

CHAPTER 1: INTRODUCTION

1.0 INTRODUCTION

1.1. INTRODUCTION

The United States Department of the Interior, Bureau of Reclamation (Reclamation) has prepared this Environmental Impact Statement (EIS) to evaluate the potential impacts of the proposed Humboldt Project Conveyance, commonly known as the Humboldt Project Title Transfer. The Humboldt Project (Project) located in north central Nevada is a Reclamation storage project. Authorized in 1933, the Project includes federal lands that were withdrawn from the public domain and dedicated to the Project (withdrawn lands), and private lands that were purchased for dedication to the Project (acquired lands).

The proposed title conveyance is authorized under Title VIII of Public Law 107-282, Humboldt Project Conveyance (Act) dated November 5, 2002. The Act directs the Secretary of the Interior (Secretary) to convey all right, title, and interest in and to the lands and features of the Humboldt Project, including all water rights for storage and diversion, to the Pershing County Water Conservation District (PCWCD *or* District), the State of Nevada (State), Pershing County, and Lander County consistent with the terms and conditions set forth in the Memorandum of Agreement between PCWCD and Lander County dated January 24, 2000; the Conceptual Agreement between PCWCD and the State of Nevada dated October 18, 2001; the Letter of Agreement between Pershing County and State of Nevada dated April 16, 2002; and any agreements between Reclamation and PCWCD. A Memorandum of Agreement between the Reclamation and PCWCD was entered into on May 6, 2004.

The Humboldt Project includes three primary features – Humboldt Sink, Rye Patch Dam and Reservoir, and the Community Pasture. The Humboldt Sink encompasses approximately 32,650 acres of withdrawn lands in Pershing and Churchill Counties. The Rye Patch Reservoir, located in Pershing County approximately 22 miles north of Lovelock, includes approximately 8,460 acres of withdrawn lands and approximately 12,340 acres of acquired lands. The Community Pasture encompasses approximately 30,000 acres of acquired pasture lands located in or near the unincorporated town of Battle Mountain.

Non-Reclamation project features, including water distribution and drainage facilities in the Lovelock Valley and lands owned by the PCWCD, are not included in this transfer and are not subject to environmental review under the National Environmental Policy Act (NEPA).

The title transfer involves approximately 83,530 acres of federal lands associated with the Humboldt Project. Under the proposed transfer, title of these lands would be conveyed as follows:

Pershing County Water Conservation District – All acquired lands in the Rye Patch Reservoir area, and all withdrawn lands below the reservoir high water mark and approximately 22,500 acres of acquired land in the Community Pasture.

State of Nevada – The State of Nevada will receive approximately 31,660 acres of withdrawn Reclamation lands in the Humboldt Sink, and certain withdrawn lands above the Rye Patch Reservoir high water mark. Approximately 5,850 acres of acquired land in the Battle Mountain Community Pasture would transfer to the State of Nevada to be managed by Nevada Department of Wildlife (NDOW) for the purpose of creating a wetland.

Lander County – Lander County would receive title to four parcels totaling approximately 1,100 acres in the Battle Mountain Area.

Pershing County – Pershing County would receive approximately 990 acres of withdrawn Reclamation

lands adjacent to the Derby Airfield in the Humboldt Sink.

1.2. PURPOSE AND NEED

The purpose of this action is to transfer the Humboldt Project from federal ownership to PCWCD, State of Nevada, Lander County, and Pershing County. The action is needed to comply with Title VIII of Public Law 107-282 (**Appendix B**) which directs the Secretary to transfer title of the Humboldt Project to the above named entities.

1.3. TITLE TRANSFER PROCESS

Reclamation policy requires that title transfers be carried out in an open and public manner. In addition to satisfying NEPA requirements, this EIS evaluates the proposed title transfer using the following six broad public interest criteria, as defined by the *Framework for the Transfer of Title: Bureau of Reclamation Projects* dated August 7, 1995. A copy of the document can be found in **Appendix A**.

- The Federal Treasury, and thereby the taxpayer's financial interest, must be protected;
- There must be compliance with all applicable state and federal laws;
- Interstate compacts and agreements must be protected;
- The Secretary of the Interior's Native American trust responsibilities must be met;
- Treaty obligations and international agreements must be fulfilled; and
- The public aspects of the project must be protected

The title transfer program is being implemented throughout the western states in which Reclamation has developed water and power projects. In recent years, Reclamation has completed a number of title transfers for lands, facilities, and other assets associated with federal projects.

1.4. PROJECT LOCATION AND DESCRIPTION

The Humboldt Project, located in the high desert of north central Nevada, includes the Humboldt Sink, the Rye Patch Dam and Reservoir, and the Battle Mountain Community Pasture. These areas are contained within three separate noncontiguous areas along the Humboldt River. The Humboldt River is the longest river within the State of Nevada and is the major source of irrigation water for the Humboldt Project. Project lands range in elevation from approximately 3,900 to 4,100 feet in the Humboldt Sink and Rye Patch Reservoir area to over 4,500 feet in the Battle Mountain Community Pasture. Project lands are surrounded by the Eugene Mountains, West Humboldt, and Trinity Ranges in the lower reaches of the Humboldt River, and the Battle Mountain, Sheep Creek, and Shoshone Ranges in the upper reaches near Battle Mountain.

1.4.1. Humboldt Sink

The Humboldt Sink consists of two noncontiguous segments at the terminus of the Humboldt River. The northeast segment includes the Toulon Lake, Humboldt Lake, and Humboldt drainage, and the southwest segment includes the White Plains area (**Figure 2**). The area is located between the West Humboldt Range to the southeast and the Trinity Range to the northeast. In total, approximately 32,650 acres of withdrawn lands located in Pershing and Churchill Counties are included in the proposed title transfer. The northern extent is located approximately 10 miles south of Lovelock, the county seat of Pershing County, Nevada and approximately 80 miles northeast of the Reno/Sparks area.

Since 1957, portions of the Humboldt Sink have been managed by NDOW as the Humboldt Wildlife

Management Area (Humboldt WMA), also called Humboldt-Toulon. The Humboldt WMA is fed by both natural flow of the Humboldt River and the drain system carrying tail water from the irrigated lands of the PCWCD. At the southwest end of the Humboldt Sink is the Humboldt Dike, a naturally formed feature that rises over 100 feet above the Humboldt Sink to the north and the White Plains to the south. The dike is breached where the Humboldt River cuts through to allow water to flow from the Humboldt Lake to the White Plains (referred to as the Humboldt Slough or Canal). In extremely wet years the Humboldt Sink discharges to the Carson Sink via this drainage.

1.4.2. Rye Patch Dam and Reservoir

The Rye Patch Dam and Reservoir are located on the Humboldt River about 22 miles upstream from Lovelock, and approximately 18 miles from the northern extremity of the PCWCD service area. The lands to be transferred include approximately 8,460 acres of withdrawn lands and approximately 12,340 acres of acquired lands. The reservoir is about 21 miles long, has approximately 72 miles of shoreline and covers approximately 12,000 acres when full. The dam is an earth-fill rock-faced structure with a height of 78 feet and a crest length of 1,074 feet, and has a storage capacity of approximately 213,000 acre-feet (USBR 1976).

The Nevada Division of State Parks (State Parks) operates and maintains the Rye Patch State Recreation Area facilities at Rye Patch, although the management agreement with Reclamation and the PCWCD has expired. The park entrance, located at the southern end of Rye Patch Reservoir, is approximately 1 mile west of Interstate 80 (I-80) via Federal Aid Secondary Road (FAS) 401. Access to other areas within the Park is available from numerous dirt roads and jeep trails and by boat.

1.4.3. Battle Mountain Community Pasture

The Battle Mountain Community Pasture is located approximately 125 miles upstream of the northern end of Rye Patch Reservoir and is traversed by the Humboldt, Rock Creek and Reese River. The lands to be transferred include approximately 30,000 acres of acquired lands north of Interstate 80, with a few isolated parcels south of the interstate. There are pasture lands primarily north and east of the unincorporated town of Battle Mountain, the county seat of Lander County, Nevada. Project lands are accessible by several paved and unimproved roads.

In addition, several Reclamation-acquired parcels in and near the Town of Battle Mountain are included in the proposed title transfer. These properties include lands adjacent to the Livestock Events Center, a metal building adjacent to the County complex used by PCWCD as a maintenance shop and a vacant parcel adjacent to the sewage treatment plant on the western edge of town. Also included in the transfer are the ranch manager's house and various farm-related structures, and the Slaven Diversion Dam located on the Humboldt River near the eastern boundary of the Community Pasture (**Appendix E**).

1.5. PROJECT BACKGROUND

1.5.1. Project History

Historical accounts of the Humboldt Project are taken from the *U. S. Bureau of Reclamation History Program, Humboldt Project* (Autobee 1993), the *Nevada Water Basin Information and Chronology Series, Humboldt River Chronology* (NDWP 2004d), and numerous unpublished reports obtained during the course of this study. **Section 3.11.1** provides additional information regarding the cultural resources in the project area.

The first attempt to provide reliable water storage facilities for the Lovelock Valley began in the early 1900s. The Humboldt-Lovelock Irrigation Light & Power Company constructed the Pitt-Taylor Reservoirs, located upstream of Lovelock, Nevada with a combined reservoir capacity of 49,000 acre-feet. These reservoirs soon proved to be inadequate as demands for the waters of the Humboldt River increased and the reservoirs lacked available water during dry years.

As the settlement of the Humboldt Basin progressed, increasing use of water on lands in the upper reaches of the river basin created shortages for lower basin water users. In response to the problem, the Nevada State Engineer ordered a general adjudication of the Humboldt River system in 1923. After years of judicial challenges, the Humboldt River adjudication was finalized by order of the Nevada Supreme Court in 1938 when it affirmed the Humboldt River Decree.

The Lovelock Irrigation District was organized in 1926 for the primary purpose of exploring possible storage sites on the Humboldt River. To facilitate the construction of such a project, the District reorganized as a quasi-governmental entity under the Nevada Irrigation District Act and changed its name to the Pershing County Water Conservation District.

In the early 1930s, PCWCD began negotiations with Reclamation for the construction of the Humboldt Project. The Humboldt Project was authorized for construction under the National Industrial Recovery Act of June 16, 1933 and approved in August 1933. The Humboldt Project was found feasible by the Secretary on November 1, 1935, and approved by President Franklin D. Roosevelt on November 6, 1935.

After studying several locations for reservoir construction, PCWCD and Reclamation decided on the present site of Rye Patch Reservoir. However, to make the Project feasible, PCWCD needed to acquire water to store in the proposed reservoir through the purchase of water rights. To this end, the PCWCD directors located willing sellers in Lander County, and in January 1934 entered into purchase agreements with several ranch owners in the Battle Mountain and Valmy areas. Two of the willing sellers were the Filippini family, who owned Argenta Ranch and Muleshoe Ranch, and the Aldous family, who owned the Aldous Ranch. These three ranches eventually become the Community Pasture. In total, PCWCD contracted to acquire more than 30,000 acres of land and appurtenant water rights from these two large ranches just outside Battle Mountain, and an additional 30,580 acre-feet of water rights from nearby properties.

In late 1934, to facilitate the transfer of water rights to storage at Rye Patch for ultimate use on PCWCD lands, PCWCD assigned its right under the ranch and water right purchase agreements to the U. S. Government. These agreements were assigned to Reclamation, which advanced the money for the sale price of the ranches. PCWCD entered into a repayment contract with Reclamation for the construction of Rye Patch Dam and the purchase price for the lands and water rights on October 1, 1934, and supplemental contract dated August 8, 1941. The contract provided for the full repayment of all Project-related construction and acquisition costs over a 40-year period.

Construction of Rye Patch Dam began in January 1935, and was completed in January 1936, with a design capacity of 170,000 acre-feet. Because of the drought conditions and legal problems with the Pitt-Taylor Reservoirs, Rye Patch was not initially filled to full capacity.

In 1934, the Humboldt Sink was withdrawn from the public domain as part of the Humboldt Project. Reclamation withdrew these lands out of concern for responsibility for flood damage which might occur as a result of Project operations. In 1957, the Nevada Fish and Game Commission entered into a 25-year land use agreement with Reclamation on approximately 18,179 acres within the Humboldt Sink. The purpose of the lease and land use agreements was to preserve the wetland habitat within the Humboldt Sink for the benefit of waterfowl, shorebirds and other wildlife, and to provide hunting opportunity for

sportsmen (Bull and Richards 2003).

In the early 1940s, with all water transfers completed, legal problems resolved, and operating methods established, PCWCD assumed the operation and maintenance of the Humboldt Project, including Rye Patch Dam and the purchased lands in Lander County.

In 1955, PCWCD entered into a contract with the United States for the rehabilitation and betterment of works of the Humboldt Project (Contract No. 14-06-200-429). This contract provided for improvements to the Battle Mountain Development and Collection System, a part of which is located on the Battle Mountain Community Pasture. This contract, as well as the original construction contract, called for repayment by PCWCD for all funds expended by the United States for Project costs. Final payment of these obligations was completed in 1978.

According to the Lander County Memorandum of Agreement, at the time of purchase of the Lander County ranches, and within the area of the Argenta Ranch and the Muleshoe Ranch, there existed an area known as the Argenta Marsh. After the transfer of the water rights from Lander County ranches, and as part of the water rights change approvals, the Nevada State Engineer ordered that the lands be dewatered. In 1955, the marsh area was channelized to improve water conveyance in the Humboldt River adjacent to those lands (**Appendix E**).

In 1975, PCWCD entered into a contract with the United States for the rehabilitation and betterment of Rye Patch Dam (Contract No. 14-06-200-8194A). The dam height was increased by 3 feet, and the total storage capacity of Rye Patch Reservoir was increased to 213,000 acre-feet. The contract required PCWCD to repay the costs of these improvements. Final payment of these obligations was made in 1995.

In the early 1990s, Reclamation determined that some modifications to Rye Patch Dam would be necessary to protect the integrity of the actual dam structure. This work was completed in 1996, and Rye Patch Reservoir was filled to a capacity of 213,000 acre-feet. Modification costs totaled approximately \$7.7 million. Of this amount, PCWCD was required to repay 15 percent (approximately \$1.1 million) of the total modification costs over an 8-year period. PCWCD completed repayment to the United States for its portion of the modification costs in 2002.

1.5.2. Title Transfer Effort

The current title transfer effort was initiated by PCWCD in 1996. Members of the Nevada Congressional delegation introduced title transfer legislation in 1982 and then again in 1991. In 1982, HR 5652 was introduced to “authorize and direct the Secretary of the Interior to convey real property to the Pershing County Water Conservation District.” The bill failed after the Department of Interior indicated that they had not finished developing title transfer guidelines.

Title transfer legislation was again proposed in 1991. HR 1038, titled the Battle Mountain Pastures Restoration Act of 1991, was introduced to convey the Community Pasture to the PCWCD. A companion bill was also introduced in the Senate (SB 357). Neither of these bills was enacted into law.

On August 7, 1995, Reclamation adopted the “*Guidelines and Framework for the Transfer of Title – Bureau of Reclamation Projects*.” This document established a collaborative, proactive approach to title transfers in an effort to resolve major concerns before legislation was introduced in Congress (**Appendix A**).

Since 1996, PCWCD has been engaged in ongoing communications and negotiations with Reclamation, the State of Nevada, Lander County, Pershing County, environmental and various other public interest

groups regarding the current title transfer effort. Prior to the preparation of this EIS, PCWCD, with the assistance of Reclamation, held scoping meetings to identify the public's concerns and resource issues. In subsequent discussions, the State of Nevada and Lander and Pershing Counties reached tentative agreements regarding future land ownership and use subsequent to transfer, including enhanced wildlife habitat, recreation opportunities and minimum operational pool requirements in Rye Patch Reservoir.

In January 2000, the Lander County Board of Commissioners and the PCWCD Board of Director's drafted a Conceptual Memorandum of Agreement (**Appendix E**) to define the proposed transfer of lands from Reclamation to Lander County and PCWCD. This agreement supported the title transfer and included language requesting transfer of approximately 1,100 acres of Community Pasture lands in the vicinity of the unincorporated town of Battle Mountain to Lander County. Proposed uses for these lands include the potential development of an industrial park in the vicinity of the sewage treatment facility, expansion of the County Fairgrounds adjacent to the Livestock Events Center, and the transfer of an existing maintenance building currently used by PCWCD to Lander County. In addition, a low-maintenance public recreation site, adjacent parking area, and access easements along the Humboldt River were proposed. The access easement would be subject to certain restrictions, including maintenance of the easement area in its natural state and allowing day use and foot traffic only.

In October 2001, the State of Nevada drafted and signed a letter of Conceptual Agreement outlining the concepts of the agreement between the State and PCWCD (**Appendix F**). The parties agreed to support legislation that transfers ownership of lands in the Battle Mountain Community Pasture, Rye Patch Reservoir, and lands within the Humboldt Sink from the federal government to the State of Nevada and PCWCD.

On April 16, 2002, the Pershing County Board of Commissioners provided specific language requesting transfer of portions of the Humboldt Sink near the Derby Airfield to Pershing County (**Appendix F**).

On November 5, 2002, Title VIII of Public Law 107-282, Humboldt Project Conveyance Act was signed into law (**Appendix B**).

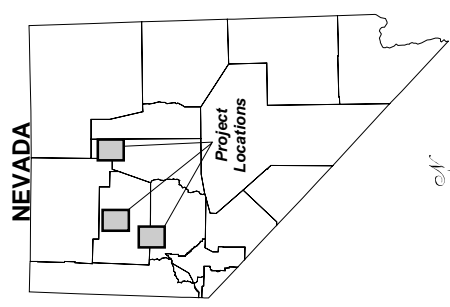
1.6. SCOPE OF THIS EIS

Reclamation is the lead agency in this NEPA review of the proposed title transfer. PCWCD is a cooperating agency under NEPA for this EIS. The Proposed Action would transfer lands from federal ownership to the PCWCD, the State of Nevada, and Pershing and Lander Counties. With the exception of the portion of the Community Pasture lands proposed to be transferred to the State of Nevada, and the isolated parcels proposed to be transferred to Pershing and Lander Counties, there would be no substantial change by the receiving entities in overall existing resource management.

PCWCD would continue to operate the Rye Patch Dam and Reservoir in a manner similar to its current agreement with Reclamation. The remaining pasture land in the Battle Mountain Community Pasture would continue to be managed by PCWCD on behalf of its constituents for livestock grazing. NDOW would continue to manage lands within the Humboldt Sink as a Wildlife Management Area and State Parks would continue to manage the Rye Patch State Recreation Area. Lands proposed to be transferred to Pershing and Lander Counties, and the Community Pasture lands proposed to be transferred to the State may undergo a change in land use. **Chapter 3, Affected Environment and Environmental Consequences**, describes the approach used in this EIS to define changes in land use that may occur in the Project area and analyzes the environmental effects that could occur as a result of the proposed title transfer.

Legend

- County Boundary
- Project Areas
- Highway
- PCWCD Boundary
- Land Transfer Locations
- City

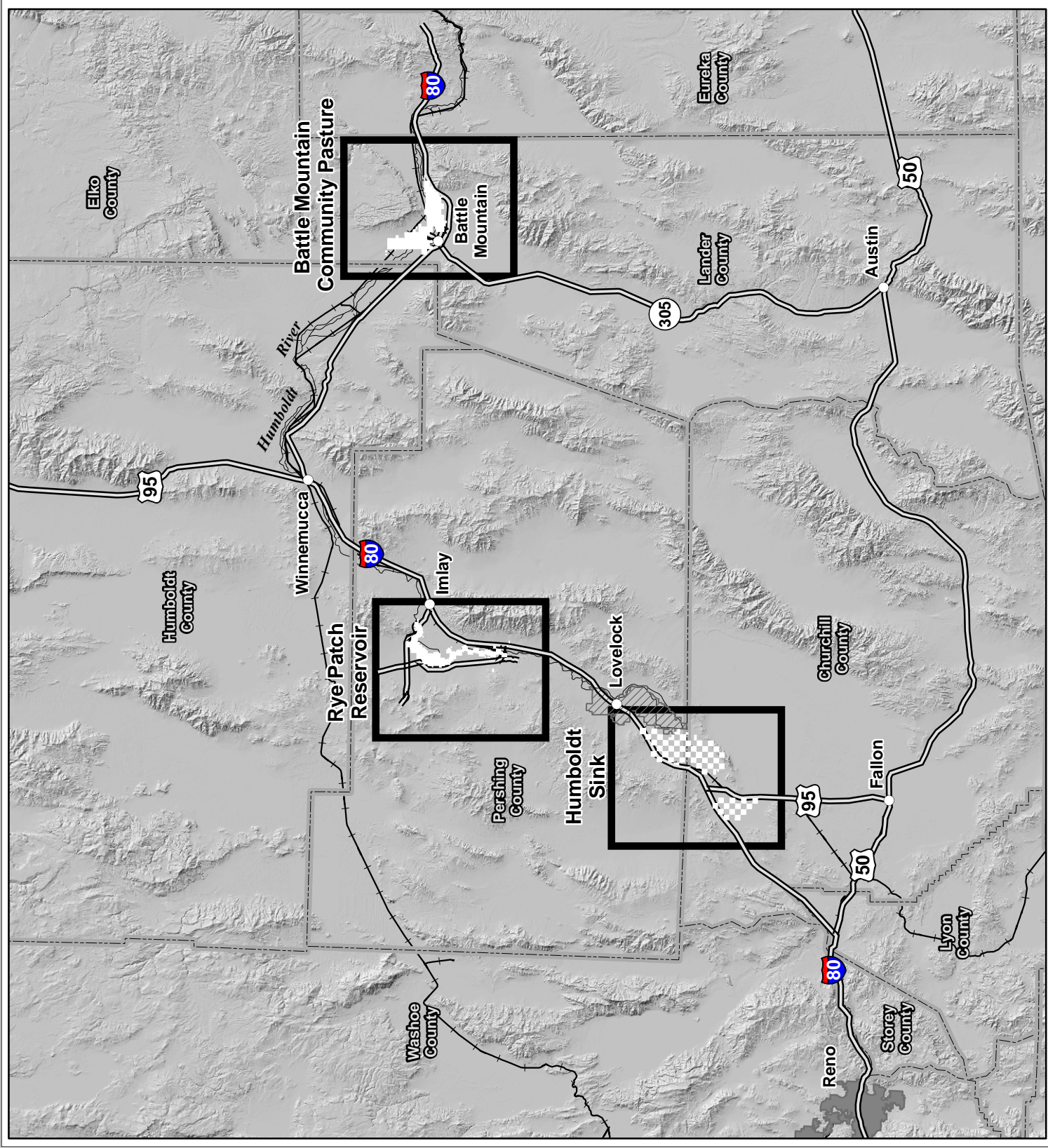


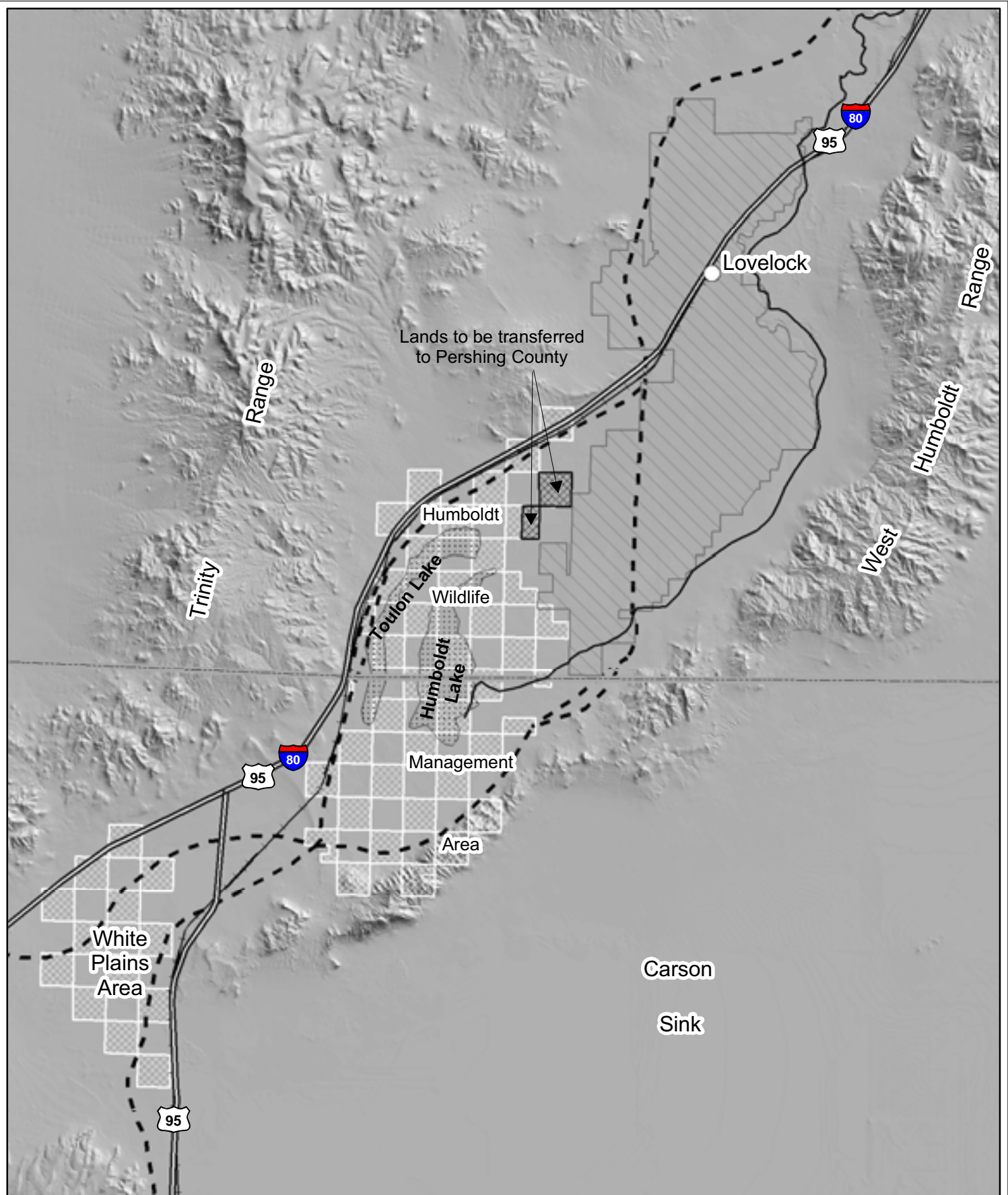
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Universal Transverse Mercator Projection
1983 North American Datum
Units: Meters
Zone 11

Humboldt Project Conveyance EIS

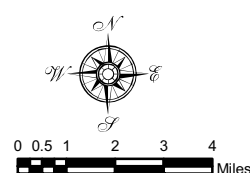
Figure 1.1: Project Area Map





Legend

○ City	Withdrawn
== Highway	PCWD Boundary
+ Railroad	Derby Field
- - - California Trail	County Boundary
— River	Lake

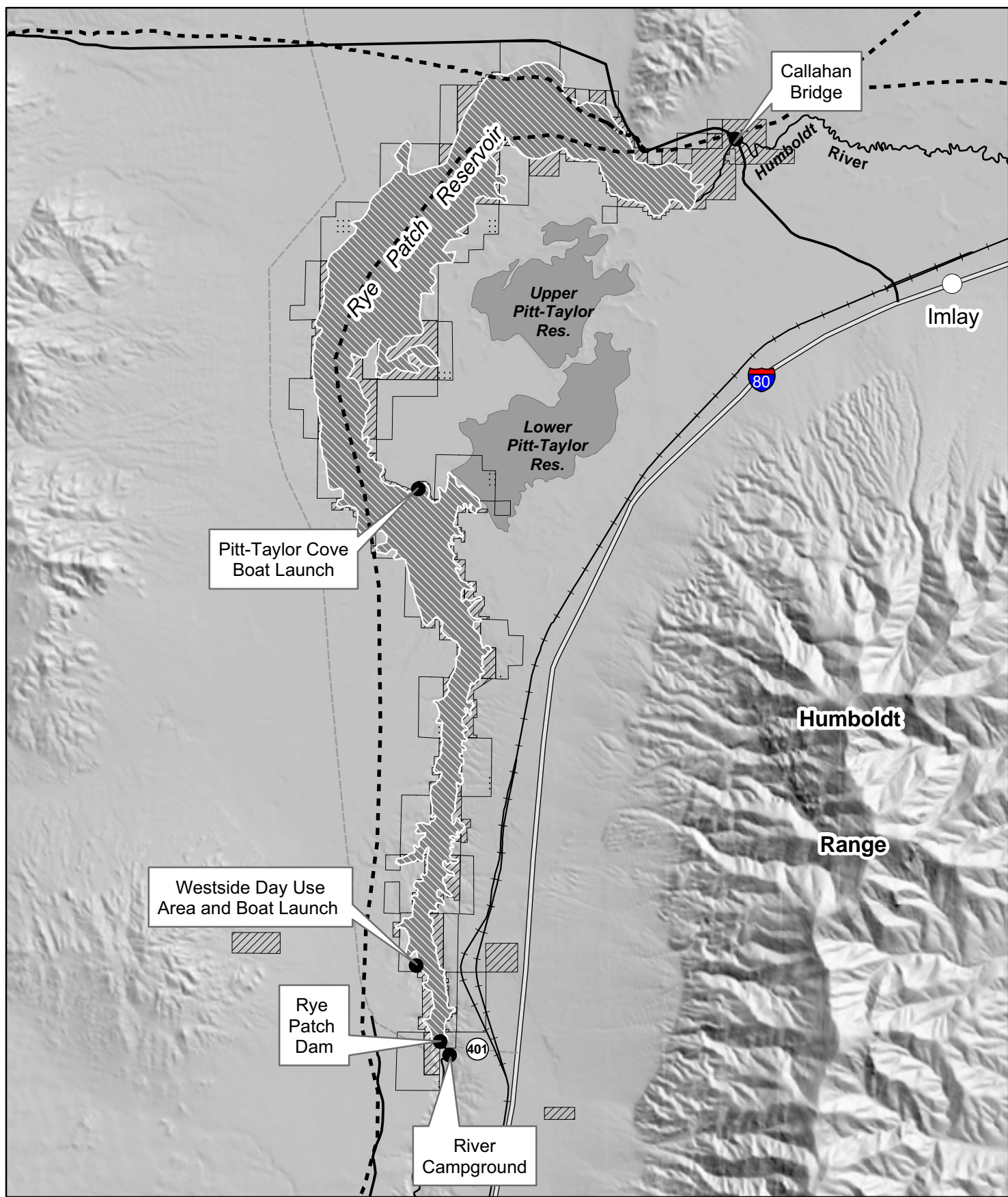


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Humboldt Project Conveyance EIS

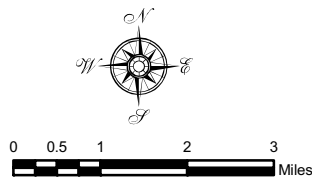
**Figure 1.2:
Humboldt Sink**

Date: 09.21.05 file: HUMBOLDT Author: msh



Legend

○ City	--- Unpaved Road
== Highway	▨ Acquired PCWCD
+ Railroad	▤ Withdrawn State
- - - California Trail	▧ Withdrawn PCWCD
— Road	

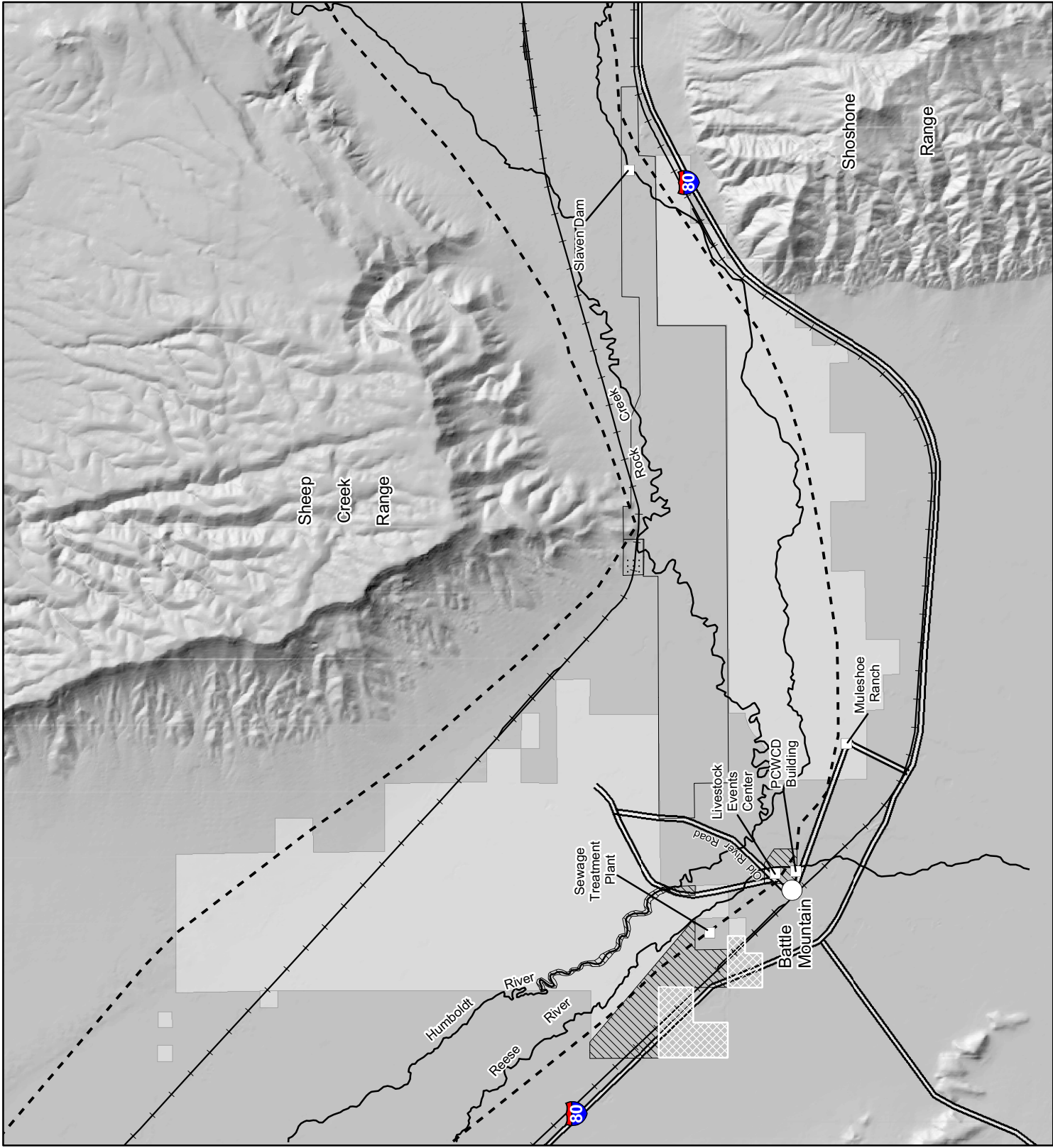


Universal Transverse Mercator Projection
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Humboldt Project Conveyance EIS

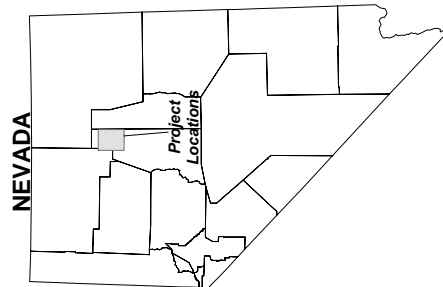
**Figure 1.3:
Rye Patch Reservoir**

Date: 09.21.05 file: RYE_PATCH Author: msh



Legend

- Battle Mountain Indian Colony
- California Trail
- City
- Lander County
- State of Nevada
- PCWCD
- Highway/Road
- Railroad



0 0.5 1 2 Miles

Universal Transverse Mercator Projection
1983 North American Datum
Units: Meters
Zone 11

CHAPTER 2: PROPOSED ACTION & ALTERNATIVES

2.0 PROPOSED ACTION AND ALTERNATIVES

This section describes the alternatives that were considered in the development of this EIS. It outlines the scoping process that was used to solicit comments from interested stakeholders and the issues that were identified. The Proposed Action and No Action Alternatives are described along with alternatives that were considered but dismissed from detailed analysis. The environmental effects of the alternatives are also summarized and compared.

