through acquired replacement habitat to be proposed by the applicant and approved by Reclamation.

### **3.4.7 Special Status Species**

#### **Federally Listed Species**

##### **No Action Alternative**

There would continue to be minor direct or indirect impacts to threatened, endangered, or candidate species from continued salt loading in the Colorado River Basin. Salinity loading of the Colorado River Basin would continue at current rates due to seepage from the Hancock Canal, Martin Lateral, and State Road Canals and associated laterals, which will impact water quality within the drainage, thereby impacting wildlife using the area. Any impacts to federally listed species and their habitat from the salt loading would continue.

##### **Action Alternative**

There have been no documented occurrences of any federally listed threatened, endangered or candidate species within the project area. Biological site surveys completed in September 2011, determined that there would be no effect to any federally listed species from the proposed action.

The Hancock Canal, Martin Lateral, and the State Road Canal laterals do not connect directly to the Green or Colorado Rivers through surface channels or waterways. As a result, no impact to endangered fish species within the Colorado River Basin would result from sedimentation entering the laterals during construction activities. The proposed action may result in long-term, minor depletions of flows to the Colorado River Basin due to reduced seepage. The

proposed action would result in a long-term decrease in salinity which would increase water quality in the Colorado River and may therefore contribute to cumulative benefits for endangered fish species from improved water quality.

### **State Sensitive Species**

#### **No Action Alternative**

There would be no impact to State Sensitive Species under the No Action Alternative.

#### **Action Alternative**

There have been no documented occurrences of any Utah State Sensitive Species within the project area. Habitat for these species does not exist within or adjacent to the project area, therefore, there would be no effect to State Sensitive Species under the proposed action.

### **Special Concern Species**

#### **No Action Alternative**

There would be no impact to State Sensitive Species under the No Action Alternative.

#### **Action Alternative**

There have been no documented occurrences of any Utah Special Concern Species within the project area. Habitat for these species does not exist within or adjacent to the project area. Effects of the development of the proposed action on State Special Concern Species would be similar to effects on general upland vegetation.

### **3.4.8 Cultural Resources**

#### **No Action Alternative**

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

#### **Action Alternative**

Under the Action Alternative, there would be an adverse effect to the Martin Lateral. A portion of the existing unlined earthen irrigation lateral would be replaced with a pipeline and buried. Mitigation measures for the adverse effect to the Martin Lateral will be outlined in a MOA in accordance with 36 CFR 800.6(c).

### **3.4.9 Paleontological Resources**

#### **No Action Alternative**

Under the No Action Alternative there would be no foreseeable impacts to paleontological resources. There would be no need for ground disturbance for any pipe installation, staging areas, or settlement/storage ponds. The existing conditions would remain intact and would not be affected.

**Action Alternative**

Under the Action Alternative, there would be ground-disturbing activities which have the potential to impact subsurface fossil material. There are, however, no paleontological localities recorded in the UGS files in the APE. Therefore, the Action Alternative is not anticipated to have an impact on paleontological resources. However with any ground-disturbing activities (like those proposed under the Action Alternative), there is a potential disturb subsurface fossil material.

**3.4.10 Soil, Erosion and Sedimentation****No Action Alternative**

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

**Action Alternative**

Under the Action Alternative, soil would be excavated, compacted and re-graded during construction. In the short-term period, during and immediately following construction, erosion and sedimentation would increase. Best Management Practices would be employed to minimize the potential for impacts from erosion and sedimentation. The proposed pipeline alignment would be reseeded, and over the long-term the soil would return to a pre-project condition once vegetation is established.

**3.4.11 Indian Trust Assets (ITAs)****No Action Alternative**

Under the No Action Alternative there would be no foreseeable impacts to ITAs. The existing conditions would remain intact and would not be affected.

**Action Alternative**

Under the Action Alternative there would be no foreseeable impacts to ITAs. There are no known ITAs within the project vicinity and implementation of the proposed action would, therefore, likely have no effect on ITAs.

**3.4.12 Environmental Justice****No Action Alternative**

The No Action Alternative would have no impact on Environmental Justice populations.

**Action Alternative**

The project area lies on privately and publicly owned land in Uinta and Duchesne Counties, Utah. After a review of the United States Census information and socioeconomic data available for Uinta and Duchesne Counties, populations that could potentially be affected by the proposed project were evaluated. Implementation of the Action Alternative would not disproportionately (unequally) affect any low-income or minority communities near the project area. The proposed action would not involve population relocation, health hazards,



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

#### **3.4.14 Transportation**

##### **No Action Alternative**

UDOT does not currently have any transportation improvement projects for the project area.

##### **Action Alternative**

Although no temporary road closures are planned as part of the proposed project improvements, any temporary road or access closure will be coordinated with local law enforcement and emergency services. The public will also be notified of any road closures that take place due to the proposed action.

### 3.4.15 Summary of Environmental Consequences

Resource Issue	Alternatives	
	No Action	Action
Air Quality	No Effect	Minor short-term effects due to fugitive dust and equipment exhaust from construction activity. Mitigate with Best Management Practices.
Water Quality	Continued salt loading of the Colorado River Basin. Long-term minor to moderate impacts.	The Proposed Project would result in an estimated 2,359 fewer tons of salt from entering the Colorado River Basin annually; thereby reducing the salinity and improving water quality. There would be long-term benefits to water quality from the decreased salinity.
Upland Vegetation Resources	No Effect	Short-term upland vegetation loss with the potential for an increase in invasive plants. Best Management Practices will be employed to decrease the likelihood of invasive species.
Wetland and Riparian Resources	No Effect	There would be permanent loss of riparian areas along the lateral channels once they are piped.
Fish and Wildlife Resources	Direct and indirect impacts may occur due to continued salt loading of nearby waterways.	Minor short-term disturbance and displacement during construction. Downstream habitat may be improved as a result of long-term increased water quality. There would be permanent loss of 19.45 acres of riparian areas once the laterals are piped. A Habitat Replacement Plan as required by the salinity legislation will be implemented to replace wildlife values foregone.
Special Status Species- Federally Listed Threatened, Endangered, and Candidate Species	Minor direct and indirect impacts may occur due to continued salt loading of nearby waterways.	No Effect
Special Status Species- State Sensitive Species	No Effect	No Effect
Special Concern Species	No Effect	No Effect. Individual plants were not identified within the project area, but there may be some short-term disturbance to potential habitat during construction (3 to 6 months) and during maintenance activities.

Special Status- Other Sensitive Plant Species	No Effect	No Effect. There may be some short-term disturbance to potential habitat during construction (3 to 6 months) and during maintenance activities.
Cultural Resources	No Effect	Adverse effect to historic property (Martin Lateral). Mitigation measures developed in an MOA.
Paleontology	No Effect	Potential effects to subsurface fossils during construction.
Soil Erosion and Sedimentation	No Effect	Minor short-term effects due to runoff during and shortly after construction activity. Mitigate with Best Management Practices.
Indian Trust Assets	No Effect	No Effect
Environmental Justice	No Effect	No Effect
Transportation	No Effect	No Effect
Cumulative Effects	No Effect	Cumulative impacts from the proposed action and related actions were assessed during the resource evaluation (Chapters 3 & 4). This analysis determined that there were no adverse cumulative impacts.

## Chapter 4: Environmental Commitments

The following environmental commitments would be implemented as an integral part of the proposed action for the piping of Hancock Canal, Martin Lateral, and State Road Canal and associated laterals.

**1. Standard Reclamation Best Management Practices** – Standard Reclamation best management practices would be applied during construction activities to minimize environmental effects and would be implemented by construction personnel or included in contract specifications.

**2. Additional Analysis** – If the proposed action were to change significantly from the alternative described in this EA, additional environmental analyses would be undertaken as necessary.

**3. State Stream Alteration Permit** – Before implementing the selected alternative, the contractor would obtain a Joint Application Permit for a Stream Alteration Permit from the COE and the Utah State Department of Environmental Quality (if necessary). The conditions and requirements of the Joint Application Permit would be strictly adhered to by the contractor.

**4. Cultural Resources** – In the case that any cultural resources either on the surface or subsurface is discovered during construction, Reclamation's Provo Area Office archaeologist shall be notified, and construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by a professional archaeologist.

Any person who knows or has reason to know that he/she has inadvertently discovered possible human remains on Federal land, must provide immediate telephone notification of the discovery to Reclamation's Provo Area Office archaeologist. Work will stop until the proper authorities are able to assess the situation onsite. This action will promptly be followed by written confirmation to the responsible Federal agency official, with respect to Federal lands. The SHPO and interested Native American tribal representatives would be promptly notified. Consultation would begin immediately. This requirement is prescribed under the Native American Graves Protection and Repatriation Act (43 CFR Part 10); and the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470).

A MOA will be executed to mitigate for the adverse effect to the Martin Lateral. Mitigation for the adverse effects to the lateral, set forth in the stipulations of the MOA, must be completed before construction activities associated with the proposed action begin.

**5. Paleontological Resources** – Should vertebrate fossils be encountered by the proponent during ground disturbing activities, construction must be suspended until a permitted paleontologist can be contacted to assess the find.

**6. Construction Activities Confined to the Surveyed Corridor** – All construction activities would be confined to the one hundred foot wide corridor that has been surveyed for cultural and biological resources.

**7. Roads** – Existing roads would be used whenever possible for project activities. New access roads would be necessary along the new pipeline alignments.

**8. Disturbed Areas** – During construction topsoil would be saved and then redistributed after completion of construction activities. Subsequently, disturbed areas resulting from the project would be smoothed, shaped, contoured and reseeded to as near their pre-project condition as practicable. Seeding and planting would occur at appropriate times with weed-free seed mixes of native plants and agricultural grasses, distributed where appropriate.