2.1. PUBLIC INVOLVEMENT/SCOPING

The scoping process was conducted to provide federal, state, and local agencies; organizations; and interested individuals with the opportunity to provide input on key issues and concerns that they believe should be evaluated in the EIS.

The objectives of scoping for the proposed project included:

- Identification of significant issues related to the proposed title transfer;
- Determination of the range of alternatives to be evaluated;
- Identification of environmental review and consultation requirements;
- Identification of interested and affected public; and
- Providing information to the public regarding the project.

Two notices were published in the *Federal Register* regarding the proposed title transfer. The first notice was published on February 26, 2003 [68 FR 8924] and indicated Reclamation's intent to prepare an EIS. The second notice, a Notice of Public Scoping, was published in the *Federal Register* on January 14, 2004 [69 FR 2157] and announced that two scoping meetings would be conducted in February 2004 to receive public input on issues to be addressed in the draft EIS. In addition, a scoping letter was mailed to approximately 250 federal, state, and local agencies; organizations; and interested individuals. Notices were also placed in four local newspapers (Reno-Gazette Journal, February 15-19, 2004; The Humboldt Sun, February 13-16, 2004; The Lovelock Review-Miner, February 12, 2004; and the Elko Daily Free Press, February 9, 2004).

The scoping meetings were held on the dates and locations listed below:

- February 18, 2004, Battle Mountain Civic Center, Battle Mountain, Nevada;
- February 19, 2004, Washoe County Bartley Ranch Park, Reno, Nevada

Approximately 26 people attended the Battle Mountain and Reno meetings. An interagency scoping meeting was also held during the day on February 19, 2004. Sixteen comments were received during the scoping meetings and 23 letters were received by Reclamation during and immediately after the comment period. A summary of comments received are listed in **Appendix J**. A complete set of the written comments are available as part of the public record for the project.

A Notice of Availability of the Draft Environmental Impact Statement (DEIS) was published in the *Federal Register* on January 28, 2005. A 60-day minimum review period began after the EPA's notice of DEIS availability was published. Public hearings were held on the dates and locations listed below:

- March 14, 2005, Lovelock Community Center, Lovelock Nevada
- March 14, 2005, Battle Mountain Civic Center, Battle Mountain, Nevada

- March 15, 2005, Washoe County Department of Water Resources, Reno, Nevada

The hearings were held to receive comments from the public. A Reclamation Hearing Officer was present during the public hearings. All written comments received during the public hearing and the 60-day review period, and responses given to each comment, are provided in **Appendix K**.

2.2. DESCRIPTION OF ALTERNATIVES

Two alternatives are evaluated in this EIS: (1) the No Action Alternative, under which all interests the United States holds in the Humboldt Project would remain in federal ownership; and (2) the Proposed Action, under which Reclamation would transfer title to all interests the United States holds in the Humboldt Project to the PCWCD, the State of Nevada, Lander County, and Pershing County.

2.2.1. Proposed Action/Preferred Alternative

The Proposed Action would transfer approximately 83,530 acres of federal lands associated with the Humboldt Project to PCWCD, the State of Nevada, Pershing County, and Lander County. Timing of participation in the title transfer by the various entities is contingent upon available funding. As such, transfer of the various components of the Humboldt project may occur in phases at different times. The following section describes Proposed Actions for each title transfer area.

2.2.1.1. Humboldt Sink

The Proposed Action would transfer Reclamation withdrawn lands within the Humboldt Sink from Reclamation to the State of Nevada and Pershing County. In accordance with the Humboldt Project Conveyance Act and related agreements, the State of Nevada would receive title to approximately 31,660 acres of land within the Humboldt Sink. NDOW would continue to operate and maintain these lands as part of the Humboldt WMA. Pershing County would receive approximately 990 acres of land adjacent to Derby Airfield for future airport expansion.

2.2.1.2. Rye Patch Dam and Reservoir

The Proposed Action would include transfer of all acquired lands in the Rye Patch Reservoir area to the PCWCD. All withdrawn lands below the reservoir high water mark would transfer to the PCWCD. All withdrawn lands above the reservoir high water mark would transfer to the State. State Parks would continue to operate and maintain the recreation facilities at the Rye Patch State Recreation Area.

PCWCD has agreed to maintain a minimum operational pool of 3,000 acre-feet in Rye Patch Reservoir to sustain the fishery. To maintain this minimum pool, PCWCD would reduce or cease all releases when the reservoir reaches a minimum of 3,000 acre-feet of storage. PCWCD would be responsible for updates to the Standing Operating Procedure Emergency Action Plan as required by the State of Nevada, Safety of Dams Program.

2.2.1.3. Battle Mountain Community Pasture

The Proposed Action would transfer acquired lands within the Battle Mountain Community Pasture from Reclamation to PCWCD, the State of Nevada, and Lander County. PCWCD would receive title to approximately 22,500 acres within the Battle Mountain Community Pasture to be managed and operated for the continuation of grazing purposes.

The State of Nevada would receive title to approximately 5,850 acres of land in the Community Pasture for purposes of creating a wetland. The land to be transferred is identified as the northern portion of the Community Pasture from the eastern boundary through Rock Creek drainage to the River Road adjacent to the Old Blossom Road Field #15. PCWCD would continue to graze livestock on the land transferred to the State until such time as development of a wetland begins. Wetland development would depend on the acquisition of water rights by NDOW or other private entities wishing to pursue such actions.

The State of Nevada would assume responsibility for operation and maintenance of Slaven Diversion Dam near the east end of the Community Pasture in conjunction with other beneficial uses of the facility when it is needed to divert water to the developed wetland. After title to the facility is transferred to the State and before it is needed for diversion of water to the wetland, PCWCD would continue to operate and maintain the dam and appurtenant structures.

In addition, Lander County would receive title to four parcels totaling approximately 1,100 acres in the Battle Mountain area. Proposed uses for these lands include development of the industrial area adjacent to the sewage treatment plant, expansion of the Livestock Event Center, a new primitive day-use recreation area and parking lot, and access easements along the Humboldt River. The access easement would be subject to certain restrictions, including maintaining the easement area in its natural state, day-use only, and access limited to foot traffic only.

2.2.2. No Action Alternative

Under the No Action Alternative, the title transfer would not occur and the lands and associated water rights and improvements associated with the Humboldt Project would continue to be held by the United States and managed by PCWCD according to the purposes for which the project was authorized. The State of Nevada could continue to operate lands and features within the Humboldt Project pursuant to applicable agreements and contracts.

If the title transfer were not to occur, Reclamation may choose to prepare a Resource Management Plan (RMP) to guide future decisions for project lands. The purpose of the RMP is to establish guidelines for the conservation, protection, development, use enhancement, and management of federal lands and associated resources with a goal to maximize overall public and resource benefits (USBR 2003a). Preparation and implementation of an RMP is subject to Congressional funding.

2.2.2.1. Humboldt Sink

Under the No Action Alternative, federal lands (those lands assigned to the Humboldt Project) within the Humboldt Sink would continue to be managed by PCWCD with the operation and maintenance of the Humboldt WMA provided to NDOW by contract. Proposed transfer of lands to Pershing County for expansion of the Derby Airfield would not occur.

2.2.2.2. Rye Patch Dam and Reservoir

Under the No Action Alternative, PCWCD would continue to operate the Rye Patch Dam and Reservoir in accordance with its contracts with Reclamation. State Parks could continue to manage the Rye Patch State Recreation Area through a tri-party agreement with Reclamation and PCWCD. The proposed transfer of lands to PCWCD and State Parks would not occur. Reclamation would be required to perform safety inspections of Rye Patch Dam and prepare Comprehensive Facility Reviews on a bi-annual basis. In addition, Reclamation would be required to update the Standing Operating Procedure Emergency Action Plan in compliance with the Safety of Dams Program.

2.2.2.3. Battle Mountain Community Pasture

Under the No Action Alternative, Project lands within the Community Pasture would continue to be operated by PCWCD for grazing purposes. The proposed transfer of lands within the Community Pasture to PCWCD, the State of Nevada, and Lander County would not occur. The State of Nevada would not receive Project lands for wetlands development. Lander County would not receive title to the four parcels totaling approximately 1,100 acres. However, Lander County could pursue land acquisition through a separate action or enter into a tri-party lease to use the lands with Reclamation and PCWCD.

2.2.2.4. Alternatives Considered But Eliminated From Detailed Analysis

Several alternatives to the proposed title transfer were suggested during scoping. All alternatives were fully considered but only the Proposed Action and No Action Alternative were included for detailed analysis. Alternatives were evaluated as to whether they met the basic Purpose and Need of the Proposed Action. A summary of comments, including suggested alternatives, received during scoping are provided in **Appendix J**. The section below discusses some of the primary comments/alternatives provided during scoping.

2.2.2.5. Development of a Wetland Marsh in the Battle Mountain Community Pasture

A number of comments and suggested alternatives received advocated the development of a wetland marsh in the Battle Mountain Community Pasture. This alternative would restore some portion of what was historically known as the Argenta Marsh along the historic Humboldt River corridor. Generally the comments suggested a larger size wetland and more wetlands than what is proposed in this EIS, including water rights acquisition for potential wetland development. The size of the proposed wetland in the Proposed Action was outlined in the Conceptual Letter of Agreement between the State of Nevada and the PCWCD dated October 2001. This agreement stated that the State of Nevada would receive title to approximately 5,850 acres of land in the Community Pasture for purposes of establishing a wetland. The land to be transferred is located in the northern portion of the Community Pasture, extending from the eastern boundary through Rock Creek drainage to the River Road adjacent to the Old Blossom Road Field #15.

The purpose of this EIS is to address the environmental and human impacts of transferring title of the Humboldt Project from federal ownership to non-federal entities and to comply with Title VIII of Public Law 107-282, Humboldt Project Conveyance Act. The Humboldt Project Conveyance Act and the *Framework for the Transfer of Title: Bureau of Reclamation Projects* contain language specific to this action. Water rights associated with the Humboldt Project, and their allowable uses, are based on specific legislation and decrees governing the use of Humboldt River water. Therefore, addressing water rights acquisition for potential wetland development is beyond the scope of this EIS. A discussion regarding Humboldt Project water rights is described in **Section 3.2.4**.

2.3. SUMMARY TABLE OF IMPACTS

Table 2.1-1 summarizes and compares the environmental impacts that would result from implementation of the Proposed Action and No Action alternatives. More detailed analysis on the impacts associated with each resource or issue listed in the table is presented in **Chapter 3, Affected Environment / Environmental Consequence**.

**TABLE 2.1-1
SUMMARY OF IMPACTS**

Resource	No Action Alternative	Proposed Action / Preferred Alternative
Land Resources and Use	<p>The United States would continue to hold title pursuant to its contract(s) with PCWCD. PCWCD would continue to manage the lands according to the purposes for which the Project was authorized, subject to applicable agreements and contracts with the State and Reclamation.</p> <p>Reclamation may choose to prepare a Resource Management Plan (RMP) pursuant to its contract(s) with PCWCD to guide future land resources decisions for Project lands. Preparation and implementation of an RMP is subject to Congressional funding (USBR 2003a).</p>	<p>Reclamation lands would be transferred to PCWCD, State of Nevada, and Pershing and Lander Counties. Subsequent to the title transfer, receiving entities could sell or commercially develop the lands they receive under the Proposed Action. However, with the exception of parcels going to Pershing and Lander Counties, such action is unlikely.</p> <p>Land transferred to PCWCD and the State of Nevada are not anticipated to be commercially developed, as this would depart significantly from these entities' basic missions. PCWCD's primary purpose is to provide irrigation water to its constituents. NDOW's primary purpose is the management of wildlife habitat within the State of Nevada, and State Parks' purpose is the management of recreational resources in the State.</p>
Surface Water	<p>No change to existing condition. Lands and associated water rights and improvements would continue to be held by the PCWCD patrons, PCWCD and the United States.</p> <p>Under the No Action Alternative, PCWCD would not be subject to the minimum operational pool criteria.</p>	<p>With the exception of the proposed minimum operational pool criteria, impacts to surface water storage and use would not change. PCWCD has agreed to maintain a minimum operational pool of 3,000 acre-feet in Rye Patch Reservoir to sustain the fishery. As a result of the Proposed Action, PCWCD's operational policy will cause a reduction or cessation of all releases when the reservoir reaches a minimum of 3,000 acre-feet of storage. I Impacts to surface water use on other Project lands would not change.</p> <p>Under the Proposed Action, the State of Nevada would receive title to approximately 5,850 acres of land in the Community Pasture for wetland development. These lands do not have water rights. Water rights acquisition for wetland development would be the responsibility of the receiving entity.</p>
Groundwater	No change to existing condition	Under the Proposed Action, impacts to groundwater in the Humboldt Sink and Rye Patch Reservoir would be the same as those under the No Action Alternative. Lands within the Battle Mountain Community Pasture proposed to be transferred to Lander County for industrial development may require the use of groundwater. The Battle Mountain Water and Sewer Department would be responsible to supply any additional Municipal and Industrial (M&I) water to lands acquired for such purposes. At this time, the Battle Mountain Water and Sewer Department does not anticipate restrictions on acquiring water supplies for additional M&I use.

TABLE 2.1-1 SUMMARY OF IMPACTS		
Resource	No Action Alternative	Proposed Action / Preferred Alternative
Water Use	No change to existing condition	Same as No Action
Water Quality	No change to existing condition	Same as No Action
Water Rights	No change to existing condition.	Under the Proposed Action, water rights now held in the name of the United States would be transferred to PCWCD.
Geologic Resources	No change to existing condition	The title transfer would not affect geological resources on transfer lands. The legislation provides that all right, title, and interest in the lands is being conveyed at the time of transfer; there is no reservation of mineral rights to the United States. The transfer may impact access to mineral and geothermal leases.
Soil Resources	No change to existing condition	Increased public access along the Humboldt River in the Battle Mountain area may result in bank erosion or sedimentation in the river. However, given the limited population in the area, the effect is expected to be minor and similar to existing conditions.
Biological Resources	No change to existing condition. If title were retained by the United States, Reclamation would continue to comply with applicable laws/regulations addressing plant, fish, and wildlife resources. All Executive Orders, regulatory requirements for wetlands under Section 404 of the Clean Water Act, and applicable state laws and regulations regarding plant, fish, and wildlife management would continue to apply to the project.	Transferring lands out of federal ownership would mean that the Endangered Species Act (ESA) compliance provisions applicable only to federal agencies would no longer apply. However other protective sections of the ESA, such as Section 9 and Section 10 would apply. All regulatory requirements for wetlands under Section 404 of the Clean Water Act and all state laws and regulations regarding fish and wildlife management would continue to apply to the project, regardless of ownership.
Hazardous Materials and Dam Safety	No change to existing conditions	Title to the Rye Patch Dam would transfer to the PCWCD. Reclamation would no longer have the responsibility for activities related to its Safety of Dams Program. The dam safety regulatory responsibility would formally transfer to the State of Nevada, and the dam safety ownership responsibilities would transfer to the PCWCD. Liability for the structure and its operation would become the sole responsibility of the PCWCD.

TABLE 2.1-1 SUMMARY OF IMPACTS		
Resource	No Action Alternative	Proposed Action / Preferred Alternative
Recreation	<p>No change to existing conditions. State Parks would continue to manage the Rye Patch State Recreation Area under substantially the same form of tri-party agreement it had in the past with Reclamation and PCWCD.</p> <p>Proposed recreational enhancements by Lander County for the development of a primitive day-use and parking area adjacent to the Humboldt River, a dedicated easement along the river, and expansion of the Livestock Events Center would not occur.</p>	<p>Reclamation-lands currently operated as part of the Humboldt WMA would transfer from federal ownership to the State of Nevada, with a small portion transferred to Pershing County for airport expansion at Derby Field.</p> <p>State Parks would manage Rye Patch State Park Recreation Area, and would enter into a cooperative agreement for the management of public recreational activities on PCWCD lands and waters within the area.</p> <p>Lander County would receive title to approximately 1,100 acres of Community Pasture lands for the development of a primitive day-use and parking area adjacent to the Humboldt River, a dedicated easement along the river, and expansion of the Livestock Events Center.</p> <p>Upon conveyance of the lands and facilities, receiving entities shall no longer be eligible to receive any future Reclamation benefits with respect to the Humboldt Project, except those benefits that would be available to other non-Reclamation districts.</p>
Socioeconomic	No change to existing conditions. The counties would continue to receive payment in-lieu of tax (PILT) payments based on annual calculations.	<p>Project lands would be removed from Lander, Pershing, and Churchill Counties' PILT payment calculation. For those lands being transferred to PCWCD and the State of Nevada, the land would be exempt from the collection of property tax.</p> <p>Commercial development of lands transferred to Pershing and Lander Counties may be subject to future property taxes and additional sales tax revenues. Local assessment of property for tax purposes is usually higher than the PILT formulation.</p>
Environmental Justice	No change to existing conditions	Lander County may develop an industrial park adjacent to the existing sewage treatment facility. The parcel is located north of lands owned by the Battle Mountain Band of the Te-Moak Tribe. Any development would be subject to county regulations.

**TABLE 2.1-1
SUMMARY OF IMPACTS**

Resource	No Action Alternative	Proposed Action / Preferred Alternative
Cultural Resources	No change to existing conditions. Cultural resources on federal lands would remain under federal control and subject to the federal protections provided by the National Historic Preservation Act (NHPA), Archeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA), and Executive Order 13007	<p>Upon transfer, Cultural Resources located on lands proposed to be transferred would lose federal protection provided by the NHPA, ARPA, NAGPRA, and Executive Order 13007. Senate Bill 81 (SB 81), a new cultural resources statute was enacted in the last session of the Nevada legislature (Date of Enactment: May 31, 2005). SB 81 authorizes the Office of Historic Preservation of the Department of Cultural Affairs to enter into agreements with state agencies or political subdivisions regarding the preservation of historic or prehistoric sites. The State Historic Preservation Officer is developing regulations to implement SB 81. Once these regulations are developed, Reclamation will evaluate whether SB 81 could assist in compliance with 36 CFR 800, the implementing regulations for Section 106 of the NHPA.</p> <p>In order to comply with Section 106 of the NHPA, Reclamation would develop a sample strategy to identify cultural resources potentially affected by this undertaking. This process is defined in 36 CFR Part 800.4(b)(1), which states: “The agency official shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey.”</p> <p>The means of resolving adverse effects to historic properties recorded within the title transfer areas are difficult to project at this time because the proposed inventory has not yet been completed. The total range and complexity of historic properties remain to be determined. A Programmatic Agreement would be developed among the State Historic Preservation Office (SHPO), Reclamation, and consulting parties to describe responsibilities of recipient entities towards consideration of historic properties.</p> <p>The Record of Decision (ROD) for the EIS will identify any environmental commitments that must be met prior to transferring lands to the receiving entities, including compliance with Section 106 of the NHPA. When Reclamation has completed Section 106 on federally designated portions of the Humboldt Project (e.g., Rye Patch Area), transfer of those areas to the receiving entities may occur separately from the other portions.</p>
Indian Trust Assets	No change to existing conditions. No Indian Trust Assets are known in the project area.	No Indian Trust Assets are known to exist in the project area.

CHAPTER 3: AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1. LAND RESOURCES AND USE

3.1.1. Affected Environment

Land ownership within the Humboldt Sink and Rye Patch Reservoir areas is dominated by a “checkerboard pattern” of alternate privately and publicly held land. This ownership pattern is a result of land grant transfers from the federal government to the Central Pacific Railroad Company in the 1860s. Odd-numbered sections were granted to the railroad in a corridor extending 20 miles on each side. This 40-mile-wide corridor of alternating private and public lands follows the Humboldt River and affects land ownership in the project area. The discussion below describes land resources and use within each specific portion of the Humboldt Project.

3.1.1.1. Humboldt Sink

Project lands within the Humboldt Sink area include approximately 32,650 acres of withdrawn federal lands located in Pershing and Churchill counties. The Humboldt WMA, with management areas in both counties, totals 37,140 acres. Of this, approximately 18,180 acres are managed by NDOW through an agreement with the United States and PCWCD. The larger Humboldt Sink area is a mixture of open land that includes the Humboldt WMA, dispersed rangelands, some farm residents, and Derby Airfield. There are active and inactive mining operations to the southwest, west, and east of the Humboldt Sink area. There are no irrigated farms, residential areas, or mining operations on lands proposed to be transferred. The nearest incorporated area is the City of Lovelock, which is approximately 6 miles northeast of the Humboldt Sink.

Plans that govern the development of lands and land use within the Humboldt Sink area include the Churchill County Master Plan (adopted in 2003), the Pershing County Master Plan (adopted in 2002), and the State of Nevada Humboldt Wildlife Management Area Conceptual Management Plan (developed in 2003). The parcels located in the White Plains area of Churchill County are designated vacant/unclassified (Churchill County 2003). The parcels located in the Pershing County portion of the Humboldt Sink are designated Agricultural/Mining/Residential, Agricultural Reserve, and Open Space (Wren 2004).

Derby Airfield is a general aviation airport operated by Pershing County. The county leases the lands to be transferred under a lease agreement with the Bureau of Land Management (BLM). The lease will expire on September 4, 2010. Pershing County has no specific airport land use designation at this time. However, Pershing County is considering the development of an airport plan if title transfer occurs and the area around Derby Field is transferred to Pershing County (Wren 2004)

3.1.1.2. Rye Patch Reservoir

Project lands in the Rye Patch Reservoir include approximately 8,460 acres of withdrawn lands and approximately 12,340 acres of acquired lands, located entirely within Pershing County. The project area is designated as Open Space with the immediate surrounding lands designated as Agricultural/Mining/Residential, Low Density Suburban, and Commercial (Pershing County 2002). Adjacent properties are used primarily as rangeland. There are operating and abandoned mines in the general area, however, there are no active mines on lands proposed to be transferred. There are several

gravel and rock pits on isolated parcels adjacent to Interstate 80, but these are not in continuous operation. The land designated as Commercial is the area around the Interstate 80 interchange, and the Low Density Suburban zone is to the east of the project area and Interstate 80. Interstate 80 runs parallel to Rye Patch Reservoir to the east.

PCWCD operates and maintains the Humboldt Project, including Reclamation's Rye Patch Dam and Reservoir for flood control and project irrigation purposes. State Parks operates the Rye Patch State Recreation Area under a management agreement with Reclamation and the PCWCD (Contract No. 14-06-200-8273A). The management agreement outlines provisions relating to development, administration, operation, and maintenance of recreation for the Rye Patch State Recreation Area. The operation agreement, signed on May 5, 1977, is for a renewable 25-year period. While State Parks continues to operate the recreational facilities at Rye Patch, the operation agreement has expired, and is currently being renegotiated.

3.1.1.3. Battle Mountain Community Pasture

Project lands in the Battle Mountain area include approximately 30,000 acres of acquired pasture land and isolated parcels in and around the unincorporated town of Battle Mountain. Pasture lands are leased to the PCWCD to Humboldt Project irrigators for grazing livestock from the beginning of May through the end of September each year. A mixture of private and federal lands is adjacent to the Community Pasture. The Battle Mountain Band of the Te-Moak Tribe is located southwest of the lands proposed for transfer and encompasses approximately 665 acres.

Within the Community Pasture area, the predominant use of project land is open grazing with the exception of some isolated parcels within the unincorporated town of Battle Mountain. These parcels include lands underlying the Livestock Events Center and surrounding area, including the Reese River Levee, a maintenance building used by PCWCD, a vacant 932-acre parcel adjacent to the community's sewage treatment plant on the western edge of town, and the ranch manager's house and various farm-related structures at the Muleshoe Ranch, including a barn (in use), and an unused bunkhouse.

Land use designations for this area are established by the Lander County Master Plan (Lander County 1997). Updates to the Lander County Master Plan were not completed as of the date of this document. The Community Pasture and adjacent private pasture lands are designated Agricultural. The areas around the Livestock Events Center and the sewage treatment plant are designated Governmental / Industrial (Hinze 2004).

The District's ongoing activities at the Community Pasture include maintenance of the Battle Mountain collection system improvements; pasture improvements such as fencing, stock water wells, and range management; noxious weed control; fertilization; road maintenance; and soil and moisture conservation practices. The District employs a full-time resident property manager to care for the property and livestock. Currently, PCWCD allows members of the public to use the property for recreational activities, including hunting and fishing, when such activities do not directly conflict with livestock operations.

3.1.2. Environmental Impacts

3.1.2.1. Proposed Action/Preferred Alternative

Subsequent to the title transfer, there may be changes in land use on lands transferred to Pershing and Lander Counties and the State. These changes are not part of the federal action but would be undertaken by non-federal interests upon receipt of the land. Receiving entities could sell or commercially develop the lands they receive under the Proposed Action. However, with the exception of parcels going to

Pershing and Lander Counties, such action is unlikely. The potential development of the county parcels is discussed below. Lands transferred to PCWCD and the State of Nevada are not anticipated to be commercially developed, as this would depart significantly from these entities' basic missions (e.g., PCWCD to provide irrigation water, NDOW management of wildlife habitat, and State Parks management of recreational resources). In addition, development pressure is not driving the transfer proposal, and there are adequate privately-held lands throughout the project area to satisfy foreseeable development needs. Therefore, the transfer of lands to PCWCD or the State of Nevada is not expected to significantly affect either the pattern or the rate of growth in either Pershing or Lander Counties.

3.1.2.1.1. *Humboldt Sink*

The Proposed Action would transfer withdrawn Reclamation lands within the Humboldt WMA from federal ownership to the State of Nevada and Pershing County. In accordance with the Humboldt Project Conveyance Act and related agreements, the State of Nevada would receive title to approximately 31,660 acres of the Humboldt WMA, to be managed by NDOW. Because there would be no substantial change in overall resource management by NDOW, from current conditions, the title transfer would not result in adverse effects to land resources on withdrawn federal lands in the Humboldt WMA.

Pershing County would receive approximately 990 acres of withdrawn land adjacent to Derby Airfield for potential airport expansion. The transfer of these lands to Pershing County may require the county to prepare an Airport Development Plan. The transfer would permit Pershing County to control the safety zones for Derby Airfield, thereby facilitating the implementation of the Airport Development Plan. With the development of Derby Field, county planners anticipate that the site could provide additional growth to the local economy, although the current pattern of use is unlikely to be affected. The land-use designation would likely change on these parcels; however, the title transfer would not result in substantial adverse effects to land resources or use on these lands.

3.1.2.1.2. *Rye Patch Dam and Reservoir*

Under the Proposed Action, PCWCD would receive all acquired lands in the Rye Patch Reservoir area in addition to all withdrawn lands below the reservoir high water mark. All withdrawn lands above the reservoir high water mark would transfer to the State. State Parks will continue to operate and maintain the recreation facilities at the Rye Patch State Recreation Area.

Because there would be no substantial change in overall management of lands and waters by State Parks and PCWCD, the title transfer should not result in substantial adverse effects to land resources or use in the Rye Patch Reservoir project area.

3.1.2.1.3. *Battle Mountain Community Pasture*

Under the Proposed Action, PCWCD would receive title to approximately 22,500 acres of acquired lands within the Battle Mountain Community Pasture, which would continue to be managed and operated for grazing purposes. PCWCD would continue to allow permissive public use of the pasture lands, including hunting and fishing, when such activities do not directly conflict with livestock operations.

Lands to be transferred to the State may undergo a change in land use. The State of Nevada would receive title to approximately 5,850 acres of acquired land in the Community Pasture. These lands are proposed for management by NDOW for the purpose of wetland development (Hunt 2004). NDOW has a goal to restore up to 2,000 acres of wetlands and lowland riparian habitat, but specific management plans, including water sources for recovery and vector control, have not been finalized.

If successful, it is anticipated that land use in this area would change from Agricultural to Open Space/Wetlands. This change in land use is not expected to alter either the pattern or rate of growth in the Battle Mountain area. Under the Conceptual Memorandum of Agreement (MOA) between PCWCD and the State of Nevada, PCWCD may continue to graze on land transferred to the State until development of wetlands occurs (**Appendix D**). Such grazing shall be pursuant to a Grazing Plan developed by a mutually acceptable range consultant. Subsequent to wetlands development, if grazing of the wetland is deemed a viable vegetation control practice by NDOW, PCWCD shall have the first right of refusal to graze selected lands within the developed wetland.

Under the Proposed Action, Lander County would receive title to approximately 135 acres of lands underlying the Livestock Events Center and surrounding area including the Reese River Levee. In addition, Lander County would receive a metal shop building currently used by PCWCD as a maintenance shop. Because these parcels have already been developed, no impacts to land resources or use would occur as a result of the title transfer.

Under the Proposed Action, a 932-acre parcel located northwest of the unincorporated town of Battle Mountain and adjacent to the existing sewage treatment plant and the Battle Mountain Band of the Te-Moak Tribe, would transfer to Lander County. This parcel is currently zoned Industrial and may be developed as an Industrial Park in the future. In the interest of economic development, Lander County's Planning Commission and the Board of County Supervisors encourage development on Industrial zoned parcels (Lander County 1997). Transfer of this parcel from federal ownership to the county would allow Lander County to incorporate these lands in future planning decisions. Any development would be subject to applicable Lander County zoning regulations.

Under the Proposed Action, Lander County would receive title to two parcels located approximately 1.5 miles north of the unincorporated town of Battle Mountain. The parcels are located on the west (left) bank of the Humboldt River, near White Bridge on Nevada State Route 806. Lander County proposes to develop a low-maintenance public recreation area on approximately 30 acres on the east side of the highway. A 1-acre parking area is proposed to be developed on the west side of the highway, across from the public recreation area. In addition, PCWCD would grant Lander County a permanent easement to a strip of land along either side of the center line of the Humboldt River. The access easement would be limited only to that width necessary to create a 5-foot-wide strip of dry land immediately adjacent to the river on each bank under non-flood conditions. The access easement will be provided solely for the purpose of providing members of the public with pedestrian access along the river extending downstream from the parking area at White Bridge about 4 miles to the western border of the Community Pasture lands.

The MOA provides that the access easement be maintained in its natural state and allow access to the river for recreational users. No motorized vehicles or horses would be permitted. Pets would be required to be kept on a leash at all times. No overnight facilities or uses would be allowed in the parking area or along the access easement. The county would maintain the easement and would patrol it to make sure it stays clear of litter. The easement would provide an official dedication of an area unofficially used by hunters, anglers, and other recreational users to access the Humboldt River with PCWCD permission, and establishes Lander County as the official agency responsible for managing the easement. Under the agreement, PCWCD may continue to graze livestock on Community Pasture lands within the easement. Potential impacts to land resources could be offset by improved management by the county, including controlled access gates and signage and regular patrols.

3.1.2.2. No Action Alternative

Under the No Action Alternative, land resources and use would not change. The title transfer would not occur, and the lands and associated water rights and improvements would continue to be held by the

United States. The lands would continue to be administered for Reclamation by PCWCD and the State of Nevada according to the purposes for which the project was authorized. NDOW and State Parks could continue to operate lands and features within the Humboldt Project pursuant to applicable agreements and contracts.

Transfer of lands to the State of Nevada for wetlands development in the Battle Mountain Community Pasture would not occur. Transfer of the lands adjacent to the sewage treatment plant for industrial development and recreational enhancements by Lander County, including the development of a primitive day-use area and parking area adjacent to the Humboldt River, a dedicated easement along the river, and the expansion of the Livestock Events Center would not occur. Project lands within the Humboldt Sink and in the Rye Patch area would not be transferred to the State. Pershing County would not receive adjacent parcels for expansion of the Derby Field.

If the title transfer were not to occur, Reclamation may choose to prepare an RMP to guide future land resources decisions for project lands. The planning life of an RMP is typically 10 years, and its preparation and implementation is subject to Congressional funding.

3.2. WATER RESOURCES

3.2.1. Affected Environment

3.2.1.1. Climate and Precipitation

Climate and climate variability play a significant role on the water resources in the project area. Precipitation supplies all of the water that flows in the Humboldt River Basin. Snowpack in the upper reaches of the Humboldt River, and to some extent rainfall, influences seasonal flows and runoff. The majority of the precipitation occurs during the winter months, typically between November and March. Precipitation normally occurs in the form of rain at the lower elevations and snow in the upper elevations (NDWP 2004a). Within the project area, and depending on topography, average precipitation can vary yearly from as little as 4 to 6 inches on the valley floors to more than 25 inches in the nearby mountains (WRCC 2004). This climatic variation has greatly influenced agricultural and water development in the project area.

3.2.1.2. Surface Water

The Humboldt River Basin is the second largest water basin in the state and covers an estimated 16,840 square miles, entirely within the State of Nevada (Berger 2000b). The basin provides the second highest annual water yield in the state, with approximately 463,900 acre-feet of water per year (NDWP 2004b). This represents about 22.1 percent of the surface water resources available within the State.

Project lands are located in the Lower Humboldt River Basin, a geographic feature based on delineation of the river below the Palisade gauging station. The lower Humboldt River Basin covers approximately 11,800 square miles, and contains 70 percent of the Humboldt River Basin's total surface area (NDWP 2004b). Information regarding the Humboldt River sub-basins is provided in **Table 3.2-1**.

TABLE 3.2-1 HUMBOLDT RIVER SUB-BASINS				
Sub-basin¹	Surface Area (acres)	Surface Area (sq. mi.)	Percent of Total Basin	County
Upper Humboldt River Basin				
Mary's River Sub-Basin	686,720	1,073	6.4%	Elko
Ruby Mountain Sub-Basin	1,194,880	1,867	11.1%	Elko, White Pine

TABLE 3.2-1 HUMBOLDT RIVER SUB-BASINS				
Sub-basin ¹	Surface Area (acres)	Surface Area (sq. mi.)	Percent of Total Basin	County
North Fork Sub-Basin	710,400	1,110	6.6%	Elko
Maggie Creek Sub-Basin	396,160	619	3.7%	Elko, Eureka
Elko Reach Sub-Basin	240,000	375	2.2%	Elko, Eureka, Lander
Lower Humboldt River Basin				
Pine Valley Sub-Basin	641,280	1,002	6.0%	Elko, Eureka
Reese River Sub-Basin	2,320,000	3,625	21.5%	Eureka, Nye, Lander
Battle Mountain Sub-Basin ²	1,605,120	2,508	14.9%	Elko, Eureka, Lander, Humboldt
Little Humboldt River Sub-Basin	1,114,880	1,742	10.3%	Humboldt, Elko
Sonoma Reach Sub-Basin	802,560	1,254	7.4%	Humboldt, Pershing
Lovelock Reach Sub-Basin ²	1,067,520	1,668	9.9%	Pershing, Churchill
TOTAL	10,779,520	16,843		
Source: Nevada Division of Water Planning 2004b				
¹ Areas are listed from the headwaters of the Humboldt River toward the Humboldt Sink				
² Shaded hydrographic areas are in or within the general vicinity of the study area				

Unlike many federal Reclamation projects, the Humboldt Project water distribution and drainage facilities are not part of the project facilities. Because the Lovelock Valley lands were under irrigation prior to the construction of the Humboldt Project, the necessary distribution and drainage facilities were largely in place in 1935 when Rye Patch Reservoir was constructed.

The water distribution and drainage facilities within the PCWCD boundaries were initially built by six different principal canal companies. Those companies continued to hold title to the facilities and assess their users until the valley's irrigators unified under the District's ownership and administration. PCWCD acquired title to the canal companies in the 1970s.

The distribution system today consists of a network of carrier and drainage canals. All operation and maintenance on the distribution and drainage systems is performed by the PCWCD. The water distribution and drainage facilities within the PCWCD boundaries are not included in the proposed title transfer.

The Humboldt Sink is an area of approximately 37,140 acres at the terminus of the Humboldt River. The area is fed by both natural flow of the Humboldt River and the drain system carrying tailwater from the irrigated lands of the PCWCD. In extremely wet years, the Humboldt Sink discharges to the Carson Sink via the Humboldt Slough. Principal features include Toulon Lake on the west side and the larger Humboldt Lake on the east side. Toulon Lake is fed by the Toulon Drain. The Humboldt Lake is fed by the Army Drain at the north end and the main stem of the Humboldt River, which empties into Lower Humboldt Lake and the southeast corner of Upper Humboldt Lake (Bull and Richards 2003).

Rye Patch Reservoir has a capacity of approximately 213,000 acre-feet. The overall drainage area into the reservoir is approximately 15,700 square miles (NDWP 2004b). Annual flows to the reservoir have ranged from a minimum of 21,170 acre-feet in 1955 to a maximum of 1,455,000 acre-feet in 1984. The overall average flow from the Humboldt River into the reservoir is approximately 184,700 acre-feet (period of record from 1936 to 1998). The outlet works can release water at a rate of up to 1,000 cubic feet per second (cfs) and the spillway can discharge up to 24,000 cfs (USBR 1976).

There are two other storage reservoirs owned by PCWCD near the northern portion of the Rye Patch Reservoir. The Lower Pitt-Taylor Reservoir has a surface area of 2,570 acres and a storage capacity of

15,000 acre-feet, while the Upper Pitt-Taylor Reservoir has a surface area of 2,070 acres and a storage capacity of 20,000 acre-feet. These reservoirs were used to store irrigation water prior to construction of the Rye Patch Dam in 1935. Presently, water is only diverted from the Humboldt River into the Pitt-Taylor Reservoirs for PCWCD storage and supplemental water delivery to PCWCD patrons when Rye Patch Reservoir is full or cannot be filled because of anticipated maintenance (USBR 1995b). The Pitt-Taylor canal also has a turnout that can return the diverted water to the river.

In the Battle Mountain area, the Reese River and Rock Creek are the primary tributaries of the Humboldt River. Willow and Boulder Creeks are tributaries to Rock Creek. The Upper Slaven Diversion Dam is located near the eastern boundary of lands to be transferred, and is used to divert irrigation water for private land north and east of the Battle Mountain Community Pasture. This dam was constructed in 1958, and is 18 feet high and 88 feet wide. However, the hydraulic height is only 8 feet. There is an unnamed canal east of the Community Pasture that was constructed as a part of the Battle Mountain Water Development and Collection Project (USBR 1995b). Historical meandering channels associated with the Humboldt River on and near project lands within the Community Pasture only carry water in extremely wet years.

3.2.1.3. Groundwater

According to the Nevada Division of Water Planning (NDWP), groundwater in Nevada provides nearly 40 percent of the total water usage in the State (NDWP 2004a). In many areas of Nevada, groundwater is the sole water supply. In other areas of the State, groundwater is pumped to supplement surface water sources, especially in agricultural areas. The extent to which groundwater is used may vary considerably from year to year, depending on rainfall, snowmelt, and drought conditions (Plume and Ponce 1999). Although groundwater is used extensively for agriculture, currently 28 percent of groundwater demands in the State of Nevada are for local M&I use (NDWP 2004d). M&I groundwater use is expected to increase as the population grows within certain portions of the State.

Perennial yield is the amount of usable water from a groundwater aquifer that can be withdrawn each year for an indefinite period of time without depleting the source. According to the Nevada State Engineer and the United States Geological Survey (USGS), the statewide perennial groundwater yield is approximately 2.1 million acre-feet per year (NDWP 2004d; Plume and Ponce 1999). The total perennial groundwater yield for the Humboldt River Basin is estimated at 842,312 acre-feet annually (NDWP 2004c). The largest single source of groundwater pumping in the Humboldt River Basin is mining (Plume and Ponce 1999).

An estimated 176,000 acre-feet of groundwater were used in Lander County in 1990 (NDWP 2004c). Approximately 1,100 acre-feet were used for domestic and public water supplies, 156,000 acre-feet for agriculture, and the remaining 18,600 acre-feet were used for self-supplied industrial, commercial, or mining purposes. Pershing County reported an estimated 219,000 acre-feet of groundwater use in 1990 (NDWP 2004c). Approximately 1,400 acre-feet were used for public and domestic supply, 216,500 acre-feet for agriculture and the remaining 1,700 acre-feet were used for self-supplied industrial, commercial, or mining uses. Groundwater was not developed for use on project lands as part of the Project. Agricultural and self-supplied industrial, commercial, or mining represent the highest usage in both counties. (NDWP 2004d).

Groundwater depths range from 10 to 30 feet below ground surface (bgs) in the Humboldt Sink area. Groundwater depth varies according to seasonal precipitation and irrigation runoff. There are no groundwater wells on lands to be transferred in the Humboldt Sink area.

Groundwater levels in the Rye Patch area range from 50 feet bgs, to very near the ground surface at the

river and the reservoir's edge. Regional groundwater flow in the valley is toward the Humboldt River but locally varies around the edge of the Rye Patch Reservoir and below the dam depending on the elevation of the water in the reservoir (Tetra Tech 2004). There are two groundwater wells for potable use at Rye Patch Reservoir. One is located on lands owned by PCWCD, and is used for the park office, ranger station, ranger's residence, and the PCWCD Dam Tender's residence. The other is located on lands to be transferred, west of the dam. It is used to provide potable water to the group-use area, trailer dump station, the River Campground and all Westside facilities. Five groundwater monitoring wells are located on top of the dam and five groundwater monitoring wells are located below the dam to assess the subterranean flow of water beneath the dam (Tetra Tech 2004).

There are seven wells located on lands to be transferred in the Community Pasture. The depth to groundwater at these wells is generally from 10 to 15 feet bgs. The wells are used primarily for livestock watering. None of the wells located in the Community Pasture are used to irrigate pasture lands.

3.2.2. Water Use

3.2.2.1. Irrigation

During years with average to above-average precipitation, PCWCD provides on-demand flood irrigation water for up to 37,506 acres (Hodges 2004). During periods of drought or short water years, PCWCD operates on a strict rotational basis. Irrigation water is delivered from releases at the Rye Patch Reservoir through the Humboldt River, main canals, and laterals to water-righted lands in the Lovelock Valley within PCWCD's boundaries. The length of the irrigation season and allowable water rights based on land classification are regulated under the Bartlett Decree. The decree provides for a continuous rate of flow in the Lower Humboldt River Basin of 0.81 cfs for each 100 acres, or proportional amounts thereto, for water-righted land below Palisade (Hennen 1964a). There are three different classes of lands under the decree. They include harvest crop, meadow pasture, and diversified pasture. Each of these classes is subject to specific water duties (Horton 2000). **Table 3.3-2** shows the land classes and types, water rights, and the number of days and dates of irrigation.

TABLE 3.2-2 HUMBOLDT RIVER WATER RIGHTS BELOW PALISADE (FLOW RATE – 0.81 CFS)			
Class and Type of Land	Water Right (acre-foot/acre)	Irrigation Days	Dates of Irrigation
Class A – Harvest Crop	3.0	180	March 15 – September 15
Class B – Meadow Pasture	1.5	90	March 15 – June 13
Class C – Diversified Pasture	0.75	90	March 15 – June 13
Source: Horton 2000			

Water apportionment to Lovelock Valley farmers is based on the Bartlett Decree. Pursuant to the decree, all water-righted acreage within PCWCD boundaries receives the same water delivery allotment by PCWCD for any given year. Under the Bartlett Decree, water diverted for irrigation must be measured where the main ditch enters or becomes adjacent to the land to be irrigated (Hennen 1964a). In addition, PCWCD water delivery regulations do not allow for use of project water outside of the district boundary. There are no M&I water rights in the District. Water rights and other legal documents associated with the Humboldt Project are described in **Section 3.2.4**.

The number of acres irrigated within the project area has varied from 1983 to 1992, primarily because of the variability of the available water supply. To provide reliable irrigation to PCWCD farmers, the Rye Patch Reservoir must have carryover storage from the previous year. Because the reservoir is located at the end of the Humboldt River drainage, it takes approximately 30 days for the spring runoff to reach the reservoir. Historically, the peak spring runoff begins in late May or early June. Consequently, early

season irrigation demands depend primarily on carryover storage at Rye Patch Reservoir from the previous year. The historic average minimum operational carryover pool is 74,370 acre-feet, and the median carryover pool is 53,178 acre-feet over 68 years of record (Hodges 2004). Over this period of record, the minimum carryover pool was 10,000 acre-feet or greater 80 percent of the time (Hodges 2004).

Alfalfa (hay and seed), and a small amount of wheat and oats are grown in the Lovelock Valley. **Table 3.2-3** shows the changes in irrigated land over time as well as the crop value for the project area.

TABLE 3.2-3 HUMBOLDT PROJECT IRRIGATION AREA AND CROP VALUE		
Year	Actual Irrigated (Acres)	Crop Value (Dollars)
1983	31,001	9,956,064
1984	27,391	9,937,664
1985	33,775	11,324,810
1986	33,900	12,378,999
1987	32,800	12,777,372
1988	32,120	14,803,178
1989	37,120	17,827,300
1990	27,622	10,133,468
1991	27,652	11,851,116
1992	24,424	12,494,315
Source: Horton 2000		

Within Pershing County, only PCWCD and two users upstream have surface water rights for irrigation diversions from the Humboldt River. Other irrigators in the area rely on groundwater or flash stream flows from mountain front drainage. Flash streams are defined as “streams that have a sudden or flash flow or flush flow for a comparatively brief period of time, while such stream is draining the particular basin or source of supply fed by melting snows” (Horton 2000). These water diversion rights, including flash or flush stream flows, are governed by the Nevada State Engineers Office. There are no groundwater or surface water rights for irrigation on the Battle Mountain Community Pasture. Lander County irrigators outside of project lands rely on surface and groundwater rights. The adjacent T-S Ranch, owned by the Newmont Mining Company, is providing treated water from their nearby mining operations to irrigate their pasture lands (Hodges 2004, Tetra Tech 2004).

3.2.2.2. Municipal and Industrial

The main domestic water supplier in Pershing County is the Lovelock Meadows Water District. According to NDWP estimates, approximately 75 percent of the water deliveries by this agency are for residential use (NDWP 2004c). Domestic water in the Battle Mountain area is supplied primarily by three groundwater wells operated and maintained by the Battle Mountain Water and Sewer Department (Snap 2004).

There are no major industrial water users in the general area. Water withdrawals for thermoelectric power generation in Lander and Pershing Counties are minimal. Most of the electric power for these counties is supplied from outside sources (e.g., the Valmy 522 megawatt Plant in Humboldt County) or by diesel-powered generators.

3.2.2.3. Mining

The largest single source of groundwater pumping in the Humboldt River Basin is mining (Hess 2002,

Plume and Ponce 1999). There are several mining operations, including open pit mines, in Pershing and Lander Counties. However, there are no active mining operations on project lands. Several of these open-pit mines have dewatered mine pits to facilitate mining below the water table (Hess 2002). In 2001, these mining operations were permitted by the Nevada State Engineer to collectively discharge 313,000 acre-feet per year (NDWP 2004d). Excess water from mine dewatering is reinjected into nearby aquifers or infiltrates to underlying aquifers from storage reservoirs (BLM 2002). Other mines are investigating dewatering activities, which could increase effects to the Humboldt River system, including incidental effects on the flows of nearby springs, streams, or other surface water bodies (Horton 2000).

The State of Nevada has recognized the potential effects these mining operations may have on the region's hydrologic conditions, and has established a mitigation process of preferred uses for the pumped groundwater from these operations (Horton 2000). The State Engineer has mandated that groundwater pumped in excess of ore processing requirements be reinjected. If reinjection is not possible, the water must be stored in surface infiltration ponds. A third option allows the mine to substitute the pumped groundwater for existing permitted beneficial uses of groundwater (e.g., irrigation, power plant cooling, etc.). As a last resort, the State Engineer will permit discharge to existing streams, some of which may drain into the Humboldt River (Horton 2000).

The long-term effects of mine dewatering operations are not well known. State and federal agencies, in cooperation with the mining industry, are currently evaluating the impacts of these actions on the Humboldt River water budget (Plume and Ponce 1999, Horton 2000).

Projected withdrawal of water for mining in Pershing and Lander Counties is difficult to predict because of the volatile nature of future demands and price of minerals. For example, gold and silver mining and processing account for more than 70 percent of the mining operations in Nevada (NDWP 2004d). Any changes in the production or market value worldwide would affect mining operations and resulting water use.

3.2.3. Water Quality

Sources of contaminants in the Humboldt River include naturally-occurring organics and inorganics; mining operations; municipal wastewater effluent; and agricultural activities, including irrigation drainage and livestock grazing. The Nevada Division of Environmental Protection (NDEP) and the State Environmental Commission regulate discharges to Nevada's surface waters to maintain healthy drinking water sources and for the protection of the environment and the wildlife. Within the project area, discharges to the Humboldt River include point source and non-point source discharges.

A point source is a discharge from an identifiable point (e.g. pipe, pond, culvert, or drain) into a water body. Generally, point sources are regulated through National Pollutant Discharge Elimination System (NPDES) permits, unless the discharge is directly to a second-party-NPDES-permitted system. NPDES permits address the treatment requirements and effluent quality levels. As a condition of their NPDES permits, entities that discharge to the Humboldt River are required to monitor quantity and quality of effluent. Data is reported quarterly to the NDEP. Surface water quantity and quality, including dissolved solids and certain trace elements, are routinely monitored by the USGS and NDEP.

A non-point source is a diffuse source, such as runoff from a large area of land. Chemical constituents from these sources are often the result of natural background sources. However, non-point source pollution can result from urban stormwater runoff, leaking septic tanks, agriculture (e.g., irrigation and grazing of livestock), and erosion from disturbed areas (e.g., highway construction, mining, or off-road vehicles). Some of these discharges (e.g., construction, open-pit mining, and urban stormwater runoff) can be controlled through the implementation of Best Management Practices during the federal and state

permitting process for the operation.

Section 303(d) of the federal Clean Water Act requires states to develop a comprehensive list of waterbodies that are impaired by point and/or non-point sources. The 303(d) list must be submitted to the EPA every two years. Section 303(d) also requires states develop Total Maximum Daily Loads (TMDLs) for all of their impaired waters.

Nevada's 2004 303(d) list of water quality-limited streams shows the Humboldt River as exceeding TMDLs for total suspended solids (TSS) and total phosphorous (TP). The Humboldt River is included in Nevada's Nondesignated Areas 208 Plan (NDEP 1993). The water quality standards for the Humboldt River were revised in November 1995. As a result of revisions to the water quality standards for TP and TSS, the NDEP has determined that existing TMDLs need to be reevaluated. **Table 3.2-4** lists specific 303(d) listed reaches of the Humboldt River that traverse on or near project lands.

TABLE 3.2-4 NEVADA'S 2004 303(D) LIST OF IMPAIRED WATERS Humboldt River Basin (River Reach – Palisade to Humboldt Sink)			
Humboldt River Reach	Length	Existing TMDLs	Pollutant or Stressor of Concern
Palisade to Battle Mountain	76.50 mi.	TP, TSS,	Iron (total), TP, TSS, Turbidity
Battle Mountain to Comus	81.36 mi.	TP, TSS, TDS	Boron, Iron (total), TP, TSS, TDS, Turbidity
Comus to Imlay	114.09 mi.	TP, TSS, TDS	Iron (total), Molybdenum, TP, TSS, TDS, Turbidity
Imlay to Woolsey	44.42 mi.	None	Molybdenum
Woolsey to Rodgers Dam	13.22 mi.	None	TDS
Rodgers Dam to Humboldt Sink	22.77 mi.	None	Boron (total), Iron (total), Molybdenum
Source: NDEP 2004			

Requirements to Maintain Higher Water Quality (RMHQ) are established when the monitoring data show that existing water quality for individual parameters is significantly better than the standard necessary to protect the beneficial uses (NDEP 2004). NDEP has determined that additional investigations are needed to determine whether or not water quality is degrading within the Humboldt River. **Table 3.2-5** lists reaches within the Humboldt River, on or near project lands, not meeting RMHQs. TMDLs are not required for these waterbodies.

TABLE 3.2-5 WATERBODIES WITH EXCEEDANCES OF RMHQs		
Humboldt River Reach	Length	Pollutant or Stressor of Concern
Palisade to Battle Mountain	76.50 mi.	pH
Battle Mountain to Comus	81.36 mi.	Chlorides, pH, TDS
Comus to Imlay	114.09 mi.	Chlorides, pH
Imlay to Woolsey	44.42 mi.	TDS
Source: NDEP 2004		

The Woolsey to Rodgers Dam reach of the Humboldt River has been identified as an area that may have water quality issues related to Total Iron. NDEP has determined that additional investigations are needed to determine whether or not standards are being exceeded and the uses are being impaired in this area.

All potential pollution generating activities (construction, mining, etc.) within the State of Nevada are regulated by NDEP. The State has the legal authority to mandate necessary pollution controls including

non-point source pollution controls for sources such as agriculture and urban runoff through the Diffuse Source regulations.

No physical sampling or analysis of any media was conducted for this EIS. Representative water quality data for selected USGS gaging stations near project lands is included in **Table 3.2-6**. Pershing Station-10333000 is north of the Rye Patch Reservoir, and the Pershing Station-10335000 is below the Rye Patch Dam. Lander Station-10325000 is south of the Battle Mountain Community Pasture. Elko Station-10321000 is north of the Battle Mountain Community Pasture. These stations were used to evaluate the overall water quality in the general project areas and to provide any indicators regarding project impacts to the Humboldt River.

TABLE 3.2-6 WATER QUALITY OF THE HUMBOLDT RIVER					
Chemical Parameter**	Units***	County, Gaging Station Number and Sampling Period*			
		Pershing	Pershing	Lander	Elko
		10335000	10333000	10325000	10321000
		1951 – 1999	1954 – 1999	1977 – 1998	1965 – 1998
Turbidity	NTU	0.70 – 48	NA	3.1 – 88	2.6 – 200
Color	PCU	4 – 30	NA	NA	5
Specific Conductance	µs/cm	384 – 2,550	377 – 940	349 – 1,210	298 – 630
Dissolved Oxygen	mg/L	7.4 – 13.0	6.6 – 12.0	6.2 – 12.6	7.6 – 12.2
pH	Standard Units	7.6 – 9.3	8.2 – 8.7	8.1 – 8.7	7.6 – 8.9
Carbonate	mg/L	≤2 – 30	≤2 – 10	3 – 14	2 – 57
Bicarbonate	mg/L	210 – 307	170 – 307	167 – 255	81 – 324
Total Nitrogen	mg/L	0.24 – 1.1	NA	NA	0.36 – 1.2
Organic Nitrogen	mg/L	0.16 – 1.1	NA	NA	0.30 – 1.2
Ammonia as Nitrogen	mg/L	≤0.01 – 0.20	≤0.01 – 0.08	≤0.01 – 0.15	≤0.01 – 0.20
Nitrite as Nitrogen	mg/L	≤0.01 – 0.200	≤0.01 – 0.170	≤0.01 – 0.054	≤0.01 – 0.010
Nitrate as Nitrogen	mg/L	≤0.01 – 0.32	NA	NA	0.02 – 0.16
Phosphorus	mg/L	≤0.01 – 0.20	≤0.01 – 0.49	NA	≤0.01 – 0.42
Hardness as Calcium Carbonate	mg/L	87 – 410	NA	NA	100 – 210
Calcium	mg/L	18.0 – 110	37.2 – 53.0	35.7 – 58.0	27.0 – 63.0
Magnesium	mg/L	7.8 – 41.0	11.7 – 25.0	7.9 – 18.0	5.8 – 17.0
Sodium	mg/L	35.0 – 445	65.2 – 120	25.0 – 81.0	20.0 – 61.0
Sodium	SAR	2 – 10	NA	NA	0.8 – 2
Potassium	mg/L	2.3 – 42.0	8.20 – 13.1	4.6 – 14.2	3.8 – 13.0
Chloride	mg/L	14.0 – 664	26.4 – 82.0	7.7 – 86.0	6.9 – 40.0
Sulfate	mg/L	40.0 – 183	36.6 – 110	19.0 – 110	11.0 – 60.0
Fluoride	mg/L	0.4 – 1.2	0.6 – 1.3	≤0.1 – 0.7	≤0.1 – 1.3
Silica	mg/L	20.0 – 60.0	20.0 – 39.0	20.7 – 31.0	15.0 – 40.0
Arsenic	µg/L	23 – 35	13 – 23	5 – 11	3 – 12
Barium	µg/L	30 – 45	52 – 86	61 – 110	47 – 120
Beryllium	µg/L	≤1.0	≤1.0	≤1.0	≤1.0
Boron	µg/L	480 – 610	300 – 650	NA	NA
Cadmium	µg/L	≤1.0	≤1.0	≤1.00 – 2.0	≤1.0
Chromium	µg/L	≤1.0 – 6.0	≤1.0 – 3.0	≤1.0 – 7.0	≤1.0
Cobalt	µg/L	≤1.0	≤1.0	≤3.0	≤3.0
Copper	µg/L	1.6 – 8.0	≤1.0 – 3.1	≤1.0 – 6.0	≤1.0 – 8.0
Iron	µg/L	≤10 – 30	≤10	≤3 – 40	≤3 – 130
Lead	µg/L	≤1.0	≤1.0	≤1.0	≤1.00 – 10
Manganese	µg/L	≤1.0 – 23	≤1.0 – 6.8	2.0 – 19	2.0 – 160
Molybdenum	µg/L	≤10 – 31.3	≤10 – 115	≤10 – 20.0	≤10 – 14.0
Nickel	µg/L	1.14 – 3.16	≤1.00 – 2.11	≤1.00 – 3.00	≤1.00 – 6.00

TABLE 3.2-6 WATER QUALITY OF THE HUMBOLDT RIVER					
Chemical Parameter**	Units***	County, Gaging Station Number and Sampling Period*			
		Pershing	Pershing	Lander	Elko
		10335000	10333000	10325000	10321000
		1951 – 1999	1954 – 1999	1977 – 1998	1965 – 1998
Silver	µg/L	≤1.0	≤1.0	≤1.0	≤1.0 – 1.0
Strontium	µg/L	340 – 490	NA	230 – 460	210 – 590
Vanadium	µg/L	10 – 14	5 – 11	≤6 – 10	≤6 – 7
Zinc	µg/L	≤1 – 25	≤1 – 3	≤3 – 52	≤3 – 28
Antimony	µg/L	1.66 – 3.62	1.02 – 10.7	NA	≤1.00
Aluminum	µg/L	≤1 – 30	≤1 – 6	≤10 – 50	≤10 – 180
Lithium	µg/L	NA	NA	19 – 180	13 – 63
Selenium	µg/L	≤1 – 2	≤1 – 1	≤1 – 1	≤1
Uranium (natural)	µg/L	4.43 – 6.43	2.66 – 8.00	NA	4.00
Fecal Coliform	Colonies per 100 mL	0 – 13	NA	NA	NA
Bromide	mg/L	≤0.1 – 0.60	NA	NA	NA
Mercury	mg/L	≤0.1	≤0.1	≤0.1	≤0.1 – 0.4
Suspended Solids	mg/L	9 – 136	9 – 2,000	26	9 – 2,440
NA = Not Available * The values given are the minimum and maximum measured values of all sampling periods. ** Data for measuring metals and other parameters in the µg/L level used only data after 1985 because of general technology improvements in detection limits and accuracy. *** Units: NTU = Nephelometric Turbidity Units µs/cm = microsiemens per centimeter @ 25 °C SAR = Sodium Adsorption Ratio ng/L = nanograms per liter PCU = Platinum Cobalt Units mg/L = milligrams per liter µg/L = micrograms per liter					
Source: U.S. Geological Survey (2004)					

Within the Humboldt Sink area, the Toulon Drain receives agricultural drainage and treated effluent from the Lovelock Sewage Treatment Plant, and the Army Drain receives primarily agricultural drainage (Paul and Gustin 2002a, 2002b). Agricultural drainage is excluded from NPDES permitting requirements. From 1998 through 2000, the USGS in cooperation with the U. S. Fish and Wildlife Service, Reclamation and the Nevada Department of Conservation Natural Resources, conducted a study to evaluate streamflow and quality of water and bottom sediment in and near the Humboldt WMA (Paul and Thodal 2000). Surface water and bottom-sediment samples were collected in the lower Humboldt River, selected agricultural drains, Upper Humboldt Lake, and Lower Humboldt Drain (an ephemeral outflow from Humboldt Sink). The purpose of the study was to compare the collected data to Federal and State standards to criteria for protection of aquatic ecosystems, and to concentrations levels of concern on aquatic organisms and wildlife. The following tables from the final report provide results of the study.

TABLE 3.2-7 SUMMARY OF CONSTITUENTS IN SURFACE WATER COLLECTED DURING USGS STUDY THAT EXCEEDED ECOLOGICAL CRITERIA IN THE LOWER HUMBOLDT RIVER SYSTEM									
Constituent (& ecological criterion)	Humboldt River near Imlay	Humboldt River near Rye Patch	Humboldt River near Lovelock	Army Drain	Toulon Drain	Unnamed Ditch	Upper Humboldt Lake near Army Drain	Upper Humboldt Lake near Humboldt River	Lower Humboldt Drain
Chloride (230 mg/L) ¹	0/12	0/13	3/12	12/12	13/13	7/7	3/3	3/4	8/12
Dissolved Solids (3,000 mg/L) ²	0/12	0/13	0/12	7/12	0/13	7/7	1/3	2/4	1/12

Arsenic (200 $\mu\text{g/L}$) ³	0/13	0/12	0/12	0/12	0/12	3/7	0/3	1/4	0/11
Boron (5,000 $\mu\text{g/L}$) ²	0/13	0/12	0/12	0/12	0/12	7/7	0/3	2/4	0/11
Mercury (0.012 $\mu\text{g/L}$) ⁴	0/1	0/1	0/1	1/1	1/1	--	--	--	0/1
Molybdenum (19 $\mu\text{g/L}$) ⁵	7/13	8/12	10/12	12/12	12/12	7/7	3/3	4/4	11/11
^{1.} This value is the USEPA (1998) chronic 96-hr average chloride criterion (http://www.epa.gov/fedregst/EPA_WATER/1998/December/Day-10/w30272.htm). ^{2.} These criteria are for waters used to water livestock (Nevada Bureau of Water Quality Planning, 1998) ^{3.} The acute and chronic aquatic life criteria for arsenic are based on arsenite concentrations. Arsenic speciation was not determined during this study and therefore exceedances of these criteria could not be established. However, the criterion for the watering of livestock is not dependent on arsenic speciation and is therefore included in this table. ^{4.} Low-level mercury concentrations were determined for water samples collected from the lower Humboldt River, Army Drain, Toulon Drain, and Lower Humboldt Drain in August 1999. The aquatic life criteria of 0.012 $\mu\text{g/L}$, was exceeded where indicated but the frequency at which collected samples exceeded this criterion is unknown due to the LRL (0.1 $\mu\text{g/L}$) associated with routine mercury analysis. ^{5.} This criterion value is intended to be protective of aquatic life (Nevada Bureau of Water Quality Planning, 1998)									
Source: Paul and Thodal 2003									

TABLE 3.2-8
SUMMARY OF CONSTITUENTS IN SEDIMENTS COLLECTED DURING THE USGS STUDY AT
CONCENTRATIONS EXCEEDING CANADIAN INTERIM FRESHWATER SEDIMENT-QUALITY (ISQG) IN
THE LOWER HUMBOLDT RIVER SYSTEM
(Number of samples in which guideline concentrations was exceeded/Total number of samples)

Constituent (ISQG in $\mu\text{g/g}$)	Humboldt River near Imlay	Humboldt River near Rye Patch	Humboldt River near Lovelock	Army Drain	Toulon Drain	Unnamed Ditch	Upper Humboldt Lake near Army Drain	Upper Humboldt Lake near Humboldt River	Lower Humboldt Drain
Arsenic (5.9)	2/2	2/2	2/2	2/2	2/2	1/1	2/2	3/3	2/2
Cadmium (0.6)	1/2	1/2	1/2	1/2	2/2	0/1	2/2	1/3	0/2
Chromium (37.3)	2/2	2/2	2/2	2/2	2/2	1/1	2/2	1/3	0/2
Copper (35.7)	0/2	0/2	1/2	1/2	2/2	1/1	1/2	0/3	0/2
Mercury (0.17)	1/1	0/1	0/1	0/1	1/1	--	--	--	0/1
¹ Exceedence of this criterion value based on low-level mercury analysis									
Source: Paul and Thodal 2003									

TABLE 3.2-9
SUMMARY OF CONSTITUENTS IN SEDIMENTS COLLECTED DURING THE USGS STUDY AT
CONCENTRATIONS EXCEEDING PROBABLE-EFFECT LEVELS (PELS) IN THE LOWER HUMBOLDT
RIVER SYSTEM
(Number of samples in which the PEL concentrations was exceeded/Total number of samples)

Constituent (PEL in $\mu\text{g/g}$)	Humboldt River near Imlay	Humboldt River near Rye Patch	Humboldt River near Lovelock	Army Drain	Toulon Drain	Unnamed Ditch	Upper Humboldt Lake near Army Drain	Upper Humboldt Lake near Humboldt River	Lower Humboldt Drain
Arsenic (17.0)	0/2	0/2	0/2	1/2	0/2	1/1	1/1	3/3	1/2
Mercury (0.486) ¹	1/3	0/3	0/3	0/3	1/3	--	--	--	0/2
¹ Exceedence based on low-level mercury analysis									
Source: Paul and Thodal 2003									

3.2.3.1. Compliance with Drinking Water Standards

As shown in **Table 3.2-10**, the Humboldt River is in compliance with federal and State of Nevada primary and secondary drinking water standards, except for arsenic, manganese, aluminum, and pH. None of the results are associated with the general project area.

**TABLE 3.2-10 COMPLIANCE WITH FEDERAL AND STATE DRINKING WATER STANDARDS
FROM 1985 TO PRESENT ***

Parameter**	Pershing (10335000)		Pershing (10333000)		Lander (10325000)		Elko (10321000)	
	Samples Number	Over Federal & State MCL	Samples Number	Over Federal & State MCL	Samples Number	Over Federal & State MCL	Samples Number	Over Federal & State MCL
Aluminum	18	1	13	0	29	2	40	8
Antimony	12	0	13	0	NA	NA	1	0
Arsenic	19	19	13	13	26	4	39	5
Barium	17	0	13	0	NA	NA	54	0
Beryllium	17	0	13	0	26	0	39	0
Cadmium	18	0	13	0	26	0	39	0
Chromium	19	0	13	0	26	0	39	0
Copper	19	0	13	0	26	0	39	0
Iron	18	0	13	0	30	0	57	0
Lead	19	0	13	0	26	0	40	0
Manganese	17	0	12	0	30	0	56	2
Mercury	7	0	6	0	22	0	24	0
Selenium	18	0	15	0	30	0	40	0
Silver	18	0	13	0	30	0	58	0
Zinc	18	0	15	0	26	0	24	0
Fluoride	25	0	12	0	30	0	73	0
Nitrate as Nitrogen	0	NA	NA	NA	NA	NA	2	0
Nitrite as Nitrogen	19	0	15	0	30	0	64	0
pH	25	16	15	2	28	6	76	24
Sulfate	25	0	12	0	30	0	73	0
Chloride	25	0	12	0	30	0	73	0

Source: U.S. Geological Survey 2004

* Highlighted numbers indicate number of reading not in compliance with Federal or State of Nevada regulations.

** All units are mg/L except for pH (standard units) and turbidity (NTU)

NA = Not Available

- **Elko (10321000)** – Exceeds water quality standards in eight of 40 samples for aluminum, five of 39 samples for arsenic, two of 56 samples for manganese, and 24 of 76 samples for pH.
- **Lander (10325000)** – Exceeds water quality standards in two of 29 samples for aluminum, four of 26 samples for arsenic, and six of 28 samples for pH.
- **Pershing (10333000)** – Exceeds water quality standards in 13 of 13 samples for arsenic and two of 15 samples for pH.
- **Pershing (10335000)** – Exceeds water quality standards in one of 18 samples for aluminum, 19 of 19 samples for arsenic, and 16 of 25 samples for pH.

3.2.4. Water Rights

Nevada water law provides that water within the boundaries of the State belongs to the public. However, the right to use the water may be acquired by individuals through diversion and beneficial use. Nevada has adopted the prior appropriations doctrine that is based on the concept of “first in time, first in right.” The doctrine provides that the first person to divert water and put it to beneficial use has a higher priority right to use that source of water than subsequent appropriators. This means that when the quantity of

available water is not sufficient to meet the needs of all those having water rights for particular source of water, the needs of those with an earliest priority will be met first. In addition, water rights are considered real property and thus are conveyed by deed. They can be sold or transferred apart from the land.

Nevada water law is set forth in Nevada Revised Statutes (NRS) in Chapters 533 and 534, regulations promulgated for administration of the statutes, and case law. Generally, the State Engineer is the water rights administrator and is responsible for the appropriation, adjudication, distribution, and management of water in the State. Where a river has been adjudicated, such as the Humboldt River, the decree court also has continuing jurisdiction over administration of water rights under that decree.

PCWCD provides water delivery to its patrons. The water rights serving the Lovelock Valley lands include water rights held in the name of individual farmers, PCWCD, and the United States. Despite this varied ownership of the water rights, PCWCD determines the annual delivery allotment and distribution of seasonally available water within the parameters provided by the water rights.

Water use within the Humboldt Project is through both direct-flow and storage rights. The direct-flow rights existed by virtue of the ditch companies predating PCWCD formation and the project as well as by transfer to farmers' lands within PCWCD from the ranch lands in the Battle Mountain and Valmy areas acquired in the 1930s as part of the creation of the Humboldt Project. The rights include a total duty of 49,667.44 acre-feet. The transferred rights are held in the name of the United States. Rye Patch Reservoir storage rights held by the United States include 115,152.32 acre-feet. PCWCD holds additional storage rights in its name for the Big Five Reservoir and Pitt Taylor Reservoirs for 54,570.00 acre-feet. These rights are summarized in **Tables 3.2-11 through 3.2-13**.