**9. Air Quality** – Best management practices would be implemented to control fugitive dust during construction. The contractor would follow the EPA's recommended control methods for aggregate storage pile emissions to minimize dust generation, including periodic watering of equipment, staging areas, and dirt/gravel roads. All loads that have the potential of leaving the bed of the truck during transportation, would be covered or watered to prevent the generation of fugitive dust. Construction machinery and operation/maintenance vehicles would be routinely maintained to ensure that engines remain tuned and emission-control equipment is properly functioning as required by law. Additionally, the contractor would comply with all Utah State air quality regulations.

**10. Habitat Replacement** – A plan to replace wildlife values foregone will be prepared by the applicant and approved by Reclamation following coordination with the Service and Utah Division of Wildlife Resource. Total acreage of wildlife habitat predicted to be lost is 19.45 acres of riparian habitat along the lateral.

**11. Breeding Birds** – A survey of ground nesting birds would be conducted prior to any ground disturbing activities. This survey would be conducted by a biologist in order to avoid, to the extent possible, any negative impacts to these birds.

**12. Noise Impacts** – Best management practice would be implemented to control temporary noise impacts during construction including mufflers on heavy equipment. The contractor would follow all local noise ordinances, including Duchesne County's Nuisance Ordinance which restricts construction activities to the following timeframes: 7 a.m. to 9:30 p.m. on weekdays, 8 a.m. to 9:30 p.m. on Saturdays, and 9 a.m. to 9:30 p.m. on Sundays and holidays.

# **Chapter 5: Consultation and Coordination**

## **5.1 Introduction**

Reclamation's public involvement process presents the public with opportunities to obtain information about a given project and allows all interested parties to participate in the project through written comments. The key objective is to create and maintain a well-informed, active public that assists decision makers throughout the process, culminating in the implementation of an alternative. This section of the EA discusses public involvement activities undertaken to date for the Hancock Canal, Martin Lateral, and State Road Canal piping project.

## **5.2 Native American Consultation**

Reclamation conducted Native American consultation throughout the public involvement process. Consultation letters and copies of the Class III cultural resource inventory report were sent to the Ute Indian Tribe of the Uintah and Ouray Reservation, and the Northwestern Band of Shoshoni Nation of Utah. This consultation was conducted in compliance with 36 CFR 800.2(c)(2) on a government-to-government basis. Through this effort, each tribe is given a reasonable opportunity to identify any concerns about historic properties; to advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance; to express their views on the effects of the proposed action on such properties; and to participate in the resolution of adverse effects. Reclamation received no response from the consulted tribes.

## **5.3 Paleontological Resources**

Reclamation requested a paleontological file search from the UGS to determine the nature and extent of paleontological resources within the APE. File search results and recommendations from the UGS were received in a letter dated January 11, 2012 (Appendix C, UGS Letter).

## **5.4 Utah State Historic Preservation Office**

A copy of the Class III cultural resource inventory report and a determination of historic properties affected for the proposed action were submitted to the SHPO.

SHPO concurred with Reclamation's determination of Adverse Effect to the Martin Lateral in a letter dated November 17, 2011 (Appendix D, SHPO Concurrence). SHPO will be a signatory to the forthcoming MOA to mitigate the adverse effects to the Martin Lateral.

## Chapter 6: Preparers

The following table provides a list of the agency representatives and consultants who participated in the preparation of the EA.

**Table 6.1 List of Preparers**

Name	Title/Position	Contributions
<b>Agency Representatives</b>		
Jeffrey D'Agostino	Environmental Protection Specialist, Bureau of Reclamation, Provo Area Office	Project Coordination
Scott Elliot, P.E.	Engineer, Bureau of Reclamation, Provo Area Office	Project Engineer
W. Russ Findlay	Biologist, Bureau of Reclamation, Provo Area Office	Biological Resource Oversight
Brian Joseph	Archaeologist, Bureau of Reclamation, Provo Area Office	Cultural Resources, Paleontological Resources, and Indian Trust Assets
<b>Consultants</b>		
Tracy Allen, P.E.	Engineer, J-U-B Engineers, Inc.	Project Manager
Chris Thomsen, P.E.	Engineer, J-U-B Engineers, Inc.	Alternative Analysis
Brad Perkins, P.E.	Engineer, J-U-B Engineers, Inc.	Alternative Analysis
Marti Hoge	Environmental Planner, J-U-B Engineers, Inc.	Environmental Project Manager NEPA Oversight
Jordan Hansen	Gateway Mapping, Inc.	GIS, Document Graphics
Vincent Barthels	Biologist, J-U-B Engineers, Inc.	Biological and Wetland Resources, Habitat Replacement Plan
Asa Nielson	Baseline Data Research	Cultural Resources





## Chapter 7: References

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**Appendix A  
Wetland Report**



## **Appendix B**

### **Biological Assessment**



**Appendix C**  
**UGS Letter**





**Appendix D**  
**SHPO Concurrence**



**Appendix E**  
**Public Comments**