TABLE 3.2-11 WATER RIGHTS TABLE – DIRECT DIVERSION RIGHTS						
Application Numbers	Certificate Number	Date Approved	Acre-feet	CFS	Priority Date	PCWCD Predecessor in Title
9729, 12955	5041	11/9/60	15,434.95	78.063	1873 1893	Filippini
9730, 12953	4436	4/23/56	4,154.08	20.068	1871 1914	Aldous
9731, 12954	4437	4/23/56	4,579.42	30.572	1873 1877	Taylor
9732, 12952	4572	7/3/57	14,432.32	91.494	1873 1887	Ellison
9733, 12951	4435	4/23/56	1,282.01	6.342	1873 1894	Silve
9734, 12950	4571	7/3/57	3,023.49	9.911	1874	Hammond
9735, 12949	4570	7/3/57	2,626.30	13.509	1874 1887	Bain
9821, 12948	4434	4/23/56	1,925.52	13.615	1863 1866	Callahan
9928, 12947	5040	11/9/60	562.17	3.610	1873 1880	Russell Land & Cattle Co.
10065, 12957	5180	8/14/61	1,647.18	9.385	1877	John G. Taylor, Inc.
Total			49,667.44	276.569		

TABLE 3.2-12 WATER RIGHTS TABLE – STORAGE RIGHTS FOR RYE PATCH RESERVOIR						
Reservoir	Application Numbers	Certificate Number	Date Approved	Acre-feet	CFS	Priority Date
Rye Patch	9716, 12956	4506	4/3/57	100,000.00	5,000.0	12/12/33
Rye Patch	10283	9258	8/30/78	15,152.32	5,000.0	8/13/38
Total				115,152.32	10,000.0	

TABLE 3.2-13 WATER RIGHTS TABLE – PERSHING COUNTY WATER CONSERVATION DISTRICT STORAGE RIGHTS

Reservoir	Application Numbers	Certificate Number	Date Approved	Acre-feet	CFS	Priority Date
Big Five*	Bartlett	Decree	10/20/31	400.00		1900
Big Five*	Bartlett	Decree	10/20/31	4,400.00		1922
Pitt Taylor.	1098	2130	9/18/35	20,200.00	300.00	8/21/08
Pitt Taylor.	1948	2131	9/18/35	29,570.00	450.00	2/10/11
Total				54,570.00	750.00	

* The Big Five storage rights have been transferred to Rye Patch Reservoir.

In addition to the rights held by the PCWCD, the United States, and privately by members of PCWCD, the State of Nevada holds rights to divert water from the Toulon and Army Drains to the Humboldt Sink WMA. The State of Nevada is also a patron of PCWCD and uses water delivered by PCWCD. **Table 3.2-14** lists the certificates and amounts held by the State of Nevada on behalf of NDOW.

TABLE 3.2-14 WATER RIGHTS TABLE – NEVADA DIVISION OF WILDLIFE					
Application Numbers	Certificate Number	Date Approved	Acre-feet	CFS	Priority Date
	9740	1/27/82	10,200	100	1972
	9741	1/27/82	21,573	2,000	1972
	9742	1/27/82	21,573	200	1972
Total			31,773*	2,300	

* Although individual certificates provide greater diversion per State Engineer's Ruling, combined total for the three permits is 31,773 acre-feet annually.

3.2.5. Environmental Impacts

3.2.5.1. Proposed Action/Preferred Alternative

3.2.5.1.1. Surface Water

Under the Proposed Action, PCWCD has agreed to maintain a minimum operational pool of 3,000 acre-feet in Rye Patch Reservoir to sustain the fishery. PCWCD would cease all releases from Rye Patch when the reservoir reaches a minimum of 3,000 acre-feet of storage. With the exception of the proposed minimum pool operational criteria, impacts to surface water on other project lands will not change. Under both the Proposed Action and No-Action Alternatives, PCWCD will continue to operate and maintain project features to deliver water to patrons in their jurisdiction. Discharge of return flows from agricultural tailwater will continue via the Army and Toulon Drains to the Humboldt Sink.

Under the Proposed Action, the State of Nevada would receive title to approximately 5,850 acres of land in the Community Pasture for purposes of creating a wetland. PCWCD constituents would continue to graze livestock on these lands until wetland development begins. NDOW's goal is to restore up to 2,000 acres of marsh habitat, but specific management plans including water sources, funding, and vector control have not been finalized.

3.2.5.1.2. Groundwater

Under the Proposed Action, impacts to groundwater in the Humboldt Sink and Rye Patch Reservoir would be the same as those under the No Action Alternative. Lands proposed to be transferred to Lander County for industrial development, may require the use of groundwater. The Battle Mountain Water and Sewer Department would be responsible to supply any additional M&I water to lands acquired for such

purposes. At this time, the Battle Mountain Water and Sewer Department does not anticipate restrictions on acquiring water supplies for additional M&I use (Snap 2004). The Battle Mountain Sewage Treatment Plant may be a source for effluent water reuse for future landscaping and some industrial processes, thereby reducing the amount of groundwater pumped.

3.2.5.1.3. *Water Quality*

Under the Proposed Action, impacts to water quality would be the same as those under the No Action Alternative. Any existing or future water quality impacts attributable to specific sources would be the responsibility of the owner or contributor of that source of water pollution, whether from federal, state, or private entities. As a result, no adverse impact to existing water quality is expected.

Proposed sanitary facilities associated with expansion of Rye Patch State Recreation Area and the Humboldt WMA would occur under both the Proposed Action and No Action Alternatives. Sanitary facilities expansion may involve the construction of either permanent restrooms using septic and leach field systems or temporary portable toilets. Construction of septic and leach field systems would be governed by the State of Nevada and local public health regulations. Disposal of portable toilet waste would be conducted in accordance with state and local public health regulations at wastewater treatment plants or other approved locations.

Proposed expansion of the Battle Mountain wastewater treatment plant or for the construction of an industrial park would be subject to state regulations and NPDES permitting. Direct use of the Humboldt River water is not anticipated, and could only be undertaken by obtaining additional water rights from the State Engineer. During the application process, the State Engineer would be responsible for assuring that the use of the Humboldt River would not impact current hydrology or water quality requirements set forth in state law. Therefore, impacts associated with the expansion of the wastewater treatment plant or construction and operation of the industrial park are not expected.

3.2.5.1.4. *Water Rights*

Under the Proposed Action, the nine direct-flow rights and two storage rights in the name of the United States would be conveyed to PCWCD for its patrons by a Report of Conveyance application to the State Engineer's Office. PCWCD would continue to manage water delivery to its patrons, as it has been doing since its inception as a water district. Since there are no known or expected changes in the use of Humboldt Project water rights, there will be no direct or indirect impacts to them.

Under the Proposed Action, the State of Nevada would receive title to approximately 5,850 acres of land in the Community Pasture. These lands are proposed for management by NDOW for the purpose of wetland development (Hunt 2004). PCWCD constituents would continue to graze livestock on these lands until wetlands development begins. Because there are presently no water rights on lands to be transferred in the Community Pasture, wetland development would depend on the acquisition of water rights by the State of Nevada. Under the Proposed Action, no water rights will transfer to the State.

3.2.5.2. No Action Alternative

Under the No Action Alternative, the title transfer would not occur, and the lands and associated water rights and improvements would continue to be held by the PCWCD patrons, PCWCD, and the United States. The lands would continue to be administered for Reclamation by PCWCD according to the purposes for which the project was authorized, subject to applicable agreements and contracts with the State of Nevada.

Under the No Action Alternative, the District would not be required to maintain a minimum operational pool of 3,000 acre-feet in Rye Patch Reservoir.

If the title transfer were not to occur, Reclamation may choose to prepare an RMP to guide future land resources decisions for project lands. The preparation and implementation of an RMP would be subject to Congressional funding.

3.3. GEOLOGIC RESOURCES

3.3.1. Affected Environment

The project area is located in the northwest corner of the Great Basin portion of the Basin and Range physiographic province. The Great Basin is characterized by northwest-trending mountain ranges separated by valley basins that have been filled with sediments derived from erosion of the adjacent mountains. Project lands are surrounded by the Antelope, Eugene, Humboldt, Majuba, and Trinity Ranges in the lower reaches of the Humboldt River; and the Battle Mountain, Sheep Creek, and Shoshone Ranges in the upper reach near Battle Mountain.

The sedimentary rocks most commonly found in the region are shale, sandstone, mudstone, siltstone, limestone, dolomite, carbonate rocks, and conglomerates. Granitic rocks found in the area include quartz, monzonite, granodiorite, and several types of intrusive rocks. These rocks are found in portions of the Eugene Mountains, Majuba Mountains, Humboldt Range, Antelope Range, and the Trinity Range. Volcanic rocks, such as andesite, tuffaceous rocks, and basalt are not very prevalent in the area, but they can be found in scattered locations in the Trinity Range and the Eugene Mountains (House et al. 2001).

Nevada has seismic activity, especially toward the western part of the State. Local faults in the region are associated with all of the local mountain ranges. The most prevalent major earthquakes near the project area have occurred in the Carson City, Reno, and Fallon areas, southwest to south of the project area. In 1915, a 7.6 magnitude earthquake occurred along the Pleasant Valley Fault, approximately 40 miles southeast of the City of Winnemucca (DePolo et al. 2000). The potential Maximum Credible Earthquake (MCE) near transfer property areas is an earthquake magnitude of approximately 7.5.

Because of the number of active faults in the project area and the results of a risk study performed by the U.S. Department of the Interior, Reclamation contracted to strengthen the downstream portion of the Rye Patch Dam foundation in 1996 (USBR 1995b). This dam improvement provided an accepted safety factor, which minimizes an earthquake-related dam failure. Dam safety issues are discussed in **Section 3.6, Hazardous Materials and Dam Safety**.

3.3.2. Mineral and Natural Resources

3.3.2.1. Mining

Mineral deposits in Pershing and Lander Counties are rich and diverse. The State of Nevada, Bureau of Mines and Geology, has established various mining districts within the State. Although there are several mining districts near lands to be transferred, there are no project lands within these mining districts.

There are no active mining operations on transfer properties; however, there are several inactive aggregate (sand and gravel) quarry sites on or near project lands. According to BLM land records there are approximately 240 acres of active sand and gravel quarry sites in the Humboldt Sink area near I-80 (Deshler 2004). These quarry sites, along with several near the Rye Patch area were used during the construction of Interstate 80 and are not in continuous operation. There is a barite processing plant, operated by Baker Hughes INTEQ, near the eastern boundary of the Community Pasture (Tetra Tech

2004). The plant processes bentonite-rich clay that is mined nearby and packages the bentonite for commercial sales.

Nevada Cement Company is currently evaluating the suitability of a limestone resource near Rye Patch Reservoir for the manufacture of Portland cement. The mining operation will be located east of Interstate 80, and has been approved by BLM (BLM 2004).

3.3.2.1.1. *Geothermal*

There are thermal features within the Humboldt River Valley (BLM 2004). Although no thermal springs are known in the Humboldt/Rye Patch area, two areas of low mounds formed by hot springs deposits have been identified in an area east of the Rye Patch Reservoir (Garside and Shilling 2004).

Exploratory geothermal drilling has occurred in the Rye Patch area since the late 1970s (Garside et al. 1988). The U.S. Department of Energy and the University of Nevada, Reno has provided funding for additional research and exploratory drilling for Presco Energy and Florida Canyon Mine to evaluate geothermal opportunities in the Rye Patch area.

At present, BLM is proposing to lease portions of public lands in Known Geothermal Resource Areas (KGRAs) and Prospectively Valuable Areas (PVAs) within the Winnemucca Field Office administrative boundary (BLM 2004). The Rye Patch Reservoir and Humboldt Sink area are located within this administrative boundary. A 12.5-megawatt geothermal power plant has been constructed in the Rye Patch KGRA, but it is not operational at this time.

3.3.2.1.2. *Oil and Gas Production*

Oil or gas production has not occurred on project lands (Nevada Commission on Mineral Resources 2002). According to the BLM Winnemucca Field Office, four leases for oil and gas exploration in Pershing County have been issued (BLM 2004). However, none of these leases are located on project lands. No oil and gas leases have been issued for Lander County.

3.3.3. Environment Impacts

3.3.3.1. Proposed Action/Preferred Alternative

Under the Proposed Action, Project lands would transfer to PCWCD, the State of Nevada, and Pershing and Lander Counties. The title transfer in and of itself would not affect geological resources on transfer lands. However the transfer may impact access to mineral and geothermal leases managed by BLM. At this time, the BLM has not yet resolved how it intends to handle these leases.

3.3.3.2. No Action Alternative

Under the No Action Alternative, the title transfer would not occur and lands would continue to be held by the United States and managed by Reclamation. Therefore, no significant impact to geologic conditions or existing geologic hazards would occur.

If the title transfer were not to occur, Reclamation may choose to prepare an RMP to guide future resource decisions for Project lands, including mineral resources, within the parameters of the existing contracts between PCWCD and Reclamation. The preparation and implementation of an RMP would be subject to Congressional funding.

3.4. SOIL RESOURCES

3.4.1. Affected Environment

The soils in the project area are related to the geology, landforms, relief, climate, and natural vegetation of the surrounding environment. During glacial times (more than 10,000 years ago), large expanses of Nevada were covered by shallow lakes. As a result of glacial melt, ancient lakes such as Lake Lahontan and Lake Bonneville covered significant basins in the State. Many of these lakes have subsequently become large salt flats as a result of recent mountain building along the western side of the State. Large deposits of alluvium settled into the lake from drainage of the Sierra Nevada mountain range and eastern regional mountain ranges. Further deposits of alluvium settled into the transfer areas as a result of erosion from the Humboldt River and its many tributaries.

Older meander belts of alluvial material generally underlie the Humboldt River Basin. These materials were formed by high stream flow during the late Pleistocene Era (> 10,900 years) and consist of gravel alluvium deposits normally found at higher elevation along the banks of the river (Seagraves and Zielinski 1998). Above the alluvial material are deposits of fluvial mud and sands found in the major river channel and meander belts. This unit is composed largely of well-stratified, fine-grain over-bank deposits of mud and sand. Dark gray deposits of organic mud are common immediately adjacent to active channels and in localized wet areas.

The floodplain terraces of the Humboldt River are rarely inundated. These materials are characterized by flat, featureless surfaces overlain by a mantle of silt and minor sand ranging from a few inches to 3 feet thick. There are piedmont and slope deposits away from the main Humboldt River channel along or near mountain areas. These materials are generally coarse-grain alluvial fan or landslide deposits (Zielinski 1994).

The soil types within the Humboldt Sink and Rye Patch areas range from silt and clay-size sediment to coarse gravel sediment. Course gravel, cobbles, and small boulder-size sediment can be found on the eastern side of Rye Patch Reservoir (Tetra Tech 2004). Several locations in this area have been mined for base-rock gravel and construction rock during the construction of the dam and I-80.

The soil types within the Battle Mountain project area range from silt and clay-sized sediments to coarse gravels and cobble sediments. Coarser soils can be found on the northern side of the project area near the Sheep Creek Mountains. Several locations in this area have been mined for base-rock gravel and construction rock (Jett 1992).

Since 1951, PCWCD has leased the Battle Mountain Community Pasture for the purpose of grazing livestock belonging to Humboldt Project irrigators. To address potential soil erosion issues associated with livestock grazing, PCWCD hired a rangeland consultant in 1995 to develop a grazing management plan for the Community Pasture (Intermountain 1997). Since the adoption of that plan, PCWCD has reported significant improvement in the condition of the Community Pasture (Hodges 2004). The continued management of seasonal grazing under a regularly updated grazing management plan with surveys of rangeland conditions assures the long-term sustainability and economic productivity of the pasture.

Because of the alluvial soils in the valley areas and the location of nearby active faults, the potential for liquefaction on transfer lands is considered to be high (USBR 1995a). Studies performed near the Rye Patch Reservoir indicated a high risk to the dam structure as a result of liquefaction potential. As a result of these studies, Reclamation modified the current Rye Patch Dam by constructing a buttress wall along the downstream side of this dam in 1996. The construction of this buttress wall substantially reduced the

risk of dam failure from liquefaction caused by a major earthquake in the region. In addition, a wetland restoration and erosion control plan was developed for the Rye Patch Reservoir following the dam reinforcement project (Western Botanical Services 1998).

3.4.1.1. Prime or Unique Agricultural Lands

“Prime farmland” is defined by the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) as farmlands best suited to the production of row, forage, and fiber crops. “Unique farmland” is defined by the NRCS as farmland that is not classified as “prime farmland,” but has special combinations of soil quality, location, topography, growing season, and moisture supply necessary to produce high yields of specialty crops such as fruits and vegetables.

The NRCS Office in Lovelock, Nevada indicated that there were no “prime” or “unique farmlands” within the title transfer properties (Anby 2004).

3.4.2. Environmental Impacts

3.4.2.1. Proposed Action/Preferred Alternative

Under both the Proposed Action and No Action Alternatives, grazing of livestock by PCWCD patrons will continue in the Battle Mountain Community Pasture. PCWCD will continue to adhere to sound range management practices to help promote long-term grazing productivity and economic viability. The proposed recreational developments in the Rye Patch Reservoir and Humboldt Sink areas will occur under either the Proposed Action or No Action Alternatives. Minor impacts to soil resources may occur during construction of the proposed recreational facilities. However, these impacts are expected to be minor and would not result in any long-term impacts to soil resources in the area.

Wetland development in the Community Pasture could result in a localized change in soil condition caused by an increase in vegetation composition. However, this change is not likely to result in a negative soil impact.

3.4.2.2. No Action Alternative

Under the No Action Alternative, the operation and maintenance activities within the project area would not change. PCWCD patrons will continue to graze livestock in the Battle Mountain Community Pasture. In the absence of title transfer, impacts to soil resources would remain unchanged.

If the title transfer were not to occur, Reclamation may choose to prepare an RMP to guide future land resources decisions on Project lands within the parameters of existing contracts between PCWCD and Reclamation, including soil impacts from grazing activities in the Battle Mountain Community Pasture. The preparation and implementation of an RMP would be subject to Congressional funding.

3.5. BIOLOGICAL RESOURCES

3.5.1. Affected Environment

Plant community or habitat types in the Project area and their original dominant native plant compositions are summarized in **Table 3.5-1**. The dominant native upland plant communities of the Project area can be described as low-growing desert shrubs: typically sagebrush scrub in the higher, better-drained upland areas and Great Basin saltbush scrub in the lower-lying areas. Many upland areas have been heavily

colonized by introduced invasive and noxious species (Neufeld 2004). Riparian areas along the active Humboldt River floodplain were historically cottonwood-willow riparian scrub-forest, but much of this historic native habitat type has been invaded by non-native tamarisk shrub and other invasive and weedy species. Emergent wetlands with bulrushes and cattails and areas of open water have been known to occur in the Battle Mountain Community Pasture area, and are present but degraded in the Humboldt Lake and Toulon Lake areas of the Humboldt Sink. There is alkali meadow habitat along drier gravel bars of the Humboldt River and in the flat, less frequently inundated portions of the Humboldt Sink basin.

TABLE 3.5-1 PLANT COMMUNITY TYPES IN THE HUMBOLDT PROJECT AREA		
Plant Community	Common Name	Botanical Name
Great Basin saltbush scrub	four-wing saltbush	<i>Atriplex canescens</i>
	shadscale saltbush	<i>Atriplex confertifolia</i>
	Nevada greasewood	<i>Glossopetalon spinescens</i>
	rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>
	winterfat	<i>Krascheninnikovia lanata</i>
	Cooper wolfberry	<i>Lycium cooperi</i>
	black greasewood	<i>Sarcobatus vermiculatus</i>
Sagebrush scrub	low sagebrush	<i>Artemisia arbuscula</i>
	big sagebrush	<i>Artemisia tridentata</i>
Riparian scrub-forest	thickspike wheatgrass	<i>Agropyron dasystachym</i>
	beardless wildrye	<i>Leymus triticoides</i>
	Fremont cottonwood	<i>Populus fremontii</i>
	golden currant	<i>Ribes aureum</i>
	narrow-leaved willow	<i>Salix exigua</i>
	silver buffaloberry	<i>Shepherdia argentea</i>
Wetland	bladder sedge	<i>Carex utriculata</i>
	spikerush	<i>Eleocharis pauciflora</i>
	Baltic rush	<i>Juncus balticus</i>
	sago pondweed	<i>Potamogeton pectinatus</i>
	Wood's rose	<i>Rosa woodsii</i>
	widgeon grass	<i>Ruppia maritima</i>
	hardstem bulrush	<i>Scirpus acutus</i>
	alkali bulrush	<i>Scirpus robustus</i>
	broadleaf cattail	<i>Typha latifolia</i>
	inland saltgrass	<i>Distichlis spicata</i>
Alkali meadow	common monkeyflower	<i>Mimulus guttatus</i>
	globemallow	<i>Sphaeralcea ambigua</i>
	Russian knapweed	<i>Acroptilon repens</i>
Non-Native Upland	cheatgrass	<i>Bromus tectorum</i>
	tansy mustard	<i>Descurainia pinnata</i>
	halogeton	<i>Halogeton glomeratus</i>
	foxtail barley	<i>Hordeum jubatum</i>
	kochia	<i>Kochia scoparia</i>
	clasping pepperweed	<i>Lepidium perfoliatum</i>
	perennial pepperweed (tall whitetop)	<i>Lepidium latifolium</i>
	alfalfa	<i>Medicago sativa</i>
	rabbitsfoot grass	<i>Polypogon monspeliensis</i>
	hornseed buttercup	<i>Ranunculus testiculatus</i>
	Russian thistle, tumbleweed	<i>Salsola tragus</i>
	tumble mustard	<i>Sisymbrium altissimum</i>
	saltcedar tamarisk	<i>Tamarix chinensis</i>
Source: Bull and Richards 2003, Eissman et al. 1991, Bradley 1991		

Native upland shrubs include sagebrush, winterfat, and rabbitbrush. The drier and hotter regions of the area support shadscale saltbush, four-wing saltbush, Nevada greasewood, and Nevada ephedra. Non-native weed species include tamarisk (noxious weed), kochia, hornseed buttercup (toxic to livestock), Russian knapweed (noxious weed), pepperweed (noxious), tansy mustard, rabbitsfoot grass, tumble mustard, tumbleweed, halogeton, foxtail barley, and cheatgrass (invasive grass). These weeds are invasive and readily displace native species, especially after land disturbance or alternation to natural grazing and fire cycles. Cheatgrass, introduced from Asia near the beginning of the 20th century, is becoming increasingly widespread in Nevada. The grass takes moisture and nutrients from native species, causing their decline, and has been associated with an increased occurrence of wildfires since the 1950s.

Only a small percentage of the State of Nevada is classified as riparian or wetland, and these few areas provide valuable wildlife habitat. Much of the State's biodiversity and grazing economy depends on these areas. Typical riparian and wetland vegetation has historically included Fremont cottonwood, narrow-leaved or sandbar willow, spikerush, bulrush, and cattail.

The project area supports a variety of wildlife species within remaining native riparian scrub-forest, wetland, open water and alkali meadow habitats. Much of this historic high-value habitat has been damaged or lost and either converted to upland grasses, forbs and shrubs, or invaded by tamarisk and other floodplain invasive weeds (Bradley 1991). These areas support a variety of waterfowl, wading bird, shorebird, and songbirds, as well as several water-associated mammals. Many of the bird species are migratory and take advantage of seasonal flooding, with highest numbers in the wettest years. Desert upland sagebrush and saltbush scrub communities are not as supportive of wildlife. According to a recent NDOW report, wildlife diversity is declining in Nevada (Bradley 1997). Many natural ecosystems and habitat types are degraded with compromised structure, function, and values; and support fewer wildlife species and numbers. Even though the wildlife species diversity and population levels have declined, wildlife presence in the project area is relatively high compared to the State as a whole.

The Rye Patch Reservoir, Humboldt Sink, and Toulon Lake support important permanent or seasonal open-water habitats, as well as remnant aquatic, riparian, wetland, wet meadow, and alkali meadow habitats along the Humboldt River floodplain. **Appendix I** provides a summary list of wildlife species that could occur in the project area. The list was compiled from a study of Wildlife and Wildlife Habitats Associated with the Humboldt River and Its Major Tributaries (Bradley 1991), the Humboldt Wildlife Management Area Conceptual Management Plan (Bull and Richards 2003), Rye Patch State Recreation Area Development Plan (Eissman, et al. 1991) and other sources. This list is inclusive of all wildlife species found along the Humboldt River, and may include several species that are not likely to be present within the project area because of the much larger area this list covers, including headwater tributaries.

3.5.2. Humboldt Sink

3.5.2.1. Habitat Types in the Humboldt Sink

Natural cycles in rainfall, runoff, and flooding are the primary factors in determining biological productivity of the Humboldt WMA from year to year. In drought years, there may be only shallow, short-duration flooding of upper Toulon Lake and small portions of Humboldt Lake. In extreme flood years, most of the Humboldt Sink will flood, and flooding may extend to Jessup Flat and connect with Carson Sink floodwaters, creating optimal conditions for migratory wildlife (Neel 2004).

Humboldt Project lands within the Humboldt Sink include major portions of three sections and minor portions of two sections of alkali desert scrub uplands northwest of I-80; two sections and parts of three sections of mostly playa and wetland habitat north of Toulon Lake and southeast of I-80; four sections and part of a fifth in the West Humboldt Range in the southwestern portion of the Humboldt Sink rim that

support salt desert scrub and sagebrush habitat; and 13 sections in a checkerboard pattern in Jessup Flat (a large playa or alkali flat with a lacustrine wetland corridor that seasonally floods in wetter years) and associated salt desert scrub uplands along I-80 that are not part of the current Humboldt WMA boundaries. Jessup Flat is a separate basin or playa that hydrologically connects the Humboldt Sink to the Carson Sink during major flood events on the Humboldt River.

Uplands habitats comprise about 52 percent of Project lands in the Humboldt Sink, including about 24 percent alkali desert scrub around the perimeter of the transfer area and 25 percent unvegetated alkali flat, primarily in Jessup Flat. A little more than 2 percent of the habitat is sagebrush in the Western Humboldt Range, and less than 1 percent is greasewood at the northeast portion of the project area in or adjacent to the sections proposed to be transferred to Pershing County near Derby Field.

The most productive habitat types in the Humboldt WMA consist of lacustrine, riverine, fresh emergent wetland, wet meadow, and desert riparian. These habitat types encompass up to two thirds of the Humboldt Sink in wet years. A series of projects sponsored in the 1990s by entities including NDOW, the Rochester Mine, Ducks Unlimited, and the Nevada Waterfowl Association resulted in the restoration of a substantial portion of the aquatic, wetland, and riparian habitats within the Humboldt WMA. One project, the Humboldt Sink Nesting Island Project, created 25 nesting islands in the Humboldt Sink for use by waterfowl (Nevada Waterfowl Association 1993). These habitat types are further described below and are shown in **Figure 3.1**. It is estimated that about 48 percent of project lands in the Humboldt Sink is composed of these habitat types.

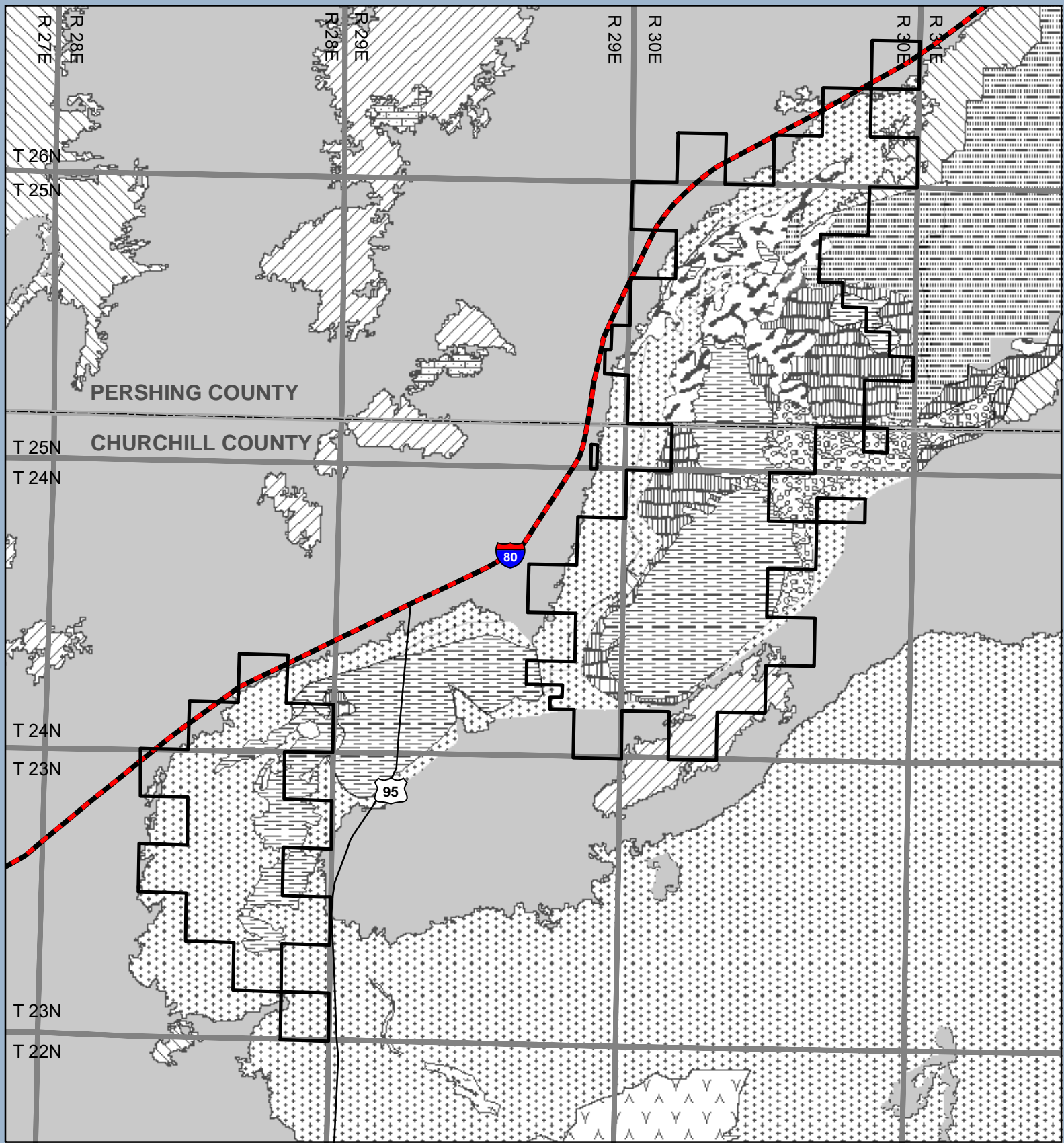
Alkali Desert Scrub - Alkali desert scrub (also known as Great Basin saltbush scrub) habitat are located primarily at or near the WMA and project lands between the lacustrine habitats and the upland sagebrush habitats outside the area. Dominant plants in this habitat type are black greasewood, shadscale, and inland saltgrass. Alkali desert scrub represents about 24 percent of the project lands in the Humboldt Sink.

Unvegetated Alkali Flat - Unvegetated alkali flats are the salt pans or playa of a dry lake, which is usually salt encrusted and devoid of plants. Toward the edge of the playas, intermittent patches of halophytes (salt-tolerant plants) occur on soil mounds raised a few centimeters or decimeters above the playa level (Vasek and Barbour 1977). During wet years, these dry, unvegetated alkali flats may be inundated and considered lacustrine habitat. Unvegetated alkali flats cover approximately 25 percent of the total project acreage in the Humboldt Sink, and are located primarily in the southern end of Toulon Lake and Jessup Flat.

Sagebrush Scrub – This upland habitat is dominated by low and big sagebrush. Approximately 2 percent of project lands in the Humboldt Sink are composed of sagebrush habitat in the higher portions of the Western Humboldt Range.

Greasewood – This habitat type consists of lower-lying uplands dominated by black greasewood and occupies about 1 percent of project lands in the Humboldt Sink in and adjacent to the portion proposed to be transferred to Pershing County.

Desert Riparian - Desert riparian habitats are characterized by dense groves of low, shrub-like trees. An abrupt transition often occurs between this and adjacent shorter and more open desert habitats. These relatively rare desert systems are extremely important to wildlife populations because they support more

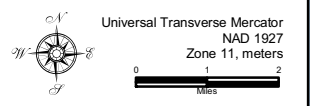


- | | | |
|---------------------------------|------------------------|-------------------------------|
| Interstate | Seasonally Flooded | Playa |
| Major Road | Riverine | Alkali Desert Scrub |
| Humboldt Project Area | Fresh Emergent Wetland | Sagebrush/Perennial Grassland |
| Wetlands Classifications | | |
| Lacustrine | Gap Vegetation | Agriculture |
| Desert Riparian | Greasewood | Sand Dune |
| | Sagebrush | |

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Figure 3.1: Habitat Types of Humboldt Sink and Jessup Flat Area

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bird species at greater densities than any other desert habitats. The dense shrubbery and permanent water provide food, cover, and water for a vast array of wildlife. The desert riparian habitat at the Humboldt WMA is located along the banks of the Humboldt River and between the lacustrine habitats of the Humboldt Sink and Toulon Lake. This habitat type has been invaded by tamarisk on most portions of the Humboldt WMA. Other common plant species in this habitat type include perennial pepperweed (noxious weed), inland saltgrass, sedges and rushes. There are approximately 11,130 acres of desert riparian habitat in the Humboldt WMA. This habitat type represents approximately 20 percent of project lands in the Humboldt Sink.

Wet Meadow - Wet meadows usually occur as ecotones between fresh emergent wetlands and perennial grassland and mesic meadow types. They generally have a simple structure consisting of a layer of herbaceous plants, while shrub or tree layers are usually very sparse. However, they may be an important feature of the meadow edge. Slight differences in water depth control what species are present where wet meadows merge with fresh emergent wetlands. Common plant species on Humboldt WMA in this habitat type include rushes, sedges, alkali bulrush, cattail, and hardstem bulrush. Waterfowl use this habitat type for food, escape cover, and nesting habitat. There are up to about 455 acres of this habitat type in the Humboldt WMA with less than 1 percent located on project lands.

Fresh Emergent Wetland - Fresh emergent wetlands flood frequently and the roots of the vegetation prosper in an anaerobic (oxygen depleted) environment. They are characterized by erect, rooted herbaceous hydrophytes (water-tolerant plants). Generally, perennial monocots (grass-like species) up to 6 feet high dominate vegetation (Cowardin et al. 1979). Dominant habitat types in fresh emergent wetland on the Humboldt WMA include alkali bulrush, hardstem bulrush, cattail, sago pondweed, widgeon grass, and rushes.

Fresh emergent wetlands are among the most productive wildlife habitats in Nevada. They provide food, cover, and water for numerous species of birds (waterfowl and wading birds), mammals, reptiles, and amphibians. The acreage of fresh emergent wetlands in Nevada has decreased dramatically since the turn of the century due to drainage, water diversion, and land conversion to other uses. Periodic droughts have compounded the decline in wetland acreage and quality over the last 100 years. There are up to 2,550 acres of fresh emergent wetlands within the Humboldt WMA. About 5 percent of project lands in the Humboldt Sink are freshwater emergent wetland.

Riverine - The riverine system includes wetlands and deepwater habitats contained within a channel (Cowardin et al. 1979). In the Humboldt WMA, this habitat type includes the Humboldt River, which empties into the northeast corner of Lower Humboldt Lake, and the Toulon Drain, which empties into either Toulon Lake or the Humboldt Lake through a control structure located at the north end of the Toulon Lake. Another riverine corridor is the Army Drain located at the north end of upper Humboldt Lake. Dominant plants in this habitat type are tamarisk, perennial pepperweed, cattail, and willow. There are about 275 acres of riverine habitat within the Humboldt WMA, including about half of 1 percent on project lands in the Humboldt Sink.

Lacustrine - Typical lacustrine habitats include permanently flooded lakes and reservoirs, intermittent lakes, and pond habitats with extensive areas of deepwater habitat (Cowardin et al 1979). Vegetation, when present, is predominantly non-persistent emergent plants (cattails and hardstem bulrush) or submerged or floating plants such as sago pondweed. Lacustrine habitat within the Humboldt Sink WMA includes the Upper and Lower Humboldt Lakes and Toulon Lake. These lake bodies become inundated by high-volume runoff and periodic floodwaters. The deepwater provides habitat for widely fluctuating fish populations, which are fed upon by cormorants, pelicans, herons, egrets, gulls, Forster's terns, and Caspian terns. Diving ducks feed on submergent plants and freshwater invertebrates in deepwater habitats. Shallow littoral zones provide feeding areas for puddle ducks and shorebirds. Lacustrine habitats provide reproduction, foraging, water, and cover resources for mammals, birds, reptiles,

amphibians, and fish. Based on aerial photos taken June 22, 1995, there were about 10,730 acres of lacustrine habitat in the Humboldt WMA during spring/summer snowmelt and flood conditions. About 22 percent of project lands in the Humboldt Sink are composed of lacustrine habitat, including those sections located in Humboldt Lake, the lower portions of the Humboldt Sink, and the lower portions of Jessup Flat.

One of the biggest threats to wildlife habitat value in Humboldt WMA has been the rapid spread of invasive and noxious plant species, especially tamarisk. In the early 1880s, tamarisk, also called saltcedar, was introduced into Southern California and Arizona as a stream bank stabilizer and ornamental shrub. It had no predators or diseases, and it spread rapidly – more than 12 miles a year by one estimate – into virtually every river system in the arid west. Tamarisk replaces native riparian vegetation, such as cottonwoods and willow, while providing a significantly inferior resource for wildlife (Larmer 1998). By 1996, more than 14,000 acres of the Humboldt Sink were infested with tamarisk (Stevenson 1996). In 1997, Natural Resource Conservation Service officials estimated that more than 60 percent of the Humboldt Sink was in total tamarisk canopy cover. Another 6,000 acres of the Humboldt River and associated reservoirs are impacted. Tamarisk has colonized several thousand acres of saltgrass pasture. Tamarisk control measures in the Humboldt Sink have included a controlled release of Chinese leaf beetle (*Diorhabda elongata*), herbicides, and other weed management techniques.

The University of Nevada, Reno (UNR), PCWCD and NDOW are working cooperatively at using integrated tamarisk control methods, including: expansion of biological control (Chinese leaf beetle); mechanical control along ditches; targeted use of herbicides; and potential use of controlled burns in an attempt to not only halt its advance, but recover habitat within the Humboldt WMA and better functional use of the drains and irrigated lands upstream. The variety of Chinese leaf beetle deployed in this area seems ideally suited to the local climate. It successfully over-winters and has had the highest success rate of all recent U. S. Department of Agriculture test releases (Carruthers and DeLoach 2004). Initial results from release of the leaf beetle are encouraging, and the PCWCD and NDOW hope to expand the eradication and revegetation program (Bull and Richards 2003). NDOW hopes to expand exotics control for other species, including knapweed, thistle, and perennial pepperweed.

Minor capital improvements are proposed for the Humboldt WMA using existing Title 28 Reclamation Recreation Management Act cost-sharing monies. These include improving existing levee roads to improve wet season access to recreation sites, improving an existing campground and boat ramp on the west side of Humboldt Lake, and adding a public wildlife viewing platform. Access to these three facilities would be designed as defined by the Americans with Disabilities Act (ADA accessible). These capital improvements involve existing facilities or clear areas with little or no disturbance to natural vegetation or wildlife habitat.

3.5.2.2. Wildlife Resources in the Humboldt Sink

The fauna found in the Humboldt Sink area is extremely diverse, primarily because of the diverse array of habitat types and relatively high quality of wetland types found during normal hydrological cycles. Preservation and management of the Humboldt WMA has been focused on waterfowl, but has benefited other wildlife, including wading birds, shorebirds, raptors, resident songbirds, and migrant birds. The Humboldt WMA also serves a valuable support role for the Lahontan Valley Wetlands (including Carson Sink and Fallon and Stillwater National Wildlife Refuges a short distance to the south) in sustaining migratory and breeding waterfowl, shorebird, and wading bird populations.

More than 21 species of ducks have been recorded in the Humboldt WMA (Bull and Richards 2003). The most common are dabbling ducks, including pintail, green-winged teal, widgeon, mallard, and northern shoveler. Redhead, canvasback, and ruddy ducks are the most common diving ducks, and mergansers are the common fish-eating ducks. Annual peak duck counts have averaged 30,872, with a peak of 76,625

during the 1975-1976 season. Canada geese (average 693, peak 2,690 1984-1985) and tundra swans (average 498, peak 3,890 1986-1987) are the common large waterfowl. Coots are the most common waterfowl, with numbers averaging 38,078 since the late 1950s and peaks in excess of 100,000 birds (Bull and Richards 2003).

Marsh or wading birds include least and American bitterns, and Virginia and sora rails. The Humboldt WMA is a nesting site for several species of herons and egrets when conditions are favorable (Bull and Richards 2003). The Humboldt WMA has been documented as an important nesting site for white-faced ibis, a species of management concern whose population is now in good health (Neel 2004).

Shorebirds are most numerous during the fall and spring migrations, and numbers are extremely variable depending on water levels from year to year. The Humboldt WMA, along with the Lahontan Valley WMA have been designated a Western Hemispheric Shorebird Reserve (Neel 2004). In years of extensive shallow flooding, the Humboldt WMA supports large numbers of migratory shorebirds. Shorebird numbers consistently range between 3,000 and 5,000 when flooded habitat is available, and reached a peak population of more than 10,000 birds in April 1989 (Bull and Richards 2003). Breeding shorebirds include American avocet, black-necked stilt, snowy plover, killdeer, and long-billed curlew.

When water level fluctuations are reasonable and fish populations thrive in the lakes, the Humboldt WMA provides important foraging habitat for fish-eating birds, including double-crested cormorant; American white pelican; and several species of grebes, gulls, and terns. When conditions are favorable, a large nesting colony of double-crested cormorants; Caspian terns; great white, great blue, and black-crowned night herons; and egrets will come together on the ridges of sand that form along the historic mouth of the Humboldt River (Neel 2004).

A variety of raptors use the Humboldt WMA and PCWCD lands to the north during all seasons. Nesting raptors in the area include great-horned and burrowing owls; red-tailed, Swainson's, and ferruginous hawks; northern harrier; and American kestrel. Golden eagles and prairie falcons nest on the bluffs and tufa outcrops in the hills around the margin of the sink and forage within the project area. Bald eagles, rough-legged hawks, merlins, and short-eared owls are winter visitors. Peregrine falcons (de-listed in 1999 as a federal endangered species) have been observed hunting shorebirds in the Humboldt WMA during migration and when conditions were suitable (Bull and Richards 2003).

No surveys of songbirds have been conducted. Emergent wetlands are known to support breeding populations of yellow-headed and red-winged blackbirds, marsh wren, common yellowthroat, and song sparrow, while saltgrass meadows have breeding savannah sparrows and horned larks. In the Humboldt WMA, tamarisk has nearly replaced higher-value native riparian vegetation that historically supported many native riparian songbird species. Tamarisk riparian communities support a lower diversity and number of more typically "generalist" species, including horned lark, Brewer's blackbird, western meadowlark, mourning dove, barn swallow, bushtit, western kingbird, and loggerhead shrike (Bull and Richards 2003).

A variety of small and medium-sized mammals are present in the Humboldt Sink area. These include carnivores such as coyote, striped and spotted skunk, long-tailed weasel, and badger. Common herbivorous and granivorous species include black-tailed jackrabbit, antelope, ground squirrels, pocket gophers, deer and grasshopper mice, voles, and other small rodents (Bull and Richards 2003). Several species of bats that use caves and crevices in nearby mountains and tree cavities may forage over riparian and wetland habitats. The cyclic drying of emergent wetland vegetation can support large numbers of rodents, such as voles, which in turn attract large numbers of hawks, harriers, and owls.

The zebra-tailed lizard, great basin gopher snake, and western ground snake are commonly observed upland reptiles, while Great Basin rattlesnakes are occasionally observed. The long-nosed leopard lizard

and red coachwhip snake inhabit the interface between the dry saltbush scrub uplands and the riparian strip of the Humboldt River (Bull and Richards 2003). Non-native bullfrogs are known to be present in more persistent open-water and emergent habitats.

Fish populations in the Humboldt WMA are sporadic because of wide fluctuations in water levels resulting from annual and antecedent climatic conditions. High river flows can result in fish being flushed through the Humboldt River system and into the lakes in the Humboldt Sink. When conditions are favorable to provide prolonged water supplies, relatively large numbers of warm-water fish can exist in the lakes until the waters recede. Non-native, warm-water game fish species include channel and white catfish; white, largemouth, and smallmouth bass; yellow perch; white crappie; and walleye. Non-game fish, such as the native Tahoe sucker and Lahontan redbreasted sunfish, and exotic Asiatic carp and mosquitofish, are also present under the same conditions, and some of the smaller species may be present for longer periods because of their ability to tolerate more marginal conditions (Bull and Richards 2003).

3.5.2.3. Sensitive Species in the Humboldt Sink

A review of the Nevada Natural Heritage Program (NvNHP) database for lands on or near Humboldt WMA identified one sensitive wildlife species and four sensitive plant species with the potential to occur in the area (NvNHP 2004). These include the American white pelican, and plants like the Lahontan milkvetch, wind-loving buckwheat, Nevada dune beardtongue and Lahontan beardtongue (NvNHP 2001). None of these species are federally listed as threatened or endangered under the Endangered Species Act.

The American white pelican nests on Anaho Island on Pyramid Lake. Brood-rearing white pelicans routinely commute on a daily basis from Pyramid Lake to shallow-water habitats of the Humboldt WMA that are more conducive to their fishing techniques. White pelicans also commute to similar wetland habitats in the Lahontan Valley.

Lahontan milkvetch is a perennial legume with yellow flowers that bloom in late spring. It is an endemic Nevada species on the NvNHP Watch List that occupies habitat at elevations from 4,020 to 5,200 feet, including open, often alkaline areas, sandy to gravelly washes, alluvium, gullies on clay badlands, knolls, or playa edges in the shadscale zone.

The Nevada dune beardtongue is endemic to Nevada. It is a federal Species of Concern, a BLM Special Status Species, a Humboldt-Toiyabe National Forest Sensitive Species, is listed on the Nevada Native Plant Society Watch List and the NvNHP Sensitive List. Populations of Nevada dune beardtongue have been recorded south of the project area at elevations of 3,920 to 5,920 feet; in deep, loose, sandy soils of valley bottoms, aeolian deposits, and dune skirts; often in alkaline areas; and sometimes on road banks and other recovering disturbances in such soils in the shadscale zone. This plant depends on sand dunes or deep sand, and may occur in locally suitable habitat within the Humboldt Sink.

Lahontan beardtongue is an endemic Nevada species that is on the NNPS Watch List and the NvNHP Sensitive List. Populations have been recorded west of the project area at elevations of 3,428 to 4,550 feet along washes, roadsides, and canyon floors; particularly on carbonate-containing substrates. This plant may occur in locally suitable habitat within the Humboldt Sink.

Bald eagles, a federally threatened species, have been observed wintering in the Humboldt Sink in small numbers (2-6), with larger numbers observed in flood years that bring an abundance of warm-water fish to the Humboldt Sink (NDOW 2003). The only known nesting location in Nevada is at Lahontan Reservoir, approximately 45 miles southwest of the Humboldt Sink project area (NvNHP 2004).

The peregrine falcon, recently delisted as an endangered species, is an occasional visitor to the area. The sagebrush habitat in the Western Humboldt Range is relatively small in area and isolated with less

vegetative and topographic complexity and cover. Therefore, it is unlikely to support significant numbers or reproductive habitat for sage grouse, a species of concern. The United States Fish and Wildlife Service (USFWS) identified several species of concern (which are not federally protected under ESA but are of management concern to wildlife agencies), including pygmy rabbit, several species of bats, birds of prey (northern goshawk, western burrowing owl) and water birds (black tern, least bittern, white-faced ibis, and American white pelican) that occur in the Humboldt Sink, with highest abundance during spring migrations in flood years (USFWS 2003, see **Appendix H**).

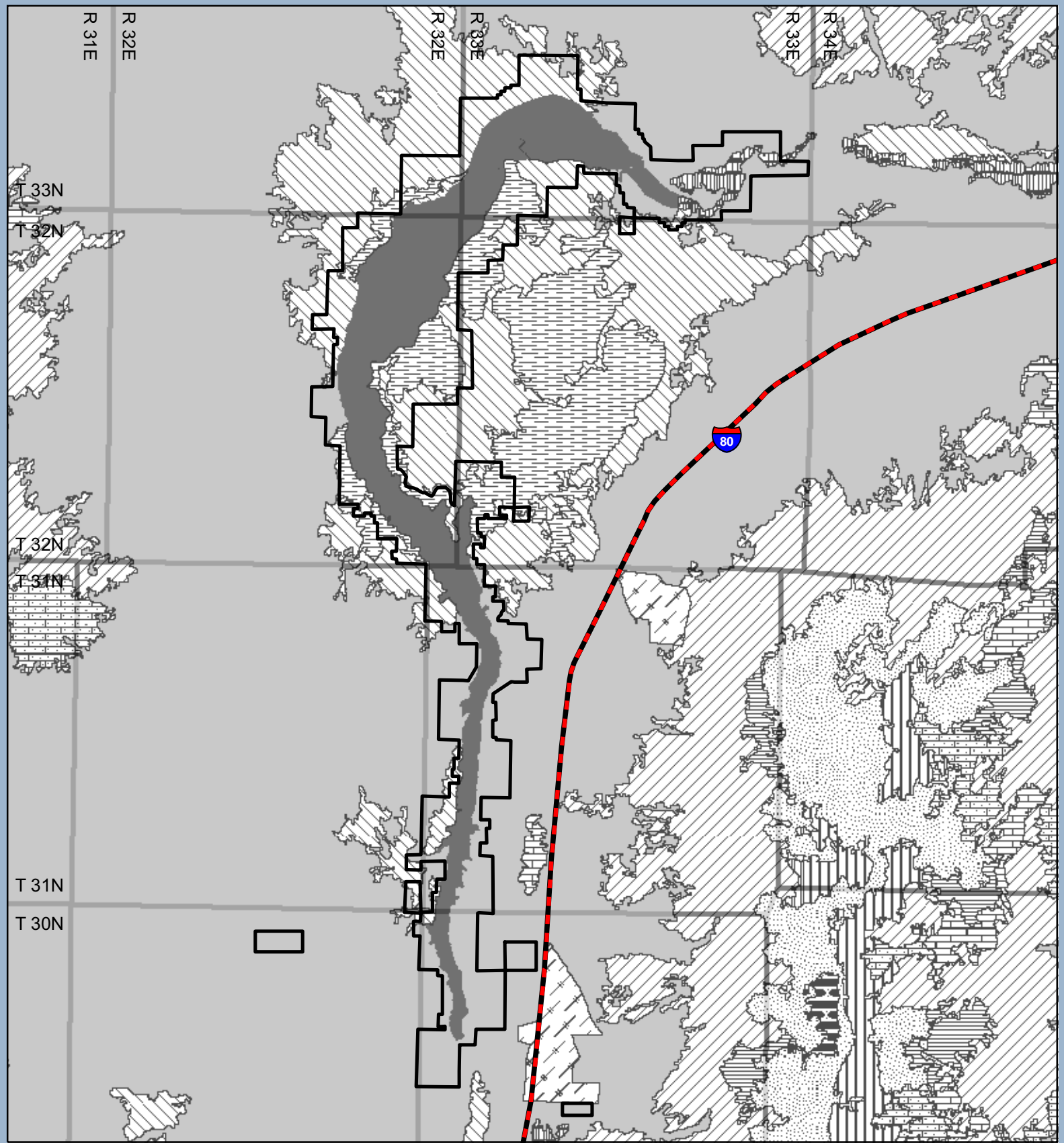
3.5.3. Rye Patch Dam and Reservoir

3.5.3.1. Habitat Types in the Rye Patch Dam and Reservoir Area

The dominant habitat type at Rye Patch above the reservoir is Great Basin saltbush scrub. Dominant species around the shoreline include black greasewood, four-wing saltbush, tamarisk, cheat grass, halogeton, Russian thistle, and native Great Basin wildrye. Great Basin saltbush scrub blends into desert sagebrush scrub habitat on the upland mesa surrounding the reservoir. This area is dominated by sagebrush, shadscale saltbush, rabbitbrush, and black greasewood (Eissman et al. 1991). The infrequently inundated Pitt Taylor Reservoirs have a mix of upland scrub and lacustrine habitat, including saltgrass, wildrye, and tamarisk, and may support cattails and bulrush (tule) when inundated. However, the mesa above the reservoir as well as land adjacent to the project area has been heavily colonized by non-native invasive and noxious weed species (Western Botanical Services 1998). Weeds dominate the vegetation in some areas. Non-native weed species identified throughout the project area in 1997 included kochia, hornseed buttercup, Russian knapweed, perfoliate pepperweed, tansy mustard, rabbitsfoot grass, tumble mustard, cheatgrass, halogeton, foxtail barley, tamarisk, and Russian thistle (Western Botanical Services 1998).

Native riparian and aquatic plants along the river upstream and (to a lesser extent) downstream from the reservoir include Fremont cottonwood, narrow-leaved willow, buffalo berry, common monkeyflower, common spikerush, beautiful spikerush, and Baltic rush. This riparian scrub-forest habitat is patchy and disturbed, and has been heavily invaded or replaced by tamarisk and, to a lesser extent, Russian olive. Upland shrubs, including sagebrush, rabbitbrush, black greasewood, and a number of grasses and forbs are also found interspersed with the above-mentioned riparian and wetland species along the river corridor upstream and downstream from the reservoir (Eissman et al. 1991). Major vegetation communities or habitat types in the Rye Patch Reservoir project area are shown in **Figure 3.2**.

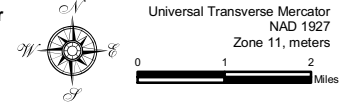
A wetland restoration and erosion control plan was developed for Rye Patch Reservoir following a dam reinforcement project (Western Botanical Services 1998). The restoration work included construction of approximately ½ acre of new wetlands, establishment of a transitional wetland/upland area, establishment of an upland Great Basin shrub community, and treatment of two borrow pits that provided structural material for the dam. The purpose of the work was to create new wildlife habitat and stabilize areas disturbed during construction. Plantings included rubber rabbitbrush, Fremont cottonwood, Wood's rose, big sagebrush, four-wing saltbush, golden currant, buffalo berry, winterfat, globemallow, a wheatgrass 'Re-green' hybrid, thickspike wheatgrass, beardless wildrye, Indian ricegrass, and alfalfa. 'Wetland plugs' were also used, including Nebraska sedge, bladder sedge, spikerush, hard stem bulrush, and Baltic rush. Plant species known to occur at in the Rye Patch State Recreation Area or common to the area are listed in **Table 3.5-2**.



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Figure 3.2: Habitat Types of Rye Patch Reservoir Area

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- Gap Vegetation**
- Aspen
 - Juniper
 - Greasewood
 - Mountain Sagebrush
 - Mountain Shrub
 - Sagebrush
 - Sagebrush/Perennial Grass

- Alkali Desert Scrub
- Grassland
- Desert Riparian
- Lacustrine
- Urban
- Open Water and Irregularly Flooded Reservoir

- Interstate
- Major Road
- Humboldt Project Area

TABLE 3.5-2 PLANT COMMUNITY TYPES IN THE RYE PATCH RESERVOIR PROJECT AREA	
Common Name	Scientific Name
Alkaligrass	<i>Puccinellia sp.</i>
Bailey greasewood	<i>Sarcobatus sp.</i>
Big sagebrush	<i>Artemisia tridentata</i>
Black greasewood	<i>Sarcobatus vermiculatus</i>
Bluegrass	<i>Poa sp.</i>
Bottlebrush squirreltail	<i>Sitanion sp.</i>
Bud sagebrush	<i>Artemisia spinescens</i>
Buffalo berry	<i>Shepherdia argluta</i>
Cattail tule	<i>Typha sp.</i>
Cheatgrass	<i>Bromus tectorum</i>
Four-wing saltbush	<i>Atriplex canescens</i>
Fremont cottonwood	<i>Populus fremontii</i>
Halogeton	<i>Halogeton glomeratus</i>
Horsebrush	<i>Tetradymia sp.</i>
Indian ricegrass	<i>Oryzopsis hymenoides</i>
Inland saltgrass	<i>Distichlis strict</i>
Nevada Ephedra	<i>Ephedra nevadensis</i>
Rabbitbrush	<i>Chrysothamnus sp.</i>
Russian olive	<i>Elaeagnus angustifolia</i>
Russian thistle	<i>Salsola kali</i>
Sagebrush	<i>Artemisia sp.</i>
Seepweed	<i>Sueda fruticosa</i>
Shadscale	<i>Atriplex confertifolia</i>
Sickle saltbush	<i>Atriplex sp.</i>
Spiny hopsage	<i>Grayia spinosa</i>
Tamarisk (Saltcedar)	<i>Tamarix sp.</i>
Tumble mustard	<i>Brassica sp.</i>
Wildrye	<i>Elymus cinereus</i>
Willow	<i>Salix sp.</i>
Winterfat	<i>Ceratoides lanata</i>
Source: Eissman et al. 1991	

3.5.3.2. Wildlife Resources in the Rye Patch Dam and Reservoir Area

The complete list of species known to occur in the Rye Patch Reservoir project area can be found in **Appendix I**. Ninety-two species of birds, including 33 species of resident and migratory waterfowl, wading birds, and shorebirds have been observed in the area (Eissman et al. 1991). These include Canada geese, resident coots, fish-eating grebes and cormorants, and various migratory ducks, geese, and occasional swans. Hawks and owls may nest or roost in trees along the river and hunt along the canyon and mesas. The river and upland attract a diversity of riparian and upland birds, including many songbirds and species that are water-dependant, such as kingfishers and swallows. The region supports game birds, including quail and chukar on the lower mountain slopes surrounding the basin, and pheasant in the irrigated fields of the Lovelock Valley.

There are 32 species of mammals either known to occur at Rye Patch State Recreational Area or common to the area and likely to be found within the park (Eissman et al. 1991). Mule deer are numerous throughout the park, particularly when winter forage is abundant. Other common mammals include coyote, fox, and several species of rabbits, rats, voles, squirrels, and mice. Species such as beaver, muskrat, river otter, and bats depend on riparian and open-water habitat provided by the reservoir and

river. Other species, such as raccoon and skunk, while native to the region, may be attracted to unattended food and garbage left by campers. Mountain lion have been observed in the park (Orr 2004b).

During wet years, the lowland riparian and wetland area below Callahan Bridge at the north end of Rye Patch Reservoir provides favorable habitat for wading birds, including the white-faced ibis, least bittern, and other fish-eating water birds such as the black tern. Regionally, these migratory species are present in higher numbers in the Lahontan Valley (e.g. Fallon National Wildlife Refuge, Carson Sink) and in Humboldt Sink when conditions are favorable.

Rye Patch Reservoir supports an important recreational fishery dominated by non-native, warm-water species. The reservoir and adjacent river contain up to 21 species of fish, including largemouth and some smallmouth bass, channel and white catfish, walleye, white crappie, green sunfish; and non-game species, including Asian carp and limited numbers of native Lahontan tui chub, Lahontan sucker, and redbreasted shiner (French 2004). White catfish, white bass, and walleye are the more important self-sustaining, non-native game fish (Eissman et al. 1991).

In the early 1990s, a multi-year drought drastically reduced water levels in the Rye Patch Reservoir and resulted in a major fish kill in 1992. NDOW initiated a restocking program between 1993 and 1995. Species stocked included white and channel catfish, largemouth and smallmouth bass, “whippers” (a sterile cross between white bass and striped bass), and walleye. Sterile whippers are used because of the aggressive behavior of bass and their potential to dominate a fishery. Walleye reproduce in limited numbers because of the wide fluctuations in water level. To support this warm-water sport fishery, NDOW has continued to stock Rye Patch Reservoir and the Humboldt River near Winnemucca on an average of about 2 years in every 5 since 1995, depending on river flows, fish population levels, and the availability of stock (French 2004).

Rainbow trout have been stocked in previous years. However, the reservoir does not provide the appropriate low temperatures, high dissolved oxygen, food sources, and other habitat conditions during the summer and early fall months that are needed to support this cold-water game species. Therefore stocking is limited to less than 500 fish in the 8-inch-to-12-inch range in the late fall and early spring to support a “put and take” sport fishery (French 2004). This population of rainbow trout is not self-supporting.

Reservoir volumes, (and therefore depths and surface area) are subject to major annual fluctuation, as well as drastic variation in drought and flood years. These fluctuations substantially affect habitat quality of the fishery (e.g. temperature, dissolved oxygen, food availability, overcrowding, predation, etc.), species composition and population levels. These fluctuations affect overall angler use and success, with the most drastic adverse affects occurring during the dry season of drought years, when reservoir carryover storage is at a minimum.

3.5.3.3. Sensitive Species in the Rye Patch Dam and Reservoir Area

There are no known federally threatened or endangered plant species within the Rye Patch State Recreation Area. The federally threatened bald eagle has been observed to periodically visit and roost at Rye Patch Reservoir during winter and spring months (Herron et. al. 1985). The only known nesting location in Nevada is at Lahontan Reservoir, approximately 100 miles southwest of the Rye Patch Reservoir (NvNHP 2004). Species of concern that may be present at Rye Patch include pygmy rabbit, several species of bats, birds of prey and water birds, sage grouse, and the Nevada Viceroy butterfly (NvNHP, see **Appendix H**).

Two plant species of concern could potentially occur. Nevada oryctes, is a small annual plant known to

occur just outside of the northern end of the park. This plant is a USFWS Species of Concern (former Candidate Category 2) and a Northern Nevada Plant Society “watch” species (Eissman et al. 1991). Nevada oryctes populations have been recorded at elevations ranging from 3,900 to 5,960 feet, in deep, loose sand of stabilized dunes, washes, and valley flats. In Nevada, this species depends on sand dunes or deep sands and only appears in years with optimal rainfall and temperature patterns. Wind-loving buckwheat may also be present in the vicinity of Rye Patch Reservoir, but has not been noted in the floristic surveys of the park available to date.

3.5.4. Battle Mountain Community Pasture

3.5.4.1. Habitat Types in the Battle Mountain Community Pasture

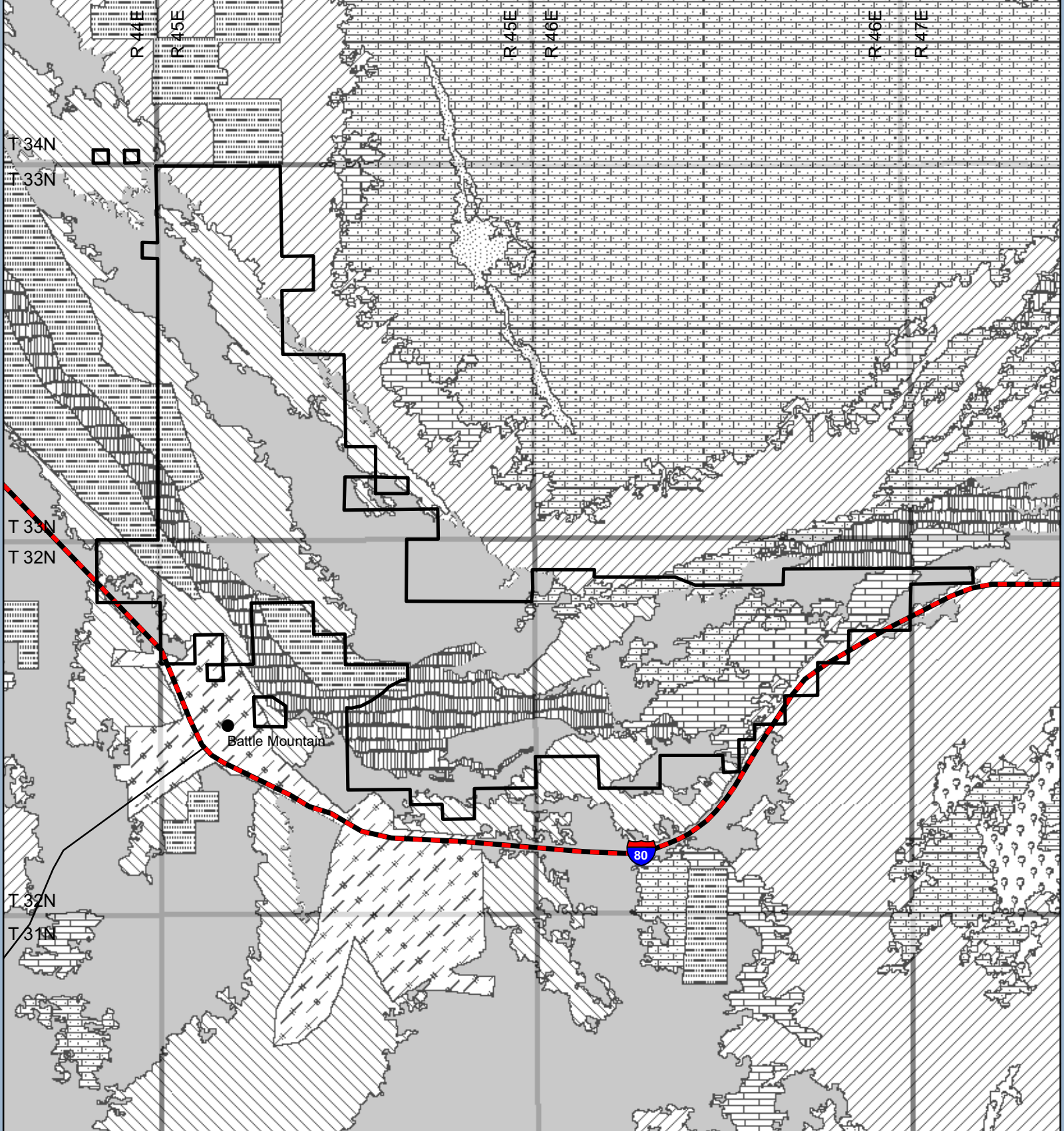
Since 1951, PCWCD has leased the Battle Mountain Community Pasture for the purpose of grazing livestock belonging to Humboldt Project irrigators. The removal of water rights from this land and seasonal grazing has resulted in the current baseline habitat condition of the Community Pasture (House 2004). The area is predominantly lowland desert scrub (greasewood/rabbitbrush) and almost half grassland (bluejoint hay meadow with some saltgrass), with increasing exotic invasive plant cover (tamarisk and other species) and has less than 5 percent riparian (willow and scattered cottonwood), emergent wetland (bulrush) and open water habitat (Bradley 1991, 2004). The lowland riparian habitat along the Humboldt River and meander scars and oxbows of historic former channels probably reached their lowest cover and functional values in 1992, at the end of a major drought (Bradley 1991, 2004).

PCWCD employs a full-time resident property manager and seasonal help to manage the Community Pasture and livestock. Grazing on the pasture occurs during the summer and fall months, allowing PCWCD farmers to maximize the irrigable acreage on their farmland without having to dedicate a portion of water to livestock grazing. In winter, the livestock are brought back to the Lovelock area.

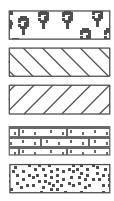
A vegetation inventory of the Battle Mountain Community Pasture was conducted in 1985 as part of an NDOW report entitled “*Wildlife and Wildlife Habitats Associated with the Humboldt River and Its Major Tributaries – Humboldt River – Community Pasture*” for Reclamation and the PCWCD (Bradley 1991). Interpretation of aerial photographs in 1985 by the University of Utah Research Institute’s Center for Remote Sensing and Cartography (CRSC) resulted in vegetation mapping for a total of 25,985 acres of Community Pasture land. Eleven dominant cover types and 36 mixes of those types were identified. Percentage of vegetation type cover as mapped by CRSC on Community Pasture lands along the Humboldt River included approximately 44 percent greasewood/rabbitbrush, 40 percent bluejoint hay meadow, 7 percent saltgrass, 3 percent annual weeds, 2 percent bulrush, 1.3 percent open water, and 0.7 percent willow. Major vegetation communities or habitat types are shown in **Figure 3.3**.

However, the NDOW report estimated that almost half of the hay meadow mapped based on aerial photograph interpretation were actually stands of Great Basin wildrye (*Elmus cinerius*), and invasive annual weeds, including thistles (*Centaurea* spp.), cocklebur (*Xanthium* spp.), and dock (*Rumex* spp.). These areas typically have lower water tables, less cover, and lower habitat values than moist or wet hay meadows, especially when the hay meadows are located near water, alkali flats, emergent wetland and riparian habitats. Therefore, alfalfa hay meadow cover is actually just under 20 percent. The report also indicated that by 1990 much of the remnant (< 1 percent of total land cover) willow vegetation mapped in 1985 had been lost. Lowered water tables, intensive growing season grazing, and herbicide application were cited as possible reasons for recent losses of the willow cover.

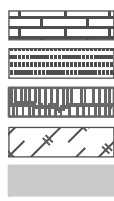
Since 1985, there has been a combination of an underestimation of weed cover and an increase in invasive and noxious weed species, including cocklebur, cheatgrass, Russian knapweed, and Russian thistle



GAP Vegetation



- Pinyon - Juniper
- Greasewood
- Sagebrush
- Sagebrush/Perennial Grass
- Mountain Sagebrush



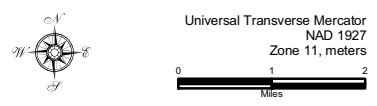
- Grassland
- Agriculture
- Desert Riparian
- Urban
- Alkali Desert Scrub

- City
- Interstate
- Major Road
- Humboldt Project Area

Humboldt Project Conveyance EIS

Figure 3.3: Habitat Types of Battle Mountain Community Pasture Area

Date: 10.11.04 file: HAB_001-06R Author: djb



(Bradley 2004).

In 1995, the PCWCD hired a rangeland consultant to develop an ongoing grazing management plan for the Community Pasture. Since the adoption of that plan, the District has improved the condition of the Community Pasture as pasturage and there has been some limited improvement of riparian and wetland habitat. The adopted grazing program includes increased pasture rotation, deferred pasture rotation and or pasture resting. The following is the pasture stocking rates from 1995 to present:

TABLE 3.5-3 PASTURE STOCKING RATES FROM 1995 TO PRESENT		
Year	No. of Head	AUM
1995	1,805	10,830
1996	2,087	11,478
1997	2,615	14,382
1998	2,703	17,569
1999	2,702	12,159
2000	2,451	11,029
2001	2,703	10,812
2002	2,206	11,030
2003	2,277	8,538
2004	2,174	9,239
2005	2,028	
Source: Hodges, 2005		

The AUM is the amount of forage needed by an “animal unit” (AU) grazing for one month. The animal unit in turn is defined as one mature 1,000 pound cow and her suckling calf. Annual pasture stocking rates are determined by annual forage production determined by annual precipitation. A survey of these non-irrigated range lands (converted historic lowland riparian and wetlands) in 1998 (after a series of wet years aided recovery) by the rangeland consultant showed more than half to be in good rangeland condition, a third to be in fair rangeland condition, and the remaining 5 percent to have been disturbed by wildfire. To achieve sustainability of the Community Pasture, the District has stocked at the Community Pasture at a rate well below the range consultant’s estimated carrying capacity. This also helps to sustain some of the wildlife habitat and opportunities for hunting and fishing.

The continued management of seasonal grazing of the Community Pasture by PCWCD below carrying capacity under a regularly-updated grazing management plan with surveys of rangeland condition will assure the long-term sustainability of the pasture. Continued implementation of the grazing management plan, in combination with an integrated invasive plant management plan to halt the spread of tamarisk, cheatgrass, and noxious weeds such as Russian knapweed and thistle, would maintain or improve the condition of the pasturage, native vegetation communities, and wildlife habitat.

3.5.4.2. Wildlife Resources in the Battle Mountain Community Pasture

Wildlife surveys conducted by NDOW in 1987 recorded 32 bird and seven mammal species (**Table 3.5-3**). This list does not represent the full range of wildlife present on the Community Pasture, but may indicate the more common bird and mammal species observed. Reptiles, amphibians, and fish were not surveyed. Historically, the marshes, riparian scrub-forest, and meadows of the Community Pasture supported larger numbers of the waterfowl, wading birds, shorebirds, songbirds, and wetland/riparian mammals, (e.g., mink, muskrat, and beaver) listed in **Table 3.5-3**, as well as many other species. Common historic wildlife not currently observed include bitterns, rails, wrens, and otters, which occupied the dense emergent wetlands and open waters of old meander scars and oxbows of the former marshes. **Appendix I** provides a more comprehensive list of wildlife species observed within the entire Humboldt

River system, some of which could be expected to occur on the Community Pasture.

TABLE 3.5-4 SPECIES OF WILDLIFE OBSERVED DURING AND INCIDENTAL TO SURVEYS CONDUCTED ON RECLAMATION COMMUNITY PASTURE LANDS, HUMBOLDT RIVER, 1987	
Birds	
Pied-billed Grebe	Long-billed Dowitcher
Great Blue Heron	Horned Lark
Cattle Egret	Barn Swallow
Snowy Egret	Black-billed Magpie
Black-crowned Night Heron	Sage Thrasher
White-faced Ibis	Loggerhead Shrike
Mallard	Yellow Warbler
Gadwall	Yellow-breasted Chat
Northern Pintail	Western Meadowlark
Green-winged Teal	Red-winged Blackbird
Cinnamon Teal	Brewer's Blackbird
Northern Shoveler	Savannah Sparrow
American Coot	Brewer's Sparrow
Killdeer	Lazuli Bunting
Spotted Sandpiper	Song Sparrow
Willet	Long-billed Curlew
Mammals	
Mink	Muskrat
Coyote	Beaver
Least Chipmunk	Mule Deer
Deer Mouse	
Source: Peter Vincent Bradley, Nevada Dept. of Wildlife. 1987. Wildlife and Wildlife Habitats Associated with the Humboldt River and its Major Tributaries – Humboldt River Community Pasture	

In 1997, 43 species of birds were observed between Dunphy (where I-80 crosses the Humboldt River 30 miles upstream of Battle Mountain) and Argenta, and 65 species between Argenta and Mote, which is located approximately 10 miles downriver from Battle Mountain. Argenta is located at the southeastern end of the Battle Mountain Community Pasture. Among the more common or notable species of birds observed along the Humboldt River in this region not included in the above table were greater sandhill crane, Swainson's hawk, black-necked stilt, Wilson's phalarope, mourning dove, common nighthawk, western kingbird, northern rough-winged and cliff swallows, common raven, marsh wren, black headed grosbeak, and Bullock's oriole. Numbers of white-faced ibis and beaver in the region noticeably increased in 1997, probably because of the higher flows and some reestablishment of woody riparian vegetation in select reaches.

There are several native and introduced species of warm-water fish in the Humboldt River and Rock Creek at the Battle Mountain Community Pasture. Species known to be present include bullhead, green sunfish, smallmouth bass, carp, and channel catfish (Bradley 2004, Teske 2004).

3.5.4.3. Sensitive Species in the Battle Mountain Community Pasture

The bald eagle is an occasional winter resident of the Humboldt River in the vicinity of the Community Pasture. The only known nesting location in Nevada is at Lahontan Reservoir (NvNHP 2004). There are no other federally listed species in the project area.

During wet years, the old meander scars and oxbows of the Humboldt River and Rock Creek fill with

water and create habitat favorable for wading birds. Potential visitors to the area include the white-faced ibis, least bittern, long-billed curlew, other fish-eating water birds such as the black tern, and other water birds that are species of concern. Regionally, these migratory species are present in much higher numbers in the Lahontan Valley (e.g. Fallon and Stillwater National Wildlife Refuge, and Carson Sink) and in Humboldt Sink when conditions are favorable. These habitats could also support most of the same species of bats, birds of prey and water birds, pygmy rabbit, and sage grouse listed for the Humboldt Sink and Rye Patch Reservoir that are species of concern, as well as local populations of ferruginous hawk and the Nevada viceroy (NvNHP, see **Appendix H**).

There are no known threatened or endangered plant species found within the Battle Mountain Community Pasture. One USFWS Species of Concern, wind-loving buckwheat, may occur in the project area. Wind-loving buckwheat is a high-elevation perennial that occurs on dry, exposed, relatively barren and undisturbed ridges. It is described in greater detail in an earlier section of this chapter.

Several species of spring snails are endemic to thermal waters of Nevada. There is a hot spring at Stony Point that flows directly into Rock Creek in the north-central portion of the lands that would be transferred to NDOW. This hot spring has not been surveyed for spring snails. Because Stony Point Hot Spring is not isolated and does flow into Rock Creek, this spring is probably below 35 to 40 degrees Celsius, and could support spring snails. Surveys have found spring snails on other springs along Rock Creek in the Battle Mountain area upstream of the proposed transfer lands (Sada 2004).

3.5.5. Environmental Impact

3.5.5.1. Proposed Action / Preferred Alternative

Potential biological resource impacts that could occur as a result of the Proposed Action, including potential impacts on vegetation and wildlife habitat and special-status species, are described in the following sections for each Project area.

3.5.5.1.1. Humboldt Sink

The Proposed Action would transfer ownership of a checkerboard pattern of approximately 18,180 acres of land from Reclamation to the State of Nevada currently in the WMA and managed by NDOW. In addition, the acreage transferring to the State of Nevada in the Humboldt Sink would include approximately 14,470 acres outside of the current WMA boundaries. Pershing County would obtain approximately 990 acres of this acreage, which includes disturbed, weedy greasewood and alkali flat habitat in the northeastern portion of the project area bordering Derby Field to the north and east.

Because there would be no substantial change in overall resource management by NDOW or Pershing County, the title transfer would not result in substantial adverse effects to vegetation or fish and wildlife resources in the Humboldt Sink Project area.

Under both the Proposed and No Action Alternatives, NDOW plans to expand efforts to control invasive species such as tamarisk and perennial pepperweed by using integrated control methods, including biological control (Chinese leaf beetle), mechanical control along ditches, targeted use of herbicides, and potential use of controlled burns. With no change in land use and potentially improved management, the title transfer would have no adverse affect, and consolidation of state ownership of lands within the Humboldt Sink under NDOW management would have a potential beneficial affect on existing vegetation communities or wildlife habitat within the Humboldt WMA.

Natural cycles in rainfall, runoff, and flooding are the primary determining factor in biological

productivity of the Humboldt WMA from year to year, with wetter years and extensive shallow flooding creating optimal conditions for migratory wildlife (Neel 2004). NDOW has no Project water rights or control over the amount of water entering the Humboldt WMA, however, NDOW has the potential to improve the management of the water it does receive subsequent to the title transfer. Under the Proposed Action, PCWCD would continue to manage the delivery of irrigation system tailwater flows and Humboldt River flood flows to NDOW to help maintain open water, marsh, seasonal wetland, and riparian wildlife habitats in the Humboldt Sink. In drier years, most water would be directed to Toulon Lake via the Toulon Drain to maintain the open water and wetland habitats in this smaller lake. Some tailwater would still flood Humboldt Lake, which would dry back first. In wetter years, Humboldt Lake would also be flooded via the Army Drain and main channel of the Humboldt River. NDOW plans to add a second dike to Toulon Lake across the narrow point and enhance habitat in the upper third of the lake (Hunt 2004). The cooperative agreement to better manage tailwater, installation of the dike, and habitat enhancements considered by NDOW would have a beneficial effect on management of water levels and wildlife habitat.

Under both the Proposed Action and No Action Alternatives, NDOW plans to continue using their remaining Title 28 Reclamation Recreation Management Act cost-sharing monies for improvements to existing levee roads to improve wet season access to recreation sites, improvements to an existing campground and boat ramp on the west side of Humboldt Lake, and adding a public wildlife viewing platform. These capital improvements involve existing facilities or clear areas with little or no disturbance to natural vegetation or wildlife habitat. Therefore construction of these recreational improvements will benefit the public with no impact to biological resources. Under the Proposed Action, the State would no longer be eligible to receive new Title 28 monies for future capital improvements, but may be eligible to receive additional state funding under existing natural resources programs such as the 2002 Question 1 bond for conservation and resource protection (Weaver 2004).

Pershing County has not developed a specific airfield expansion plan for Derby Airfield, but proposes to add hangers and storage facilities if Project lands are transferred to the county. This expansion would occur on land that is already cleared and mowed as runway clear zones. Expansion of Derby Airfield would not result in any substantial impact to natural vegetative communities or wildlife habitat.

Impacts to Special Status Species

Wind-loving buckwheat is unlikely to occur in the Humboldt Sink because it is a high-elevation species occurring on barren, exposed ridges and knolls, including the mountains east of Humboldt Sink. Nevada dune beardtongue and Nevada oryctes, are found in deep sandy soils or sand dunes and could be present in the sand dune ridges along the mouth of the Humboldt River within the Sink. Lahontan milkvetch and Lahontan beardtongue occur along washes, gullies, alluvium, canyon floors, and playa edges (the former in more alkaline areas and the latter in carbonate substrates). Both species may occur in locally suitable habitat within the Humboldt Sink. However, no substantial change in management of the Humboldt WMA or alterations in drainage patterns or ground disturbances are proposed that would impact these plant species of concern.

Bald eagles over-winter in the Humboldt Sink, with greatest numbers occurring in flood years that support large numbers of warm-water fish. The nearest known nesting area is in the Washoe Valley a considerable distance southwest of the project area. Future proposed management by NDOW would result in some improvement of habitat within the WMA, which could provide a minor benefit to bald eagles, which are otherwise unlikely to be adversely affected by the proposed transfer.

Presence and abundance of the American white pelican, a sensitive species, depends on flooding of the Humboldt Sink and the warm-water fish that accompany such events, which depends primarily on

climatic cycles. Improvements in NDOW's ability to manage tailwater and flood water could be beneficial to pelicans by having some improved ability to manage water depths in Toulon and, to a lesser extent, Humboldt Lake. These water management improvements, combined with habitat enhancement projects and efforts to control exotic invasive plants, should result in some potential improvement of habitat conditions for wildlife species of concern, including bald eagle, white pelican, white-faced ibis, least bittern, log-billed curlew, and other migratory bat and water bird species of concern listed by the USFWS that may occur in the Humboldt Sink area (**Appendix H**).

3.5.5.1.2. Rye Patch Reservoir

Under the Proposed Action, PCWCD would receive all withdrawn lands below the reservoir high water mark and all acquired lands above and below the high-water mark. PCWCD would continue to operate Rye Patch Dam and Reservoir in a manner similar to that of its current agreement with Reclamation. State Parks would receive all withdrawn lands above the reservoir high-water mark and continue to operate and maintain the state recreation area facilities surrounding Rye Patch Reservoir.

PCWCD has agreed to manage and operate Rye Patch Reservoir to provide a minimum operational pool of 3,000 acre-feet of carryover irrigation water storage from year to year. To assure this minimum operational carryover pool, PCWCD would reduce or cease all releases if the reservoir approaches or reaches a minimum of 3,000 acre-feet of storage, which should only occur in multiple drought years. The 3,000 acre-feet volume is sufficient to maintain a viable portion of the adult warm-water game fish population. The PCWCD will manage the reservoir to maintain a higher operational carryover storage pool from year to year when conditions are favorable to provide even better survival of adult and juvenile warm-water fish populations. The historic average storage at the end of the season or average minimum operational carryover pool is 74,370 acre-feet, and the median carryover pool is 53,178 acre-feet over 68 years of record (Hodges 2004). Over this period of record, the minimum carryover pool was 10,000 acre-feet or greater 80 percent of the time, a volume that would also assure the survival of a reasonable number of juvenile fish and reduce the amount of stocking needed to maintain the sport fishery. NDOW will continue to monitor the fishery and stock Rye Patch Reservoir and the Humboldt River as needed. This beneficial change in management of minimum carryover storage should have no adverse effect on the sport fishery at Rye Patch Reservoir.

Because there are no anticipated changes in overall management of lands and waters by State Parks and PCWCD, the title transfer would not result in substantial adverse effects to vegetation, or fish and wildlife resources in the Rye Patch Reservoir project area.

Impacts to Special Status Species

PCWCD and State Parks have not proposed any changes in operations, such as increases in maximum reservoir levels or land acquisition and recreational improvements, which would directly impact the population of Nevada oryctes, just north of the park. Any minor secondary effects of activities, such as invasive plant control or development of a primitive campground at Callahan Bridge, would not extend upriver to the location of these plants. No other sensitive plants listed by the USFWS as species of concern occur in the Rye Patch Reservoir area.

Bald eagles visit or over-winter at Rye Patch Reservoir in limited numbers. Maintenance of the agreed-upon 3,000 acre-foot minimum operational carryover storage to assure the survival of a warm-water fishery and typically operating with minimum carryover storage above 10,000 acre-foot in most years, will maintain a healthier fishery and potentially benefit bald eagles. Therefore, the title transfer is unlikely to adversely affect and may have a minor beneficial effect on this federally threatened species.

The Nevada viceroy, a butterfly species of concern listed with the NvNHP, occurs in aspen and willow habitat in the mountains west of Rye Patch Reservoir (NvNHP 2004). There is no habitat for this species in the Rye Patch Reservoir area. Therefore this viceroy would be unaffected by the title transfer.

A recent BLM study identified a sage grouse lek (traditional display ground) in upland habitat on lands managed by BLM west of I-80 (BLM 2004). Replacement habitat has been proposed by BLM in a more suitable upland habitat west of I-80 near the northeastern end of Rye Patch Reservoir. The area is adjacent to project lands. The potential for sage grouse to occur within the park is low because of a lack of hilly or mountainous upland scrub habitat with larger vegetation for cover. Because the title transfer is an administrative action and no changes in operation and maintenance of the Rye Patch Dam and Reservoir are proposed by PCWCD or State Parks the Proposed Action is unlikely to have a direct effect on nearby sage grouse populations.

When the lowland riparian and wetland area below Callahan Bridge at the north end of Rye Patch Reservoir floods in wet years, it creates habitat favorable for wading birds, including the white-faced ibis, least bittern, and other fish-eating water birds such as the black tern. On a regional basis, these migratory species are present in much higher numbers in the Lahontan Valley (e.g. Fallon and Stillwater NWR, Carson Sink) and in Humboldt Sink when conditions are favorable. However, upper Rye Patch can provide locally important habitat, especially when conditions are different at these other locations (Neel 2004).

Other species of concern, such as the pygmy rabbit, several species of bats, birds of prey, and the above-mentioned water birds listed by the NvNHP as potentially present at Rye Patch Reservoir should be unaffected by the title transfer, as no change in habitat conditions is expected. Management efforts by PCWCD and State Parks to control the spread of invasive plants, which would recover some riparian and wetland habitat, could incrementally improve habitat for some of these species.

3.5.5.1.3. *Battle Mountain Community Pasture*

Under the Proposed Action, PCWCD would receive title to approximately 22,500 acres of acquired lands within the Battle Mountain Community Pasture, which would continue to be managed and operated for grazing purposes. PCWCD will continue to employ a full-time resident property manager and seasonal help to care for the property and livestock. PCWCD will continue to allow public use of the pasture lands, including hunting and fishing, when such activities do not directly conflict with livestock operations.

The State of Nevada would receive title to approximately 5,850 acres of acquired land in the Community Pasture. These lands are proposed for management by NDOW for the purpose of wetland development (Hunt 2004). NDOW has a goal to develop up to 2,000 acres of wetlands and lowland riparian habitat, but specific management plans including water sources, funding, and vector control have not been finalized.

The State has obtained 1,680 acre-feet of winter or “ice” water rights for wetland restoration. Once needed, this water could be diverted from the Humboldt River at Slaven Diversion Dam, and the State would take over responsibility for operation and maintenance of the dam. NDOW is also attempting to acquire other water rights, including potential purchase of the Licking Ranch (900 acre-feet). The State is also investigating the potential to obtain the Lander County rights to the old Rock Creek Dam (3,000 acre-feet). Another potential water source could be mine dewatering water (e.g. Newmont Mining). Depending on the economics of mining and the rate at which the deposit is mined, this water source would not be permanent, but could “jump start” some restoration efforts while more permanent water rights are being obtained (Hunt 2004). However, any potential water acquisition above the 1,680 acre-

feet has to be considered speculative at this time.

The restoration of a portion of emergent wetland, open-water, and riparian habitat would include removing existing non-native vegetation, raising the water table, and seasonally or permanently flooding low-lying lands along Rock Creek and the historic channels of the Humboldt River, planting new native riparian and wetland vegetation, and using exclusion/protective fencing. These enhancements to the baseline conditions would have a positive effect on the regional vegetation, encouraging and supporting native vegetation in a more naturalized hydrologic regime and reducing the impact of invasive plant species on habitat value.

This restoration would result in the stabilization of stream banks, reduced soil erosion, higher water tables, decreased salinities, and more soil water retention capabilities. If portions of State land managed by NDOW continue to be grazed or are used to grow pasturage compatible with wildlife management area goals and objectives, the agricultural productivity of these lands should be high. This potential restoration of a mosaic of riparian, wetland, open-water, and upland habitat would benefit a wide variety of wildlife species, including many of the species of concern listed by the NNHP and USFWS as potentially occurring in the Battle Mountain Community Pasture and other species that occur in low numbers or historically occurred in the region. Restoration of these habitats could also attract hunters, fishermen, wildlife watchers, and other recreational users and tourists, potentially providing added economic benefit and diversity to the region. These biological resource and recreational benefits would be directly related to the ability of the State to obtain the water rights and successfully implement the Conceptual Management Plan (CMP) for wetland and riparian restoration.

Under the Proposed Action, Lander County would receive title to approximately 1,100 acres of acquired Community Pasture lands. The proposed expansion of the Livestock Events Center and the use of PCWCD's maintenance shop would occur on lands that are already developed as asphalt and turf grass, and support little or no natural habitat. No impacts to vegetation and wildlife resources would occur as a result of the title transfer and proposed continued use and expansion of the facilities.

The parcel proposed by Lander County for future industrial development is located behind dikes and is either mowed or poor-quality pastureland with scattered greasewood and saltbush scrub. This parcel is not located in prime agricultural land or near sensitive lowland riparian habitat. As such, future industrial development of the area would not result in any significant direct adverse impact on important native vegetation communities or associated wildlife habitat. The county and State should review future proposed industrial development to assure that there would be no adverse effects to groundwater quantity and quality that could impact the Humboldt River and either no direct discharges to the Humboldt River or limited discharges that meet federal and State requirements. Provided that future industrial development did not affect the quality of water in the Humboldt River and associated lowland riparian habitats, no adverse secondary or indirect impacts of industrial development of this parcel to biological resources is anticipated.

Development of a low-maintenance, primitive day-use recreational area and parking lot adjacent to State Route 806 and the Humboldt River south of White Bridge has the potential to remove lowland riparian vegetation, including willows, wild rose, and other soft shrub and woody scrub riparian vegetation. The parking lot would be sited in an open area on high ground adjacent the highway and set back from the river terrace that has a minimum amount of woody and shrubby vegetation. The primitive day-use area adjacent to the parking lot would be similarly sited with minor improvements. The parking lot and small day-use area will be fenced and gated to allow foot traffic only downriver. Conversations with the PCWCD, Lander County officials, and NDOW confirm that the parking lot and minimal adjacent facilities would be sited and developed as described above.

The dedicated access easement along the river would be maintained in its natural state, without improvements. No motorized vehicles or horses would be permitted. Pets would be required to be kept on a leash at all times. No overnight facilities or uses would be allowed in the parking area or along the easement. The county would be responsible for regularly patrolling the easement to assure compliance and remove trash and refuse. The PCWCD would continue to graze Community Pasture lands within the easement.

As proposed, the small parking lot and primitive recreation area and access easement along the Humboldt River would not have an adverse effect on lowland riparian vegetation and wildlife habitat. The easement provides an official dedication of an area unofficially used by hunters, fishermen, and other recreational users to access the Humboldt River with PCWCD permission, and establishes Lander County as the official agency responsible for managing this easement. Potential secondary effects to biological resources resulting from increased public use of the river corridor resulting from the establishment of an official parking lot and public access easement would be offset by improved management by the county, including controlled access gates, signage, and regular patrols.

The parking and primitive recreation area and access easement along the river would provide public access to the river and riparian corridor and offer hiking, hunting, fishing, and wildlife viewing opportunities. The development of the proposed parking lot, primitive day-use area, river access easement, and future enlargement of the Livestock Events Center at the County Fairgrounds following the terms outlined in the Memorandum of Agreement between Lander County and PCWCD would result in increased recreational opportunities in Lander County without significant adverse impacts on vegetation, fish, and wildlife resources.

Impacts to Special Status Species

Wind-loving buckwheat is present in the mountains north and possibly southeast of Battle Mountain, but is unlikely to occur in the Community Pasture because it is a high-elevation species found on barren, exposed ridges and knolls. Lahontan milkvetch and Lahontan beardtongue occur along washes, gullies, alluvium, canyon floors, and playa edges; habitats not found within the Battle Mountain Community Pasture. No substantial change in management of the Community Pasture is proposed that would adversely affect plant communities, including plant species of concern in the region.

The bald eagle is an occasional winter resident of the Humboldt River in the vicinity of the Community Pasture. No other federal listed species occur in the project area. The nearest protected nesting sites are located a considerable distance away in the Washoe Valley. Proposed improvements by NDOW on lands transferred to the State, including potential restoration of riparian, emergent wetland and open water habitats and management of these lands as a wildlife management area, would provide some net benefit for this species. Therefore, the continued implementation of the grazing management plan for the Community Pasture by PCWCD, proposed management and habitat improvements on the State portion by NDOW, and minor capital improvements and recreational use on lands transferred to Lander County would not adversely affect the bald eagle.

The Nevada viceroy occurs in aspen and willow habitat in the mountains adjacent to Battle Mountain Community Pasture (NvNHP 2004). No habitat exists for this species on title transfer lands in the Community Pasture area. Therefore, this viceroy would be unaffected.

Sage grouse are likely to be present in sagebrush and sagebrush/perennial grassland habitats in the rugged mountains north and southeast of Battle Mountain. Grouse are not likely to utilize the lowland habitats along the Humboldt River, Reese River, Rock Creek, and McIntyre Slough in or near the Community Pasture. Therefore, transfer of Battle Mountain Community Pasture lands would have no direct effect on

nearby sage grouse populations.

When the old meander scars and oxbows of the Humboldt River and Rock Creek fill with water in wet years, they create habitat favorable for wading birds, including the white-faced ibis, least bittern, long-billed curlew, fish-eating water birds such as the black tern, and other water birds that are species of concern. On a regional basis, these migratory species are present in much higher numbers in the Carson and Humboldt Sinks when conditions are favorable. However, the State portion of the Community Pasture, if restored to lowland riparian, emergent wetland and open-water habitat, could benefit these species by providing locally important habitat in the future.

Other species of concern, such as the pygmy rabbit, several species of bats, birds of prey including the ferruginous hawk, and the above-mentioned water birds, that are listed by the NvNHP as potentially present in the vicinity of the Community Pasture should be unaffected by the title transfer, as no adverse change in habitat conditions is expected. Management efforts by NDOW that may control the spread of invasive plants and potentially restore some riparian, wetland, and open-water habitat would result in improved habitat for many of these species.

3.5.5.2. No Action Alternative

Under the No Action Alternative, biological resources within the Project area would not change. Lands proposed for transfer to NDOW for restoration of lowland riparian habitat and the creation/restoration of wetlands in the Battle Mountain Community Pasture would not occur. Proposed recreational enhancements by Lander County, including the development of a primitive day-use and parking area adjacent to the Humboldt River, a dedicated easement along the river, and expansion of the livestock events center would not occur. Reclamation lands within the Humboldt Sink and in the Rye Patch Reservoir area would not be transferred to the State.

If the title transfer were not to occur, Reclamation may choose to prepare a RMP to guide future decisions for Project lands. The RMP could incorporate an updated grazing management plan for lands leased for grazing, and may include a more comprehensive blueprint for managing natural resources on Humboldt Project lands, including vegetation and wildlife. Potential future federal funding for resource management enhancements and improvements may be available and may result in positive effects for fish, wildlife, and vegetation. However, federal monies for the preparation and implementation of an RMP are subject to congressional funding (USBR 2003a).

3.6. HAZARDOUS MATERIALS AND DAM SAFETY

3.6.1. Affected Environment

3.6.1.1. Hazardous Materials

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires “identification of contaminated property based on an investigation of the real property to determine or discover the obviousness of the presence or likely presence of a release or threatened release of any hazardous substance on the real property.”

Historically, Reclamation, PCWCD, and State of Nevada employees have conducted routine environmental site inspections of the Humboldt Project lands as part of normal operation and maintenance. State employees managing the Humboldt Sink and Rye Patch Reservoir lands, and Mr. Jerry Chapin, PCWCD Pasture Manager, routinely inspect project lands for any unlawful disposal of solid and hazardous wastes.

Tetra Tech, Inc (Tetra Tech) performed a Phase I Environmental Site Assessment in August 2004. The Phase I included a site reconnaissance, interviews with local officials, and a review of regulatory agency information for project lands and surrounding sites. Project lands and adjacent properties within a reasonable distance were inspected to identify if actual or potential releases of hazardous substance have occurred or have the potential to affect lands to be transferred. No physical sampling or analyses of any media were performed during the Phase I ESA. The following sections are incorporated by reference from the Tetra Tech report *Final Phase I Environmental Site Assessment, Humboldt Project Lands, Nevada, September 2004*.

3.6.1.1.1. Humboldt Sink

An aboveground storage tank (AST) was observed at Derby Airfield. The tank is mostly empty and has not been used since the late 1940s (Hodges 2004). The AST is approximately 35 feet in diameter and 35 feet long, with a capacity of approximately 30,000 gallons. Aviation fuel was stored in the tank and was dispensed from a pumping station, through underground pipelines, to valve standpipes on the tarmac. The tank and pump station were observed, but it is not evident where the underground pipelines or standpipes used to be. A sample of the residue was reportedly collected during the last couple of years and was found to contain only heavy petroleum hydrocarbons that may not be of environmental concern.

Underground storage tanks (UST) were located on the property in the 1980s and were used to fuel small aircraft. In 1984, a large flood washed out these USTs (Montrose 2004). Since then, an AST system was installed and is operating at the edge of the airport tarmac. This system appears to include a 3,000-gallon tank that is in good condition. No releases or evidence of spills were reported or observed. There are plan and budget for the Airport Board to replace the AST system with a new 12,000-gallon system that will be in full compliance with the fuel storage regulations.

There was one site identified in the regulatory database search as being located on project lands. A site owned by Helena Chemical Company was identified in the EPA Section 7 Tracking System database as a site that produces pesticides. As of the last report year, the permit for the facility was registered, but the site status was inactive. The report indicates that an inspection of the property was conducted in May 1997, and no violations were found. Based on these findings, there is no evidence that this site has any significant impacts on project lands. Information on the type of pesticides produced at this site could not be located.

3.6.1.1.2. Rye Patch Dam and Reservoir

The rollup gates at Rye Patch dam are controlled by an electric motor that travels on a track from one gate to the next. The drive mechanisms contain gear boxes, each containing approximately 2 quarts of motor oil. No used or new motor oil is stored at the dam site. When the motor oil is changed, new oil is brought to the site, and used oil is disposed of off-site the day the work is performed. A small amount of motor oil for these gear boxes and other pump reservoirs is stored for immediate availability at the dam tender's residence. No areas of environmental concern were noted.

A sump pump associated with the fish holding tanks contains an oil reservoir for lubrication. No environmental concerns were observed at this location.

The lift gates that control the subsurface flow beneath the dam are operated by four hydraulic lifts. These valves have a small hydraulic fluid reservoir (estimated to be 10 gallons) in the control room. According to the Tetra Tech report, no indication of spills or releases was observed.

Beneath the control room, the lift gates control the flow of water through the reservoir transfer release lines. One of the four lift gates contains a hydraulic leak that is captured and controlled by a trough and reservoir system. The gate appeared to be relatively clean, and was continuously monitored to maintain the leak-control system. No significant amounts of hydraulic fluids appear to be released to the environment.

The restroom and shower facilities maintained by State Parks have septic tanks that are either self-contained and must be pumped out or associated with leach fields. For those that require cleanout, State Parks has set up a sewage sludge dump in a low berm area. Although no sewage was observed during the field inspection on August 5, 2002, debris in the berm area suggested recent dumping in the area.

There is an AST near the State Park office and a residence at the east end of the dam. The AST is connected to a gasoline and diesel fueling station. This fueling station was reported to be in good operating condition with no signs of spill or releases. The fueling station is used by State Parks personnel and the dam tender only. There are no other fueling facilities around the Rye Patch Reservoir, and all recreational vehicles, including boats on the reservoir, bring their fuel supply with them from outside the park boundary.

Five sites on adjacent properties were identified as sites where hazardous substances are known to have been or may have been released, and may have impacted the subject property. These sites are located at least 1 mile from project lands.

3.6.1.1.3. Battle Mountain Community Pasture

There are several gravel pits within and adjacent to the Battle Mountain Community Pasture. Nearly all of the pasture land pits are no longer used for gravel production and are partially filled with water. In 1994, Reclamation collected water samples from abandoned gravel pit sites located on the Battle Mountain Community Pasture. All analyzed elements were at acceptable levels for fresh water aquatic life as outlined in EPA Document 440/5-86/001, with the following exceptions: arsenic levels of 300 and 210 µg/L found in two of the five ponds tested (EPA criteria is 190 µg/L) and slightly elevated mercury levels (0.015, 0.036, 0.012, and 0.014; EPA criteria is 0.012) in four of the five ponds tested. These metals are normally not associated with quarry operations, and may be attributed to natural background levels. Total organic carbon was found in most of the samples at low levels. These organic levels could also reflect natural decay of organic material found in plant life. However, analysis for manufactured organics (e.g., fuel oils) was not performed (USBR 1994b).

There are seven wells located throughout the Community Pasture. One of the wells is powered by detachable solar panels. The remaining six wells produce water from windmill power. Each of the six windmills connected to water wells contains a crankcase of gears that contains approximately 1 gallon of motor oil. There were no environmental issues observed at these locations.

The age of the Muleshoe Ranch barn and bunkhouse suggests that lead-based paint may have been used on them at some time. In addition, the age of the bunkhouse and the character of its ceiling and floor tiles indicate that the building may contain friable asbestos. The pasture manager's residence did not appear to have any environmental issues.

Within the unincorporated town of Battle Mountain, seven sites on properties adjacent to parcels to be transferred to Lander County were identified as sites where hazardous substances are known to have been released. These releases are primarily associated with gasoline stations with USTs. Based on the relative proximity of the sites to project lands and the potential impact of previous spills on groundwater, it is possible that one or more of these sites may impact project lands.

There is a fertilizer manufacturing plant approximately 1/2 mile northeast of the Community Pasture boundary in Section 35, Township 33 north, Range 45 east. The facility uses raw materials to produce fertilizer that is later mixed with diesel fuel to make blasting powder for nearby mining operations. While several local residents have reported noxious fumes emitting from the facility, no violations were identified during the regulatory review process.

3.6.1.2. Safety

3.6.1.2.1. Flood Hazards

In the 1940s, the Humboldt Sink was withdrawn from the public domain because of flooding concerns related to operation of the Humboldt Project. The area is fed by both natural flow of the Humboldt River and the drain system carrying tailwater from the irrigated lands of the PCWCD and wastewater effluent from the City of Lovelock. In extremely wet years, the Humboldt Sink discharges to the Carson Sink via the Humboldt Slough. The levees in the Humboldt Sink area could be damaged during a major flood in the region.

Rye Patch Dam and the Pitt-Taylor Reservoirs prevent flooding below the Rye Patch Reservoir. The Pitt-Taylor Reservoirs are normally empty and available for storage during heavy runoff events. The Rye Patch Reservoir has a capacity of approximately 213,000 acre-feet, and has a maximum discharge from the dam's spillway of approximately 24,000 cubic feet per second, or about 1/2 acre-feet per second. The Pitt-Taylor Reservoirs have a combined storage capacity of 35,000 acre-feet. During periods of heavy flow in the Humboldt River, the reservoirs have a combined storage capacity of 248,000 acre-feet.

Battle Mountain Community Pasture has historically been prone to flooding. The Federal Emergency Management Agency (FEMA) has established a boundary for the 100-year floodplain. According to Ms. Debra Hinze, Town of Battle Mountain Building Department, the majority of the Battle Mountain Community Pasture near the Humboldt River is within the 100-year floodplain (Hinze 2004).

3.6.1.2.2. Dam Safety

As owner of the Rye Patch Dam, Reclamation is responsible for all safety-related activities at the dam. The 1978 Reclamation Safety of Dams Act (P.L. 95-578), the Reclamation Safety of Dams Act Amendments of 1984 (P.L. 98-404), the Federal Guidelines for Dam Safety and other laws, policies, and guidelines provide the authorization and guidance for Reclamation's Safety of Dams program.

Dam safety issues are generally associated with land use categories, the type of uses, and population. The four main categories used to assess safety issues are given below:

- Highly Sensitive Uses – Schools, hospitals, convalescent homes, daycare centers, and other areas where large numbers of people concentrate who, because of their age, physical condition, or large number may require assistance to evacuate.
- Urban Land Uses – Residential, commercial, and industrial areas.
- Rural Land Uses – Agricultural areas, farms, orchards, and nurseries.
- Open Space – Undeveloped areas, golf courses, beaches, and other areas.

The areas around the Rye Patch Dam fall within the rural and open space land use categories.

The West Humboldt Fault is approximately 0.9 mile east of the Rye Patch Dam. Estimates indicate that this fault has the capacity for producing an earthquake of a 7.5 magnitude. Other faults in the area of the

dam are considered to be active, and can produce earthquakes with similar magnitudes. As a result, the risk of an earthquake from a fault in the area of the Rye Patch Dam within the next 10 years is considered high. (USBR 1993)

Because of the number of active faults, the U.S. Department of Interior performed a study in 1993 to determine the risk posed by the dam. This study estimated that 49 people would be at risk of drowning if the dam failed (USBR 1993). Additionally, the property damage associated with a dam failure was assessed to be approximately \$44.4 million. The main risk factor for a possible Rye Patch Dam failure was determined to be liquefaction of soil at the base of the dam during a major earthquake. (USBR 1993)

As a result of the above study, Reclamation and PCWCD constructed a concrete buttress wall in 1996 to strengthen the downstream portion of the dam foundation and minimize the risk of dam failure caused by liquefaction. The Rye Patch Dam improvement was designed to provide a safety factor of at least one in one million (USBR 1996). In addition to improving the stability of the dam, the Reclamation Dam Safety Program provides for regularly-scheduled examinations and inspections of the dam and appurtenant facilities. This program also provides notification procedures to minimize human risk associated with the dam failure. The dam operator lives in the dam tender house adjacent to the dam, and is available in case of an emergency. The operator is also responsible for inspecting the dam daily.

The Lower Pitt-Taylor and Upper Pitt-Taylor Reservoirs are not continuously used for water storage. They are used during years of high precipitation for additional storage, but most years they are dry or have minimal storage. If these reservoirs failed, their contents would flow directly into Rye Patch Reservoir.

The Upper Slaven Diversion Dam, near the community of Battle Mountain, is a small diversion dam. The dam is not used for water storage, and does not pose a risk to downstream structures or populations.

3.6.1.2.3. *Recreational Safety*

Potential water safety issues on lands proposed to be transferred include boating accidents or drowning incidents related to water-related activities, including fishing, boating, and swimming at the Rye Patch Reservoir and along the Humboldt River. Hunting and fishing opportunities in the Humboldt Sink are sporadic because of fluctuating water levels.

Hunting occurs in the Battle Mountain Community Pasture, and in designated areas surrounding the Rye Patch Reservoir and Humboldt Sink during established hunting seasons. In accordance with State law, hunting is not allowed within 1,000 yards of any developed facility, including campgrounds and boat docks (Orr 2004a). A license is required to hunt within the State of Nevada. Anyone born after January 1, 1960, is required to provide proof of attendance of a Hunter Education class offered by NDOW.

3.6.2. Environmental Impacts

3.6.2.1. Proposed Action/Preferred Alternative

Under the Proposed Action, the use of hazardous materials within the project areas would be the same as that under the No Action Alternative. No increase in hazardous material use is expected. Operation and maintenance of the Humboldt Sink, the dams and reservoirs at Rye Patch, and grazing at the Community Pasture would remain unchanged. Entities receiving lands would be responsible for ensuring compliance for any hazardous release on their properties, and would be governed by applicable federal, state, and local laws and regulations. Potential safety issues related to flooding or recreational activities on lands to

be transferred would be the same as those for the No Action Alternative.

Under the Proposed Action, title to the Rye Patch Dam would transfer to the PCWCD. Reclamation would no longer have the responsibility for activities related to their internal Safety of Dams Program. The dam safety regulatory responsibility would formally transfer to the State of Nevada, and the dam safety ownership responsibilities would transfer to PCWCD. Liability for the structure and its operation would become the sole responsibility of the District.

Prior to title transfer, Reclamation would meet with the State Engineers Office and PCWCD to help facilitate an effective transfer of knowledge and responsibilities. Copies of all documents related to dam safety necessary for PCWCD and the State to assume their roles as owners and regulators of the facility would be made available before title transfer. Reclamation would meet with the parties preceding title transfer to provide a final summary of all dam safety issues and recommendations.

At the time of title transfer, the dam safety regulatory responsibility would formally transfer to the State of Nevada, and the dam safety ownership responsibilities would transfer to PCWCD. Liability for the structure and its operation would become the sole responsibility of PCWCD. As stated in Sec. 807(Liability) in P. L. 107-282, “Effective on the date of the conveyance required by Section 803, the United States shall not be held liable by any court for damages of any kind arising out of any act, omission, or occurrence relating to the Humboldt Project, except for damages caused by acts of negligence committed by the United States or by its employees or agents prior to the date of conveyance. Nothing in this section shall be considered to increase the liability of the United States beyond that currently provided in Chapter 171 of Title 28, United States Code, popularly known as the Federal Tort Claims Act.”

3.6.2.2. No Action Alternative

Under the No Action Alternative, hazardous material use and public safety issues would remain unchanged. Reclamation would be required to perform safety inspections of Rye Patch Dam and prepare Comprehensive Facility Reviews on a bi-annual basis. In addition, Reclamation would be required to update the Standing Operating Procedure Emergency Action Plan in compliance with the Safety of Dams Program.

3.7. RECREATION

3.7.1. Affected Environment

3.7.1.1. Humboldt Sink

Because of its remote location and lack of permanent resource staffing, management activities in the Humboldt Sink have been sporadic over the years. NDOW has developed a CMP to guide the long-term planning of the Humboldt Sink WMA (Bull and Richards 2003). Under optimal weather conditions (e.g., years with abundant water), the Humboldt WMA is popular for fishing, waterfowl and upland game bird hunting, as well as substantial “nonconsumptive” uses, such as wildlife viewing, photography, hiking, education, and scientific study (DCNR 2002). While no specific public use data is available for the Humboldt WMA, the Nevada Natural Resources Status Report indicates that the average annual “use days” for other WMAs range from a high of 47,000 for Mason Valley, located approximately 75 miles southeast of Reno, to a low of 1,800 for the Key Pittman WMA in southeastern Nevada (DCNR 2002).

Under optimal hydrologic conditions, waterfowl hunting dominates recreational activities at Humboldt WMA, with ducks being the primary waterfowl hunted (more than 99 percent). The majority of hunters

utilizing the Humboldt WMA reside in Washoe County (77 percent) with others coming from Pershing (7 percent), Lyon (6 percent), Humboldt (5 percent), and Nye (4 percent) Counties. Non-residents of the preceding counties make up the balance (1 percent) (Bull and Richards 2003).

Hunting for upland birds at Humboldt WMA is limited. While there are populations of ring-necked pheasant and California quail, access is limited because of the nearly impenetrable stands of tamarisk, an invasive species. Fish may be abundant during wet years, but because of the wide fluctuation of water levels, there is no long-term fishery in the Humboldt WMA. During extended dry seasons, most lakebeds in the Humboldt Sink are dry.

The CMP for the Humboldt WMA describes policy goals to improve access to the area both for hunting and wildlife viewing (Bull and Richards 2003). To assist with these goals, the State through NDOW is planning to use existing funds from Reclamation's Title 28 Program to construct new boat ramps, develop campgrounds and wildlife viewing areas, and improve access routes. NDOW is currently in the planning phase for these improvements, with an anticipated completion date of 2005. The proposed total cost of the project would be approximately \$230,000, with the Title 28 grant contributing approximately half of the estimated cost. Currently, there is a boat launch and primitive campground near the Toulon Lake Canal.

3.7.1.2. Rye Patch Dam and Reservoir

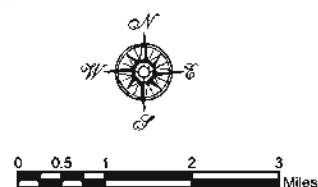
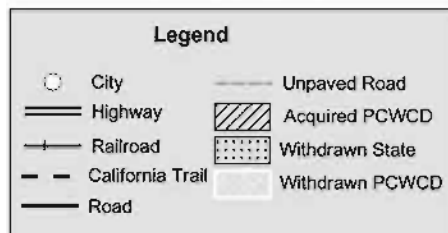
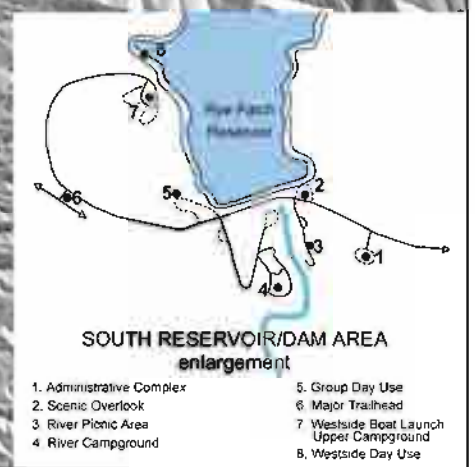
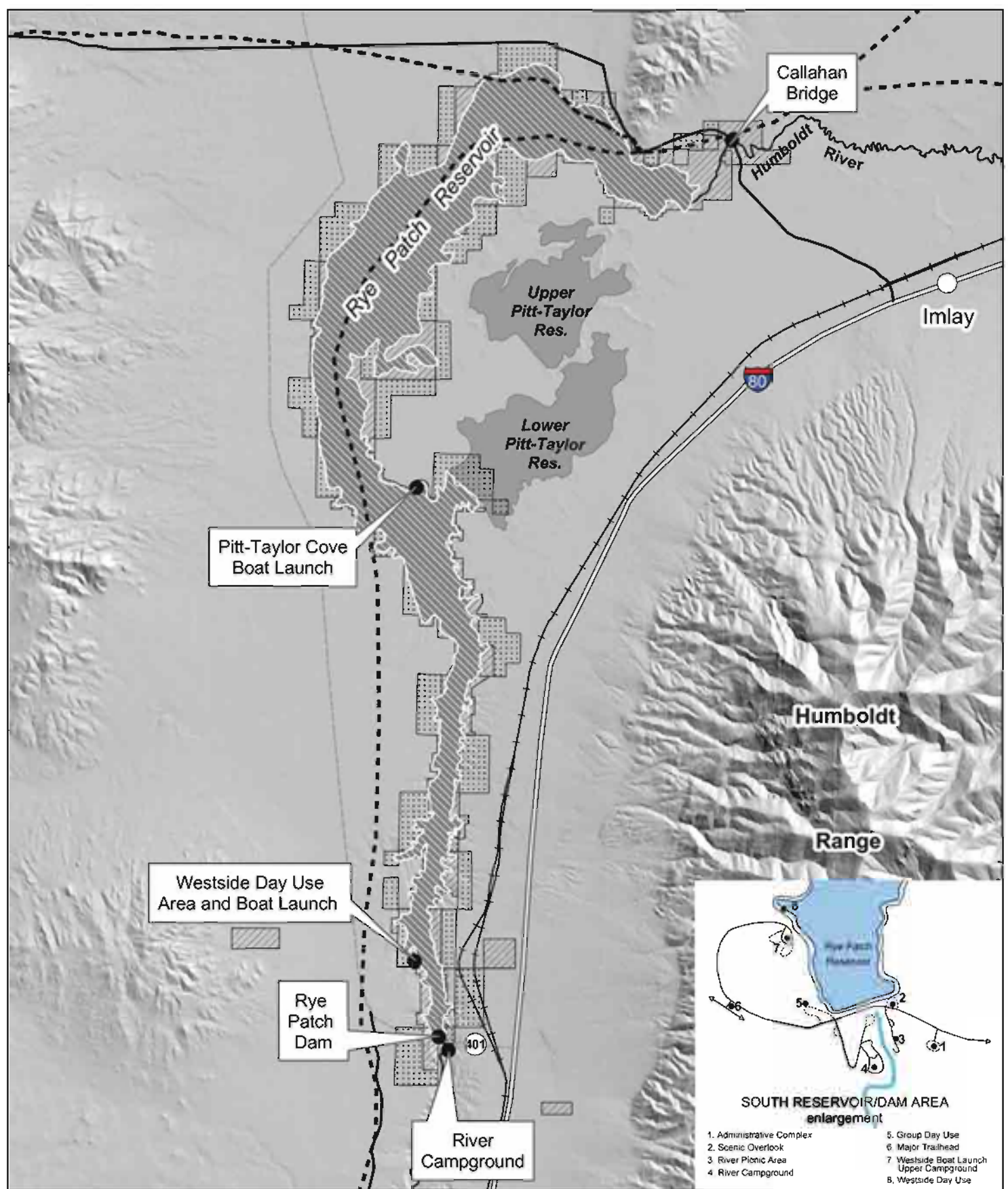
Prior to 1971, PCWCD operated limited recreational facilities in the Rye Patch Reservoir area. Since 1971, the State of Nevada has operated the Rye Patch State Recreation Area under a management agreement among State Parks, Reclamation, and PCWCD. Recreational activities include boating, water-skiing, and fishing on the reservoir itself; and picnicking, hiking, and camping along the shore and upland areas around the reservoir.

Most of the shoreline of the reservoir is open space and undeveloped, and can be used for camping. Developed recreational facilities are mostly concentrated around Rye Patch Dam. **Figure 3-4** shows the locations of these facilities.

At present, there are two campgrounds in the Rye Patch State Recreation Area. The River Campground is located below the dam along the Humboldt River, and includes 18 campsites with picnic tables, barbecues or fire rings, two double campsites, four ramadas, six water hydrants, a comfort station with showers, and two pit toilets. The Upper Campground is located near the boat launch, and includes 24 campsites with picnic tables, 12 water hydrants, and a comfort station, which is shared with the boat launch. Both the campground and boat launch provide reservoir access. A fee tube is used for deposit of camping fees for the developed and undeveloped sites along the reservoir perimeter.

There are two developed day-use/picnic areas near the dam. One site is below the dam and provides river access and overflow camping. The second area is above the dam on the northwest, and provides five picnic sites and a comfort station.

The Group Use Area, adjacent to the Upper Campground, includes a large ramada, group barbecue, comfort station, and parking, and can accommodate up to 100 people (Eissman et al. 1991). The developed areas above the dam consist of two of the concrete boat ramps and parking lots. A fish-cleaning station has recently been constructed near the ramp of the Upper Campground area. A third boat ramp, called the Pitt-Taylor Cove Boat Launch, and primitive day-use/campground have been built further upstream of the Rye Patch Dam near the Pitt-Taylor Dam. There is a primitive area at the upper reaches of the reservoir near Callahan Bridge that provides river access. There are no developed facilities



Humboldt Project Conveyance EIS

Figure 3.4: Rye Patch Recreation Map

Date: 01.16.05 File: Rye_Patch_Rec Author: djb

in this location.

Annual visitation to the Rye Patch State Recreational Area fluctuates with water levels within the reservoir. As shown in **Table 3.7-1**, prior to the recent drought, the number of visitors per year was approaching 100,000 (DCNR 2002). However, as a result of reduced water levels caused by the ongoing drought, the number of visitors declined to an estimated 56,000 in 2003. Although the overall number of visitors has declined, park staff has noted that the park is receiving increased visitation from the Reno-Sparks area (Orr 2004a).

TABLE 3.7-1 YEARLY VISITATION AT RYE PATCH STATE RECREATION AREA				
1996	1997	1998	1999	2000
84,756	82,611	79,908	82,239	94,188
Source: DCNR 2002				

In 1991, State Parks prepared a Development Plan for Rye Patch State Recreation Area. The plan included recommendations to improve and expand existing facilities in addition to constructing new recreational facilities and areas. **Table 3.7-2** below lists the proposed recommendations.

TABLE 3.7-2 PROPOSED DEVELOPMENTS AT RYE PATCH STATE RECREATION AREA	
AREA	IMPROVEMENTS
Below the Rye Patch Dam	Construct new picnic sites, restrooms, showers, and RV dump station. Develop River Interpretative Trail.
Above the Rye Patch Dam	On the eastern side of the Rye Patch Dam, improvements will consist of an informational kiosk, a trailhead for the River Interpretative Trail, and additional parking. At Upper Campground: Provide additional day-use/overflow camping area and develop a marine concession. At Westside day-use area: provide additional picnic sites and improve beach.
Numa Cove	Build new campground with 40 to 45 campsites, build restrooms with showers, and develop a reservation-only group camp with restrooms and showers.
Pitt-Taylor Cove	Improve boat launch; provide potable water, shade trees and landscaping; and develop eight to 10 picnic sites.
Callahan Bridge	Develop four to six picnic sites, restrooms, parking area, and a minor trailhead. Improve access to the area.
Source: Eissman et al. 1991	

The Development Plan also includes provisions to investigate the possible acquisition of private lands adjacent to the reservoir. In 2002, the people of the State of Nevada voted on and passed Question 1, which directs the State to sell bonds to develop recreational facilities within the State. Approximately \$1.8 million of current and future bond sales have been allocated to Rye Patch to implement the Development Plan (Weaver 2004). With the aid of Question 1 monies, State Parks recently purchased approximately 275 acres of land for the development of the Upper Campground/boat ramp parking lot. Future bond monies are proposed to be used for improving the Pitt-Taylor Campsite and developing the Numa Cove Campground.

State Parks collects a fee for entrance into the Rye Patch State Recreation Area. These fees are deposited into the State's General Fund. Although the fees offset some of the operating costs of the park, the amount collected (approximately \$50,000 per year) is not enough to support the park. Fees collected in the last few years have declined because of the low water conditions at the park (Orr 2004a). The budget for Rye Patch State Recreation Area, like other state parks, is made on a 2-year cycle and includes the anticipated amount needed for daily operations and maintenance. In addition, the State has an established

development plan and budget for Rye Patch. When State Parks received authorization to operate the Rye Patch Recreation Area, they received an initial grant, with additional funding provided as available. Since this time, the bulk of the development monies for improvements and health and safety additions were paid by Reclamation as Title 28 grants (Bray 2004).

3.7.1.3. Battle Mountain Community Pasture

Recreational resources in the Battle Mountain area consist of developed public and private facilities and open rangelands that may be accessed for recreational uses.

The Battle Mountain Community Pasture is primarily used for livestock grazing by PCWCD patrons. Since the 1970s, it has been PCWCD's operational policy that the pasture gates not be locked, and public access is permitted when cattle are not present. The most common recreational use within the Community Pasture is hunting, mostly waterfowl, deer, and some upland game birds. While the Humboldt River can be accessed through the Community Pasture, fishing opportunities are limited in this section of the river. Outside the Community Pasture area, the Town of Battle Mountain has developed other recreational resources listed in **Table 3.7-3**.

TABLE 3.7-3 BATTLE MOUNTAIN RECREATIONAL RESOURCES		
Name	Location	Facilities
Livestock Events Center	North Reese	Rodeo grounds and grandstands Livestock holding and viewing area
The Mountain View Golf Course	On Highway 305, approximately 1- mile south of Battle Mountain	Nine-hole golf course
The Copper Basin Mountain Bike Trail	Off of Highway 305, approximately 3 miles south of Battle Mountain	Facility on BLM land consisting of multiple trails ranging from 5- to 8.25-mile loops
Elquist Park	561 Altenburg Avenue	Covered areas, picnic tables, barbeques, volleyball court, and playground
Lion's Park	North Reese Street	Covered area, picnic tables, barbeques, horseshoes, playground
Spring Canyon Park	E. Antelope & Bryson	Covered area, picnic tables, barbeques, playground
Borealis Park	Bastain Road	Covered area, picnic tables, barbeques, volleyball, basketball, playground
Battle Mountain Sports Complex	Lemaire Road	Two lighted tennis courts, skate park, lighted baseball fields, restrooms, and concession stand Two lighted soccer fields and "fastpitch" ball field are planned
RCA flying field-Sage Trimmers	Dump Road	Remote control airplane flying field, bleachers, suncovers on pit area
Lander Gun Club	Dump Road	Pistol and rifle range out to 300 yards, three trap layouts
ATV/Moto Cross Track	Airport Frontage Road	Dirt track
Battle Mountain Race Track	Airport Frontage Road	IMCA-sanctioned Circle Track (dirt track, lighted, grandstands, restrooms, concession stands)
Source: Peterson 2004		

3.7.2. Environmental Impacts

3.7.2.1. Proposed Action/Preferred Alternative

3.7.2.1.1. *Humboldt Sink*

Under the Proposed Action, project lands currently operated as part of the Humboldt WMA would transfer from federal ownership to the State of Nevada with a small portion transferred to Pershing County for airport expansion. NDOW would continue to manage the Humboldt WMA. The title transfer is an administrative action and, as such, there would be no changes or impacts to recreation or recreational resources resulting from the transfer of land to the State. Management of these lands would be governed by provisions of NRS 501.65 and NRS 501.181, which establish policies and regulations for preservation, protection, management, and restoration of fish and wildlife habitat under State jurisdiction.

Approximately 990 acres adjacent to Derby Airfield would be transferred to Pershing County. While the airfield is adjacent to the Humboldt WMA, no recreational resources have been identified on these lands. There would be no changes or impacts to recreation or recreational resources resulting from the transfer of land to Pershing County.

3.7.2.1.2. *Rye Patch Dam and Reservoir*

Under the Proposed Action, the State of Nevada would receive withdrawn lands above the high-water mark of the reservoir and would continue to manage current and future recreational use and development at the reservoir under an agreement with PCWCD. Therefore, under the Proposed Action, recreation use is not expected to change. Because the Rye Patch State Recreation Area would no longer be located on federal lands, State Parks would not be eligible to receive new Title 28 monies for future capital improvements. State Parks is eligible to receive State funding under existing natural resources programs, such as the 2002 Question 1 bond, for conservation and resource protection. However, the monies that have been allocated to Rye Patch are to be used to fund facilities development, not operations and maintenance (Weaver 2004).

Under the Proposed Action, PCWCD would receive all acquired lands, in addition to all withdrawn lands beneath the Rye Patch Reservoir. The largest potential impact to recreation from the proposed title transfer is associated with the level of the reservoir itself. As part of the operational criteria developed for the transfer agreement, at least 3,000 acre-feet will be maintained as a minimum operational pool in Rye Patch reservoir. To maintain the minimum pool, PCWCD would reduce or cease all releases when the reservoir reaches a minimum of 3,000 acre-feet of storage.

3.7.2.1.3. *Battle Mountain Community Pasture*

The Proposed Action would transfer acquired lands within the Battle Mountain Community Pasture from Reclamation to PCWCD, the State of Nevada, and Lander County. PCWCD would receive title to approximately 22,500 acres within the Battle Mountain Community Pasture to be managed and operated for grazing purposes. Currently, PCWCD allows members of the public to use the property for recreational activities, including hiking, bird watching, and hunting and fishing when such activities do not directly conflict with livestock grazing operations.

Under the Proposed Action, the State of Nevada would receive title to approximately 5,850 acres of land in the Community Pasture for the potential development of a wetland. It is NDOW's goal to restore a wetland régime for this area, but specific management plans, including the acquisition of water sources

for the area, have not been finalized. Transferring lands to the State of Nevada is expected to enhance recreational opportunities in the Community Pasture.

Lander County would receive title to approximately 1,100 acres of Community Pasture lands. Proposed recreational opportunities include the development of a primitive day-use area and parking area adjacent to the Humboldt River, a dedicated easement along the river, and expansion of the Livestock Events Center. No facilities are proposed to be developed at the day-use area, but it would provide access to the Humboldt River. The easement along the river would allow public access to the river and offer hiking and wildlife viewing opportunities. The proposed park, easement, and future expansion of the Livestock Events Center would increase recreational opportunities in Lander County and would have a net positive effect on recreation resulting from the Proposed Action.

3.7.2.2. No Action Alternative

Under the No Action Alternative, recreational opportunities would remain unchanged in the Humboldt Sink and Rye Patch Reservoir areas. State Parks would continue to manage the Rye Patch State Recreation Area under a tri-party agreement with Reclamation and PCWCD. Portions of lands in the Battle Mountain Community Pasture would not be transferred to the State of Nevada or Lander County. Proposed recreational enhancements by Lander County for the development of a primitive day-use and parking area adjacent to the Humboldt River, a dedicated easement along the river, and expansion of the Livestock Events Center would not occur.

3.8. SOCIOECONOMICS

3.8.1. Affected Environment

The Humboldt Project lies within three Nevada counties: Pershing, Lander, and Churchill. The small portion in Churchill County is vacant land, and there are no proposed actions or foreseeable changes to these parcels. Therefore, this analysis addresses existing socioeconomic conditions and trends, including population, housing, employment, public services, and utilities within the two primary Counties of Pershing and Lander.

3.8.1.1. Population and Population Trends

Official estimates from the 2003 Nevada State Demographers Office list Pershing County's population at 6,967 and Lander County at 5,277. The two identified towns within Pershing County are the incorporated City of Lovelock and the unincorporated town of Imlay. The City of Lovelock is located approximately 22 miles south of the Rye Patch dam and reservoir and approximately 10 miles north of the northern extremity of the Humboldt Sink area. There are no incorporated cities in Lander County, but the county's population is generally concentrated in three unincorporated towns, including Battle Mountain, Austin, and Kingston. Battle Mountain is the largest town in the county, and lies adjacent to the Battle Mountain Community Pasture.

Table 3.8-1 below presents year 2000 U. S Census population data and ethnic composition for Pershing and Lander Counties, and for the major population centers for each county. Because of recounts to the 2000 U. S. Census, the 2003 Nevada State Demographers Office population data differs from the U.S. Census data. **Table 3.8-2** following presents the population composition percentages for each county.

TABLE 3.8-1 ETHNIC COMPOSITION OF MAJOR POPULATION CENTERS				
Ethnicity	Pershing County	Lander County	City of Lovelock	Town of Battle Mountain
White	4663	4385	1314	3971
Black or African American	356	10	16	5
American Indian and Alaska Native	203	216	124	211
Asian	34	20	6	17
Native Hawaiian and other Pacific Islander	13	2	4	2
One Race Total	5269	4633	1464	4206
Two or More Races	126	81	54	77
Total	5395	4714	1518	4283
Source: US Census Bureau, 2000 Census Data				

TABLE 3.8-2 COUNTY POPULATION COMPOSITION		
Ethnic Identity	Pershing County-Percent of Total	Lander County-Percent of Total
White	86.4	93
African American	6.6	0.21
Native American	3.8	4.6
Asian or Pacific Islander	0.89	0.47
Other	2.31	1.73
Hispanic Heritage ¹	19.3	18.5
Source: US Census Bureau, 2000 Census Data		
¹ Persons of Hispanic heritage may be of any race		
Because of rounding, the Lander County percentages add up to more than 100 percent.		

3.8.1.2. Housing

Pershing County is sparsely populated with the major population center located in Lovelock and a few unincorporated communities along the Interstate 80 corridor. The remainder of Pershing County's population consists of individual farms and ranches. There are isolated farms and ranches near the Humboldt Sink area, but there are no residential areas on lands proposed to be transferred.

Single-family dwelling units predominate most of Pershing County. Most new homes are mobile or manufactured versus brick- or wood-constructed homes. There are also apartments and multi-family dwelling units within the City of Lovelock.

Imlay is the nearest community to the Rye Patch Reservoir project area, with a few individual ranches to the west and north of the project area. The dam tender's house is the only permanent residence on project lands in Rye Patch.

Like Pershing County, Lander County is sparsely populated outside of the communities of Battle Mountain, Austin, and Kingston, with housing consisting of individual ranch houses and other farm-related buildings. The Battle Mountain Community Pasture is adjacent to the Town of Battle Mountain, and most of the area housing is located south of the project area with some scattered ranches located northeast of the project area.

Single-family homes predominate the Battle Mountain area and the remainder of Lander County, with apartment complexes found only within the unincorporated town of Battle Mountain. According to the Lander County Commissioner's office, no new permits were issued for brick or wood constructed housing in the Battle Mountain area in the last 2 years (Hinze 2004). All new permits were for mobile homes placed on concrete pads.

3.8.1.3. Employment and Unemployment

Employment data is available for Pershing County as a whole. The major sources of employment in Pershing County are agriculture, mining, construction, government (local, state, or federal), and retail and services. **Table 3.8-3** lists the top non-farming labor sectors in Pershing County according to the Nevada Commission of Economic Development. **Table 3.8-4** list the major employers in Pershing County.

TABLE 3.8-3 EMP-1 MAJOR NON-AGRICULTURAL LABOR SECTORS IN PERSHING COUNTY	
Industry	Employees
Government	760
Mining	590
Trade	300
Service	120
Manufacturing	50
Construction	20
Source: Nevada Department of Employment, Training and Rehabilitation 2000a	

TABLE 3.8-4 EMP-2 MAJOR EMPLOYERS IN PERSHING COUNTY	
Employer	Number of Employees
Coeur Rochester Industries	300
Eagle-Picher Industries	200
Pershing County School District	200
Consolidated Land and Livestock	100
Brinkerhoff Ranch, Inc.	100
Western Nevada Cattle Feeders	100
Ryepatch Truck Stop	100
Ro-Mark Pallet, Inc.	100
Fundis Company	100
Source: Nevada Department of Employment, Training and Rehabilitation 2000a	

Unemployment data for Pershing County for the year 2003 ranged from a high in March of 6.4 percent to a low of 4.1 percent in November. However, reflecting on the "boom-and-bust" cycle of mining, Pershing County's unemployment rate over the last decade ranged from a high of 7.6 percent to a low of 1.6 percent (Pomerening 2004).

Table 3.8-5 shows the top employment sectors for Lander County and **Table 3.8-6** shows the top employers in the Battle Mountain area.

TABLE 3.8-5 EMP-3 MAJOR NON-AGRICULTURAL LABOR SECTORS IN LANDER COUNTY	
Industry	Employees
Mining	640
Government	580
Trade	390
Service	110
Manufacturing	40
Construction	30
Source: Nevada Commission of Economic Development 2000b	

TABLE 3.8-6 EMP-4 MAJOR EMPLOYERS IN BATTLE MOUNTAIN	
Employer	Number of Employees
Cortez Gold Mine	450
Newmont Mining Corp	150
Lander County School District	142
Lander County	125
Battle Mountain General Hospital	86
M-I Drilling Fluids Company	74
BLM	70
Etcheverry Food Town	48
Costal Chemical, Inc.	34
Source: Nevada Department of Employment, Training and Rehabilitation 2000b	

During 2003, unemployment started high at the beginning of the year, with a 9.1 percent rate in January, falling to a low of 5.3 percent in August and rising to 5.5 percent at the end of the year.

Like Pershing County, Lander County's long-term employment/unemployment rates fluctuated greatly with the fortunes of the State's mining industry (Harris 2004). Unlike Pershing County, however, the overall unemployment rate has been consistently high, with the lowest rates remaining greater than 5 percent.

3.8.1.4. Police, Fire and Emergency Services

3.8.1.4.1. Police

Police protection in Pershing County is provided by the City of Lovelock Police Department and the Pershing County Sheriff's Department. The Lovelock Police patrol area is within the city limits, with the Sheriff's Department patrolling the remainder of the county. In addition, all police, fire, and emergency dispatch duties within Pershing County are carried out by the Sheriff's Department.

The Sheriff's Department is headquartered in the City of Lovelock. None of the lands proposed for transfer are within the city limits of Lovelock. Security patrol for the Rye Patch State Recreation Area is the responsibility of Nevada State Park employees, with the support of the Sheriff's Department. While law enforcement on the Humboldt WMA is administered through NDOW's Law Enforcement Bureau, the Sheriff's Department does patrol and respond to emergency calls.

The Lander County Sheriff's Department provides police protection to all of Lander County, including lands in the Battle Mountain Community Pasture (Davis 2004). The department is headquartered in Battle Mountain with a substation in the town of Austin. The Battle Mountain Band of the Te-Moak Tribe is served by the tribal police.

3.8.1.4.2. *Fire and Emergency Services*

Two volunteer fire departments serve the Rye Patch area. The first responding department is the Rye Patch Volunteer Fire Department. The Lovelock Volunteer Fire Department is the second responding department, which responds for medical emergencies.

The Battle Mountain Volunteer Fire Department provides fire protective services to the Battle Mountain area, including areas located on project lands (Killeen 2004). The Battle Mountain Ambulance Department provides emergency medical transport for the Battle Mountain area. The ambulance department has a full-time paid coordinator, but ambulance response personnel are volunteers. Battle Mountain is the location of the county's 25-bed Battle Mountain General Hospital.

3.8.1.5. Utilities

3.8.1.5.1. *Electric*

Sierra Pacific Power Company is the electric power provider in both Pershing and Lander Counties. Power generation facilities in the region include the North Valmy Power Plant west of Battle Mountain and a geothermal plant west of Winnemucca. There is an electrical power substation located in the Battle Mountain Community Pasture. This substation is owned and maintained by Sierra Pacific Power Company. There are electric transmission and distribution lines on or near project lands throughout all three project areas.

3.8.1.5.2. *Gas*

The areas near Rye Patch and the town of Imlay are not serviced by natural gas. Four private firms deliver propane within Pershing County. An underground natural gas pipeline runs along the east side of Rye Patch reservoir largely on adjacent lands, though it does cross project land (Tetra Tech 2004). No other natural gas pipelines near project lands were identified.

Southwest Gas Company provides natural gas service within the unincorporated Town of Battle Mountain. However, homes outside of town use propane delivered by one of two private providers.

3.8.1.5.3. *Water Service*

The Lovelock Meadows Water District serves the majority of the general project area within Pershing County. The water district covers a total area of approximately 250 square miles, stretching from Oreana in the north to Derby Field in the south and about 4 miles east and west from Lovelock. Residents not served by the Lovelock Meadows Water District rely on private wells. Within the Town of Battle Mountain, water is provided by the Battle Mountain Water and Sewer Department, with outlying residents using private wells (Snap 2004).

There are two groundwater wells at Rye Patch Reservoir for potable use. One is located on lands owned by the PCWCD, and is used for the park office, ranger station, ranger's residence, and the PCWCD Dam Tender's residence. The other is located on lands to be transferred, west of the dam. It provides potable water to the group-use area, trailer dump station, the River Campground and all Westside facilities (Hodges 2004, Tetra Tech 2004). There are no groundwater wells on project lands in the Humboldt Sink.

3.8.1.6. Property Values and Tax Revenue

"Payments in Lieu of Taxes" (or PILT) are federal payments to local governments that help offset losses

in property taxes caused by nontaxable federal lands within their boundaries. Public Law 94-565, dated October 20, 1976, is the key law that established these payments. This law was rewritten and amended by Public Law 97-258 on September 13, 1982, and codified at Chapter 69, Title 31 of the United States Code. The law recognizes that the inability of local governments to collect property taxes on federally-owned land can create a financial impact.

Congress appropriates PILT payments each year. The BLM administers the program for the Department of the Interior. The BLM allocates payments according to a formula in the PILT Act that includes population, receipt-sharing payments, and the amount of federal land within an affected county. These payments are additional to other federal revenues (such as oil and gas leasing, livestock grazing, and timber harvesting) that the federal government transfers to the states. BLM's responsibility is to calculate payments according to formulas established by law and to distribute the funds in an equitable manner.

PILT payments are made annually for tax-exempt federal lands administered by the Department of the Interior, including BLM, National Park Service, U.S. Fish and Wildlife Service, and Reclamation. In addition, PILT payments are made annually by the U.S. Forest Service (part of the U.S. Department of Agriculture), and some military installations.

Table 3.8-7 below lists the amount of PILT-eligible lands in Churchill, Pershing, and Lander Counties for the last 5 years, the amount of Reclamation land within that acreage, and the amount paid to each county.

TABLE 3.8-7 PILT PAYMENTS OVER LAST 5 YEARS			
	Total Federal Acreage	Reclamation Acreage	PILT Payment
Churchill County			
2000	2,143,895	8,346	\$649,397.00
2001	2,143,895	8,346	\$955,700.00
2002	2,143,755	8,346	\$1,003,277.00
2003	2,143,755	8,346	\$1,151,139.00
2004	2,143,755	8,346	\$1,183,436.00
Pershing County			
2000	2,929,129	19,180	\$263,194.00
2001	2,929,129	19,180	\$466,127.00
2002	2,928,779	19,180	\$489,334.00
2003	2,928,779	19,180	\$561,467.00
2004	2,928,779	19,180	\$577,210.00
Lander County			
2000	3,335,585	29,884	\$324,916.00
2001	3,335,585	29,884	\$424,277.00
2002	3,335,384	29,884	\$445,999.00
2003	3,335,185	29,884	\$454,824.00
2004	3,335,185	29,884	\$467,597.00
Source: U. S. Department of the Interior 2004			

As shown in the above table, although the amount of federal lands is stable, the size of the PILT Payment can vary from year to year depending on the formula used by the BLM.

Table 3.8-8 below shows, for each county, what percentage of the county's total federal lands are Reclamation lands, and, based on that percentage, an estimate of the amount of PILT monies from Reclamation land.

TABLE 3.8-8 RECLAMATION LAND PERCENTAGE AND PILT PAYMENT 2000 TO 2004		
	Reclamation Land Percentage	Reclamation PILT Payment
Churchill County		
2000	0.389	\$2528.05
2001	0.389	\$3720.46
2002	0.389	\$3905.93
2003	0.389	\$4481.58
2004	0.389	\$4607.32
Pershing County		
2000	0.655	\$1723.92
2001	0.655	\$3053.13
2002	0.655	\$3205.14
2003	0.655	\$3677.61
2004	0.655	\$3780.03
Lander County		
2000	0.896	\$2911.25
2001	0.896	\$3801.52
2002	0.896	\$3996.15
2003	0.896	\$4075.22
2004	0.896	\$4189.77
Source: U. S. Department of the Interior 2004		

3.8.2. Environmental Impacts

3.8.2.1. Proposed Action / Preferred Alternative

3.8.2.1.1. Police Protection

The State currently provides security services at Rye Patch Reservoir with support from the Pershing County Sheriff's Department. An agreement between the State and PCWCD will be necessary to continue to enforce park regulations when title transfer occurs. This policing/security agreement will recognize the enforcement authority of State personnel within the Rye Patch State Recreational area regardless of the ownership of the land.

3.8.2.1.2. Water Service

Any proposed development of the parcel next to the treatment plant being transferred to Lander County would require water and sewer services. The area is currently outside of the Battle Mountain Water and Sewer Department's service area. However, it is adjacent to existing water and sewer lines that currently have (or, with already planned improvements, will have) the capacity to be connected without impacting water or sewer services.

3.8.2.1.3. PILT Payments

Under the Proposed Action, project lands located within Pershing, Lander, and Churchill Counties will transfer to PCWCD, the State of Nevada, Pershing County, and Lander County. With the transfer, these lands would be removed from each of the counties' PILT payment calculation. As political entities, lands transferred to PCWCD and the State of Nevada would be exempt from property tax. Therefore, the size of the PILT payments made to Pershing, Lander, and Churchill Counties would decline.

The acreage proposed for transfer to Pershing County is adjacent to Derby Field, the county's airport.

Pershing County is planning to develop an Airport Master Plan, which may increase economic development in the area. Improvements to the airport and development of the land surrounding the airport may provide additional revenues to Pershing County that could eventually offset the loss of revenues from the reduced PILT payment (Mora 2004).

The 1,100 acres being transferred to Lander County includes the Livestock Events Center and surrounding area, a maintenance building used by PCWCD, a parcel proposed for use as a primitive day-use and parking area, an access easement along the Humboldt River, and the 932-acre parcel adjacent to the sewage treatment plant. Plans for the parcel next to the river are to develop a county park. County lands are also exempt from property tax. The Livestock Events Center is designated as a governmental (county) facility, and it too would be exempt from property tax, however sales taxes would be generated during facility events. The parcel next to the sewage treatment plant is designated Industrial by Lander County, and plans for the parcel are to make it available for commercial development.

The land planned for the park would be exempt from property tax, and as a primitive park would not likely generate any additional user fees or related revenues. Future expansion of the Livestock Events Center is envisioned to accommodate larger events. While exempt from property tax, the Livestock Events Center provides a source of sales tax and other revenues. Improvements to the center could increase revenue-generating activities.

Because Lander County is planning to open the parcel next to the sewage treatment plant for commercial development, this property may be subject to future property taxes and additional sales tax revenues. Local assessment of property for tax purposes is usually higher than that for the PILT formulation. Therefore, future private development of this parcel may eventually offset any reduction in PILT payments resulting from the transfer (Powrey 2004).

3.8.2.2. No Action Alternative

Under the No Action Alternative, the United States would continue to hold title pursuant to its contract(s) with PCWCD. PCWCD would continue to manage the lands according to the purposes for which the Project was authorized, subject to applicable agreements and contracts with the State and Reclamation. The amount of federal land included in either county PILT payment calculation would not change. Payment amounts to either county would continue to be subject to the formula used by the BLM.

Transfer of lands to the State of Nevada for wetlands development in the Battle Mountain Community Pasture would not occur. Transfer of the lands adjacent to the sewage treatment plant for commercial development and recreational enhancements by Lander County, including the development of a primitive day-use area and parking area adjacent to the Humboldt River, a dedicated easement along the river, and the expansion of the Livestock Events Center would not occur. Reclamation lands within the Humboldt WMA and in the Rye Patch area would not be transferred to the State. Pershing County would not receive adjacent parcels in the Humboldt Sink for future expansion of the Derby Field.

3.9. ENVIRONMENTAL JUSTICE

Environmental justice refers to the fair treatment of peoples of all races, income levels, and cultures with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no person or group of people should shoulder a disproportionate share of negative impacts resulting from the execution of federal programs.

Executive Order 12898, dated February 11, 1994, establishes the achievement of environmental justice as a federal agency priority. The memorandum accompanying the order directs heads of departments and

agencies to analyze the environmental effects of federal actions, including human health, economic, and social effects when required by NEPA, and to address significant and adverse effects on minority and low-income communities.

3.9.1. Affected Environment

Population, employment, and economic data for Pershing and Lander Counties are presented in **Section 3.8**. Both counties have a low minority population. Median household incomes are consistent with overall statewide averages. Although employment in the counties fluctuates with the cyclic nature of the mining industry, neither county has a greater proportion of low-income families than the State as a whole.

There are two Native American tribes located near project lands. Native American populations in both counties comprise less than 4 percent of the total population. In Pershing County, the Lovelock Paiute Tribe is located near the City of Lovelock, and more than 5 miles from the project area. In Lander County, the Battle Mountain Band of the Te-Moak Tribe resides on lands adjacent to the project area.

3.9.2. Environmental Impacts

3.9.2.1. Proposed Action/Preferred Alternative

Under the Proposed Action, the State of Nevada and Pershing County would receive withdrawn lands in the Humboldt Sink, and the PCWCD and State of Nevada would receive lands in the Rye Patch area. There are no substantial populations in these areas. Therefore, the Proposed Action will have no impacts on environmental justice issues in these areas.

The Battle Mountain Te-Moak Tribe is located adjacent to the lands proposed to be transferred to Lander County. This parcel is currently zoned industrial. In the future, Lander County may develop an industrial park on this 932-acre parcel. However, these decisions are speculative at this time. Development of this parcel will depend on a number of future political, planning, zoning, and economic factors. At this time, the Proposed Action is not expected to adversely impact environmental justice issues in the Battle Mountain area.

3.9.2.2. No Action Alternative

Under the No Action Alternative, impacts to environmental justice would not occur.

3.10. PALEONTOLOGICAL RESOURCES

3.10.1. Affected Environment

No paleontological field surveys have been conducted specifically for the purposes of the Proposed Action. However, in 1978, the BLM Winnemucca Field Office (WFO) contracted with a local paleontologist to conduct a literature review and document previously known paleontological resources within the WFO boundary (BLM 2004). According to this study numerous paleontological localities have been identified within the Humboldt River watershed.

The Humboldt River, as is Winnemucca Lake, Honey Lake, Pyramid Lake, and Walker Lake are remnants of Lake Lahontan, a prehistoric lake that existed during the ice age. At the end of the Pleistocene Epoch, the receding lake left remains of fossilized trees, single-celled plants and mammalian vertebrates within the remaining playas and remaining lakes. Most abundant are corals and shell fossils,

including brachiopods, pelecypods, gastropods, and cephalopods. Excavations near Rye Patch dam and the Rye Patch KGRA have yielded late Pleistocene elephant, horse, camel, and rodents (BLM 2004). One of the more notable late Pleistocene sites on the east shore of Rye Patch Reservoir (26PPE23) has been documented by Green and Rusco (1978) and Firby et al. (1987). Site 26PPE23 consists of disarticulated Rancholabrean fauna dominated by horse and camel in sand-filled spring throat deposits. These deposits are capped by sediments from the last high stand of Lake Lahontan (13,000 to 20,000 B.P.) and have been dated to 20,000-30,000 B.P. (Firby et al. 1978). The west side of the Humboldt Range has yielded fossils such as ichthyosaurs, sharks, ammonites, pelecypods, brachiopods, and hermatypic corals (BLM 2004). Known fossils in the region are common taxa that have relatively broad regional distribution. To date, no unique or unusually rich localities have been reported.

3.10.2. Environmental Impacts

3.10.2.1. Proposed Action/Preferred Alternative

The Proposed Action may include limited surface disturbance on lands transferred to Lander County for the development of a primitive day-use area, adjacent 1-acre parking area, and the Humboldt River easement for river access. In addition, Lander County will receive a 932-acre parcel adjacent to the existing sewage treatment plant for future industrial development. At this time, no developments plans have been identified. Pershing County will receive approximately 990 acres of lands for expansion of Derby Airfield. However, at this time, the timeframe for airport expansion has not been identified. The State will receive approximately 5,850 acres of land within the Community Pasture for wetland development. No wetland development plans have been identified. Planned surface disturbance for the entire 83,530 acres to be transferred is minimal, therefore potential effects to possible paleontological resources is very low.

3.10.2.2. No Action Alternative

Under the No Action Alternative, the title transfer would not occur and lands would continue to be held by the United States and managed by Reclamation. Therefore, no significant impact to paleontological resources would occur.

3.11. CULTURAL RESOURCES

Cultural resources are physical expressions of human activity or occupation. Such resources may include culturally significant landscapes, prehistoric and historic archaeological sites, districts, and isolated artifacts or features, historic structures, and traditional cultural properties (TCPs). TCPs are sites or areas of important cultural value to existing communities. Historic properties are cultural resources that are eligible or listed on the National Register of Historic Places (NRHP). The National Historic Preservation Act (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (Council) an opportunity to comment on such undertakings. Native American human remains, funerary and sacred objects, and objects of cultural patrimony from federal lands are also subject to the Native American Graves Protection and Repatriation Act (NAGPRA). The Archaeological Resources Protection Act (ARPA) protects archaeological resources on federal land.

3.11.1. Affected Environment

Approximately 160 prehistoric and historic cultural resources have been identified within the title transfer area through a search of existing records. Prehistoric site types include rock shelters, habitation sites,

limited activity sites, petroglyphs, lithic quarries, and artifact scatters. Historic sites are typified by the activities that drew Anglo settlers to the project area. Sites dating to the historic period and related to the Anglo presence include trails, towns, ranches, water conveyance features, mines, and railroads. Sites that date to the contact period and sites that represent historic, post-contact aboriginal use are also identified within the project area.

3.11.1.1. Cultural History

The following description of the cultural history of the project area is summarized directly from existing literature, including other environmental studies conducted in the local area. Primary sources utilized to summarize the project area's culture history include: D'Azevedo (1986), Elston (1986), Fowler and Liljeblad (1986), Grayson (1993), Smith et al. (1983), Steward (1938), Thomas et al. (1986), Autobee (1993) and BLM (2004).

Paleoindian (11,200–10,900 B.P.). The widely-known Clovis culture dates to this period. Clovis has been typified by large, distinctive, fluted projectile points that may have been used to hunt now-extinct large mammals. Clovis has not been identified in the Great Basin, but is more widely known from sites in the southwest and the plains. There are fluted points within the Great Basin, but there is some question as to their specific date of use. These projectile points are commonly found on the surface, and with no stratigraphy to examine, it is impossible to conclusively date the artifacts. However, the fluted points of the Great Basin are typically associated with the earliest occupations of the region. In addition to this chronological question, variability in form of Great Basin fluted points when compared with typical Clovis points further confuses their relationship to the traditionally identified Clovis culture.

At Rye Patch Reservoir deposits of Pleistocene megafauna and, though not associated, very early artifact assemblages (assumed to date back to 10,000 to 12,000 years ago) have been found. Fragments of large, concave-base projectile points were found at the Old Humboldt Site (Rusco and Davis 1987). These points are similar in several aspects of workmanship and design to Clovis points, which have been found in other regions associated with extinct Pleistocene megafauna.

Paleoarchaic (10,900–7500 B.P.). A drying trend began in the Paleoarchaic period, causing large Pleistocene lakes to reduce to smaller shallow lakes or marshes. Evidence of human occupation tend to cluster around these areas or around watercourses that flow into shallow lakes and marshes. However, evidence of human occupation from this period has also been identified in a variety of environments, indicating a broadening of the resource base, possibly in response to the disappearance of megafauna. Great Basin Stemmed points occur during this period, and are actually represented by local variations in point form. However, because the projectile points share so many characteristics, they are often grouped together and referred to as Great Basin Stemmed. Such points have been recovered from the Old Humboldt site at Rye Patch Reservoir (Rusco and Davis 1987).

In addition to these points, crescent-shaped points or tools are also common. Such crescents are found in the Great Basin and the Mojave Desert, and may have been used to stun birds. In fact, it is unclear if these crescent-shaped points were first produced in the Paleoarchaic, or in the preceding Paleoindian period. In any event, the points are part of a Paleoarchaic tool kit that also includes large bifacial knives, graters, punches, chopping tools, scrapers, and occasionally, metates and manos. The appearance of metates and manos may also indicate a widening of the resource base away from large game, with more of the subsistence base relying on locally available seed-producing plants. A good example of the Paleoarchaic tool kit can be found at Sadmat site in the Carson Sink (south of the project area on the east side of the Mopung Hills) (Tuohy 1968).

Early Archaic (7500–4000 B.P.). The drying trend from the previous Paleoarchaic period continued and intensified during this period. Low-elevation lakes and marshes largely dried, increasing the necessity of

a broad-based subsistence strategy. Desert, mountain, and riverine resource were utilized, and this period saw an increase in the use of grinding tools such as manos and metates.

During this period, evidence for occupation in the region surrounding the project area is sparse. However, the Lahontan Basin and the area around Winnemucca Lake do exhibit some sites from this period. The Lahontan Basin includes the area around the City of Fallon and northward, including the Carson Sink; Winnemucca Lake is located approximately 40 miles west of the Humboldt Sink and is currently a dry lake. Some sites along Winnemucca Lake, such as Shinners Site I in Falcon Hill (Guano Cave), Cowbone Cave (Heizer and Hester 1978; Hattori 1982), Leonard Rockshelter (Grosscup 1958; Heizer and Hester 1978), and Silent Snake Springs date to this period. Occupation of Lovelock Cave (just south of the town of Lovelock) begins during this period and intensifies during the subsequent Middle Archaic period. Humboldt- and Gatecliff-type projectile points are known from this period.

Middle Archaic (4000–1500 B.P.). Occupations throughout the region of the project area intensify during this period. Caches become well-known at the early stages of this period. Cave sites tend to be used to cache, or store, important food-processing tools and other items to be used during a seasonal round where groups of people move over the landscape in an organized fashion to exploit various resources as they come into season. Groups were wide-ranging, and exploited resources of many ecotones. Tool types and projectile point styles did not alter drastically during the transition from the Early to Middle Archaic periods, but settlement and subsistence patterns did shift. This is most likely because of increased moisture during this period, which “re-created” shallow lakes and marshes.

Sites with evidence of longer occupations are more typical of this period, as the use of pithouses became more common. Projectile points typical of this period include Northern Side-notched, Elko, and Gatecliff types. Distinctive basketry known as Lovelock Wickerware appears during this period, as do certain styles of rock art (Heizer and Baumhoff 1962) and a wider-ranging trade network. Use of cache sites continued during this period, but they also began to exhibit pithouse features. In addition to occupations along the Humboldt River and the Winnemucca Lakes area, sites in and around the current location of the Rye Patch Reservoir date to this period.

Late Archaic (1500–200 B.P.). The bow and arrow replaced the atlatl during this period. Correspondingly, projectile point styles changed to suit this new technology. Projectile points become smaller, and triangular-shaped points become the norm for several hundred years (Rose Spring and Eastgate types). After Rose Spring- and Eastgate-type projectile points, Desert Series points become characteristic. Subsistence strategies continued to broaden (because of a drying period), utilizing a wide range of plant foods, with a faunal focus on small game such as rabbits and squirrels.

At sites along the Humboldt River, habitations returned to more ephemeral occupations, with pithouse architecture reflecting a more expedient use. Use of temporary base camps continued at Rye Patch Reservoir, and these sites exhibit the greatest variety of faunal remains recorded during the entire prehistoric era (Rusco and Davis 1982).

Ethnographic¹ (200 B.P. to ca. A.D. 1950). Subsistence activities from the Late Archaic continued into the ethnographic period, where a broad-based mixture of economic strategies were used (Thomas et al. 1986). As the environment continued to dry from the preceding Late Archaic period, Shoshone and Paiutes maintained a seasonal round (Fowler and Liljeblad 1986; Grayson 1993; Thomas et al. 1986). As these groups were highly mobile, shelter was constructed from readily available materials such as brush, grass, or woven mats (Wheat 1967). Because of the environment and subsistence lifestyle of the Shoshone and Paiutes, groups were organized into small units focused on the nuclear or extended family. Perhaps two or three times a year, groups would congregate for communal activities or to reside in winter

¹ Refers to Native American occupation.

villages, where populations could reach up to 150 individuals. Winter villages, because they are semi-permanent, were located along the Humboldt River and other permanent water sources. A Northern Paiute band was known to winter along the Humboldt River between Humboldt Sink and Winnemucca (Park et al. 1938; Steward and Wheller-Voegelin 1974).

As Anglo settlers entered the region, they displaced the aboriginal populations. Some Shoshone and Paiute refused resettlement efforts, but most were consolidated into colonies and reservations. No such settlements occurred within lands proposed for transfer, but there are two communities adjacent to such lands. These communities are the Lovelock Paiute Tribe and the Battle Mountain Band of the Te-Moak Tribe of Western Shoshone.

- **Lovelock Paiute Tribe.** Paiute Indians of the Lovelock Colony are descendants of the Numa, a group of people who once inhabited Nevada, Oregon, Idaho, and California. When Anglos entered the region, resources such as food and water became scarce. Paiute living in the Lovelock area joined in the 1860 Pyramid Lake War against Anglo occupation. After their defeat, they returned to camp near Lovelock and avoided Anglo settlers.

In 1907, William Pitt sold 2 acres of land to the federal government to be used as an Indian school in order to avoid integration of Indians and Anglos in school. In 1910, he sold an additional 18 acres to the government for Indian use, and this entire 20-acre parcel was decreed an Indian reservation by the Secretary of the Interior. The colony is organized under the Indian Reorganization Act of 1934, and a constitution and by-laws were approved on March 14, 1968.

- **Battle Mountain Band of the Te-Moak Tribe of Western Shoshone.** The Battle Mountain region was the boundary between the Shoshone and Paiute. The Battle Mountain area was a focus of Shoshone rabbit and antelope drives. With the arrival of Anglo settlers, and the founding of the Town of Battle Mountain, the Shoshone were pushed to the outskirts of town, occasionally working for Anglo businesses. The colony consists of two separate parcels totaling 683.3 acres. The original 677.05-acre reservation was established by Executive Order on June 18, 1917 for Shoshone living near Battle Mountain and Winnemucca. An act of the 90th Congress on August 21, 1967 added 6.25 acres. The colony is organized under the Indian Reorganization Act of 1934, its charter was ratified in 1938, and its constitution and by-laws were sanctioned in August 1982. The Battle Mountain Colony is one of four separate colonies that comprise the Te-Moak Tribe of Western Shoshone Indians, with tribal headquarters in Elko, Nevada. The Te-Moak Tribal Council has total jurisdiction over all tribal lands, but the colonies retain sovereignty over all other affairs.

Historic² (ca. 1800–Present). Trappers first entered the Humboldt River Valley at this time. This presence in turn opened the way through Nevada for emigrants to reach California and Oregon on a variety of trails, such as the Applegate-Lassen Trail, the California Trail (Truckee River Route and other local variants), Fremont Trail, and others. The California Trail carried more than 250,000 gold seekers and farmers to the gold fields and rich farmlands of California during the 1840s and 1850s, the greatest mass migration in American history (NPS 1999).

In the mid-1800s, emigrants following the California Trail used the lower Humboldt River in what is now Pershing County to rest with their livestock before attempting to cross the next long, arid segment of the trail west, known and dreaded as the Forty Mile Desert. Before long, the increasing local population of emigrants and miners fueled a significant demand for agricultural products in the area. In 1868 the Central Pacific Railroad reached Lovelock. The railroad transported people and goods throughout the west, and created a key element in the growth and survival of many small towns throughout the region.

2 Refers to Anglo occupation of the area.

As populations grew, the need for reliable water supplies became increasingly important.

In the early 1900s, the Humboldt-Lovelock Irrigation Light and Power Company constructed the Upper and Lower Pitt-Taylor Reservoirs, located upstream of Lovelock, Nevada. The combined capacity of these reservoirs was 49,000 acre-feet, which soon proved to be inadequate as demands for the waters of the Humboldt River increased. In addition, the reservoirs suffered from a lack of available water during dry years.

As the settlement of the Humboldt Basin progressed, the amount of water available at the lower end of the system continued to decrease. Increasing use of water on lands in the upper reaches of the river basin created shortages for lower basin water users. In response to the problem, the Nevada State Engineer ordered a general adjudication of the Humboldt River system in 1923, designating the Sixth Judicial District Court in Winnemucca as the decree court.

In 1931, Hon. George A. Bartlett issued a final decree establishing the water rights for the Humboldt River Basin. The Bartlett Decree was immediately subjected to judicial challenges, which were resolved through the issuance of the “Edwards Decree” in 1934. Together, these decrees are commonly referred to as the Humboldt River Decree. The Humboldt River adjudication was finalized by order of the Nevada Supreme Court in 1938, when it affirmed the Humboldt River Decree, halting all future challenges.

With the issuance of the Bartlett Decree in 1931, some measure of order was established in the river, opening the way for efforts to build a new water storage project for Lovelock Valley irrigators. The Lovelock Irrigation District had been organized in 1926 for the primary purpose of exploring possible storage sites on the Humboldt River. However, these efforts intensified after the Bartlett Decree was entered. To facilitate the construction of such a project, the District reorganized as a quasi-governmental entity under the Nevada Irrigation District Act and changed its name to the Pershing County Water Conservation District.

In the early 1930s, PCWCD began negotiations with Reclamation for the construction of the Humboldt Project. The Humboldt Project was authorized for construction under the National Industrial Recovery Act of June 16, 1933, and approved in August 1933 when the Public Works Administration allocated 2 million dollars for construction. The Humboldt Project was found feasible by the Secretary on November 1, 1935, and approved by President Franklin D. Roosevelt on November 6, 1935.

After studying several locations for reservoir construction, PCWCD and Reclamation decided on the present site of Rye Patch Reservoir. However, to make the project feasible, PCWCD needed to acquire supplemental water rights for the Project. To this end, PCWCD sought out willing sellers upstream of the reservoir site. The PCWCD directors located willing sellers in Lander County, and in January 1934, entered into purchase agreements with several ranch owners in the Battle Mountain and Valmy areas. In total, PCWCD contracted to acquire more than 30,000 acres of land and appurtenant water rights from two large ranches just outside Battle Mountain, and an additional 30,580 acre-feet of water rights from nearby properties.

After PCWCD successfully located and contracted for the necessary supplemental water rights, the PCWCD directors voted to proceed with the Project. PCWCD entered into a repayment contract with Reclamation for the construction of Rye Patch Dam on October 1, 1934, and a supplemental contract dated August 8, 1941. The contract provided for the full repayment of all project-related construction and acquisition costs over a 40-year period as required under the Reclamation Act.

In late 1934, to facilitate the transfer of the water rights to PCWCD lands, PCWCD assigned its rights under the ranch and water right purchase agreements to the U. S. Government. In early 1935, the United

States concluded the transactions when it purchased the land and water rights PCWCD had put under contract. The purchase price for these lands and water rights were then made a part of the District's repayment obligation to Reclamation.

Construction of Rye Patch Dam began in January 1935, and was completed in January 1936, with a design capacity of 170,000 acre-feet. Because of the drought conditions and legal problems with the Pitt-Taylor Reservoirs, Rye Patch was not initially filled to capacity.

In the early 1940s, with all water transfers completed, legal problems solved, and operating methods established, PCWCD assumed the operation and maintenance of the Humboldt Project, including Rye Patch Dam and the purchased lands in Lander County.

In 1955, PCWCD entered into a contract with the United States for the "Rehabilitation and Betterment" of works of the Humboldt Project. This contract provided for improvements to the Battle Mountain Development and Collection System, a part of which is located on the Battle Mountain Community Pasture. This contract, as well as the original construction contract, called for repayment by PCWCD for project costs as required under the Reclamation Act. Final payment of these obligations was completed in 1978.

According to the Lander County Memorandum of Agreement, at the time of purchase of the Lander County ranches, and within the area of the Argenta Ranch and the Muleshoe Ranch, there existed an area known as the Argenta Marsh. After the transfer of the water rights from Lander County ranches, and as part of the water rights change approvals, the Nevada State Engineer ordered that the lands be dewatered. In 1955, the marsh area was channelized to improve water conveyance in the Humboldt River adjacent to those lands (**Appendix E**).

In 1966, Reclamation issued a quitclaim deed for 160 acres to Lander County for a sewage disposal facility. In 1969, Reclamation issued another quitclaim deed to the State of Nevada Department of Transportation for the Interstate 80 project.

In 1975, PCWCD entered into a contract with the United States for the rehabilitation and betterment of Rye Patch Dam. The work increased the height of the dam by 3 feet and increased the storage capacity of the reservoir to 213,000 acre-feet. PCWCD has repaid the United States for the work performed.

In 1977, the United States, acting through Reclamation, PCWCD and the State entered an agreement providing for the development of public outdoor recreation facilities on Humboldt Project lands and the Rye Patch Reservoir. The parties recognized the development and use of these facilities as secondary and subordinate use to the primary purpose of water conservation for storage and irrigation. The agreement was to continue for 25 years, with the option to extend the term provided that the parties agreed to do so 1 year prior to the expiration of the initial agreement.

In the early 1990s, Reclamation determined that some modifications to Rye Patch Dam would be necessary to protect the integrity of the actual dam structure. A restriction was placed on the dam, reducing the amount of water that could be stored in the reservoir until the work was completed. This work was completed in 1996, and Rye Patch Reservoir was refilled to a capacity of 213,000 acre-feet. PCWCD has repaid the United States for its portion of the modification costs as required under the Reclamation Act.

3.11.2. Identification of Cultural Resources: Results of Literature Search

A baseline Class I Inventory (literature review) was conducted in order to determine the number and location of previously identified cultural resources and previously conducted archaeological investigations within the title transfer areas. Information was obtained from the Nevada State Museum, U.S. Bureau of Land Management (Winnemucca and Elko Field Offices), and U.S. Bureau of Reclamation for the lands proposed for transfer. The Nevada State Museum provided the records search in the form of a compact disk that contained cultural resource records and inventories for the three title transfer areas and included data within a 1 kilometer buffer, presented in a Geographic Information System (GIS) format. An additional 10 resources were identified through a search of BLM files, and these were added to the Nevada State Museum GIS coverage. BLM inventory acreage totals were not added to the Nevada State Museum totals because the BLM activities were generally composed of small or linear projects, and identifying precise acreage was difficult. The amount of previous archeological inventory and the number of recorded cultural resources at each of the three title transfer areas varies considerably.

Table 3.11.1 provides information regarding the extent of survey coverage and numbers and types of identified archaeological sites within each of the three proposed transfer areas. Approximately 54 percent of lands proposed for transfer at Rye Patch has been inventoried, or else lie below the original water pool of the reservoir, prior to the dam raise (the majority of this percentage). The area between the original water line of the reservoir and the increased high water line resulting from the dam raise is the area previously surveyed (the exact acreage is not known). The amount of inventory is significant in comparison to the Battle Mountain Community Pasture and the Humboldt Sink, which have each been subject to less than 3 percent survey coverage for proposed transfer lands. It is not unexpected, as a result of this survey coverage, that Rye Patch contains 122 of 160 sites previously identified within the entire proposed title transfer area (almost 76 percent).

TABLE 3.11-1											
CULTURAL RESOURCE INFORMATION SUMMARIZED BY TITLE TRANSFER AREA											
Location	Acres	Inventory Acres¹	% Inv¹	Total Sites²	Hab	Camp	Lithic	Other	No Record	Hist	Iso
Battle Mtn.	29,500	610	2.1	8	0	0	7	0	0	1	6
Rye Patch	20,820	11,210 ³	53.8 ³	122	13	14	75	0	10	10	34
Humboldt	32,683	879	2.7	30	6	11	5	1	1	6	4
Total	83,003	Unknown	-	160	19	25	87	1	11	17	44

¹ - Does not include BLM acreage (see text above)
² - Includes BLM sites
³ - Includes unsurveyed areas below the water pool of Rye Patch Reservoir and portions inventoried within and adjacent to the reservoir

Hab – habitation sites include a complexity of artifact classes and generally contain midden deposits
Camp – campsites contain a mix of two or more artifact types or classes, but generally lack midden
Lithic – lithic scatters generally contain only chipped stone artifacts
Other - rock shelters or other site types
Hist - historic resources
Iso - isolated artifacts or 3 or fewer objects.

Of the eight sites previously recorded for the Community Pasture, seven are lithic scatters and one is a historic site. The Rye Patch area contains 13 habitation sites, 14 campsites, 75 lithic scatters, and 10 historic sites. Although the Humboldt Sink has been subject to significantly less survey coverage than Rye Patch, it contains six habitation sites, 11 campsites, five lithic scatters, and six historic sites. Habitation sites and campsites are representative of less transient occupations and based on this, it would appear that prehistoric groups may have favored the Humboldt Sink area for more permanent occupations. However, habitation and campsites in the Rye Patch area may have been most concentrated along the Humboldt River and such sites within the reservoir footprint would have been inundated after the construction of Rye Patch Dam. As the reservoir area was not surveyed prior to the original construction of Rye Patch Dam, these sites would be underwater or possibly covered with silt and therefore not identified. It is important to note that Rye Patch contains the NRHP-listed Rye Patch

Archaeological District (which includes three excavated habitation sites, three collected or tested habitation sites, and one collected or tested campsite).

In addition to sites previously recorded, numerous historic cultural resources such as railroads, historic-era trails (California Trail, Emigrant Trail, Applegate-Lassen Route, Truckee River Route, etc.), canals, dams, and related features (e.g., Muleshoe Ranch, Rye Patch Dam, Slaven Dam, Iron Point Relief Channel, etc.), and mines are also known to occur within the area.

3.11.2.1. Battle Mountain Community Pasture

Battle Mountain Community Pasture contains the smallest number of known cultural resources of the three transfer areas, with a total of eight known sites and 610 acres inventoried (2.1 percent of the proposed transfer area). The bulk of this inventory came from a single Nevada Department of Transportation gravel pit survey (Turner 1979). The proposed gravel pit was abandoned because of the identified archaeological sites. Nearly 29,000 acres of Community Pasture lands have not been surveyed for cultural resources.

The California Trail is a special and unique historic resource that crosses all three title transfer areas (Brock 2000). As a result of the National Trails System Act (U.S.C. v.16, Section 1241-1251), the National Park Service (NPS) recognized the California National Historic Trail. This trail is significant because “it is one of the major highways of the 19th Century, which provided a 2,400-mile path for emigrants to the West” (NPS 1999). The California Trail was used in one of the largest overland migrations in American westward expansion resulting from the California Gold Rush.

Remaining physical evidence of the California Trail varies considerably. NPS recognizes “high-potential route segments” and “high-potential historic sites” that capture scenic, educational, or interpretive values associated with this early travel route. Several segments of the trail and related sites occur within the title transfer. The Oregon-California Trail Association (OCTA) has mapped the entire route and classified trail segments based on condition and integrity using a rating system ranging from Levels 1 to 6. Segments rated from Levels 1 to 4 are considered high value, potentially eligible for inclusion in the National Register. Those segments identified as Level 5 or 6 lack integrity and are considered potentially ineligible for inclusion in the National Register.

3.11.2.2. Rye Patch Reservoir

Rye Patch Reservoir has received the greatest amount of archaeological work of the three transfer areas, largely because of extensive work by the Nevada State Museum in support of a 3-foot raise of Rye Patch Dam (Rusco 1976; Rusco and Davis 1982, 1987; Rusco and Jensen 1976; Rusco et al. 1977; Rusco et al. 1979). This extensive inventory examined the entire perimeter of the reservoir from the existing water level to the proposed high water mark (exact acreage is not known). This work and other BLM studies account for 122 known cultural resources within the transfer area, including 13 habitation sites, 14 campsites, 75 lithic scatters, 10 historic sites, and 10 sites for which site record forms are missing. An additional 34 isolated finds have been noted. Approximately 9,600 acres, located above the high water level of Rye Patch Reservoir, have not been surveyed for cultural resources.

The Nevada State Museum conducted additional archaeological research at Rye Patch Reservoir “to mitigate adverse effects of the construction of an addition to Rye Patch Dam” (Rusco and Davis 1982:4). Several archaeological sites were subject to surface collections and test excavations during this field work. Several sites received a considerable amount of excavation because these sites contained substantial deposits, and the presence of buried deposits offered significant research potential. Recognition of the data collected and the potential for additional studies led to the listing of seven

archaeological sites (26Pe365, -366, -388, -390, -428, -435, and -450) on the National Register of Historic Places as part of the Rye Patch Archaeological District. The age of the archaeological sites ranged from the Western Pluvial Lakes Tradition to the late prehistoric period, a span of more than 8,000 years.

Despite the previous inventory efforts, challenges exist with the archaeological data from Rye Patch Reservoir. Cultural resources were not fully recorded if they extended beyond the high water mark of the proposed reservoir increase. A number of site records note that boundaries extended beyond the impact area and the full extent of the site was not determined. The site records were created before the advent of the Intermountain Antiquities Computer System (IMACS) site recording forms. Most existing records are simple one-page summary sheets with general information that do not meet contemporary documentation standards.

The distribution of archaeological sites at Rye Patch Reservoir is interesting because of the difference in number of sites between the east and west sides of the reservoir. The east side contains substantially more archaeological sites than the west side. A linear density of 1.4 sites per mile along the reservoir edge on the east side, versus 1.0 site per mile for the west side, hints at the variation. There are large breaks in the distribution of archaeological sites on the west side of the reservoir, as opposed to the east side. The lower density of sites may be caused by different ecological circumstances. The west side opens to a broad, rather featureless valley floor, whereas the east side allows for access to adjacent mountainous ecosystems.

3.11.2.3. Humboldt Sink

The Humboldt Sink, as terminus of the Humboldt River, attracted Native American use for millennia, as people came to exploit the natural resources that developed around the marsh environments and intermittent open-water environments. In the twentieth century, the complexity and number of archaeological sites also attracted archaeological investigations by the University of California and others (Bard et al. 1981; Livingston 1986; Loud and Harrington 1929). Initial work began in 1912 and continued for more than 50 years as archaeologists surveyed and excavated rock shelters and open sites in the region. Bard et al. (1981) present a summary of this early work. More recently, compliance with the NHPA has driven archaeological work, with an emphasis on inventory. Despite the abundance of work in the region, less than 3% of the title transfer lands in the Humboldt Sink have been inventoried to current standards and approximately 31,800 acres have not been surveyed for cultural resources.

There are noteworthy archaeological sites that have contributed to our understanding of Great Basin and Nevada prehistory within and adjacent to title transfer lands. Lovelock Cave, Humboldt Cave, and Leonard Cave are found in the Humboldt Range, west of the Humboldt Sink, not far outside title transfer lands. These sites contributed extensive artifact collections and chronological knowledge leading to a better understanding of lacustrine adaptations. Granite Point Cave, test excavated in the 1930s and reported by Roust (1966), lies just outside the transfer area.

The Humboldt Lakebed Site, 26Ch45 (26-CH-15, University of California) is an important archaeological site included within the title transfer. This site was originally recorded by Loud and Harrington (1929) in their Lovelock Cave Report. Early collections and human remains were removed from this site and additional collections and excavations were also performed in the 1960s (Livingston 1986). Site 26Ch45 is the type site for the Humboldt projectile point series. The site contains an extensive deposit of features, house floors, and artifacts. Pit features of various kinds totaled 719; these were identified as burial pits, storage pits, hearths, smudge pits, seep pits, and house pits (Livingston 1986). At least 34 of the 173 features identified as house pits were excavated in 1969, but this work has not been fully reported.

Attempts to relocate 26Ch45, as well as several other sites originally reported by Loud and Harrington

(1929), during recent field visits to the area were not successful. A flood in 1983 deposited silt and sediment over a large area of the Humboldt Sink, and archaeologists now think that numerous sites, including the Humboldt Lakebed Site, may be buried by the flood deposits (McGuckian 2004). The 1983 flood also resulted in the growth of extensive groves of tamarisk that are extremely dense in some places, obscuring the visibility of cultural resources and complicating potential field inventory.

3.11.3. Environmental Impacts

3.11.3.1. Proposed Action/Preferred Alternative

Under the Proposed Action, the federal government would transfer ownership of land to PCWCD, State and county ownership, and potentially private ownership should any receiving entities dispose of the transfer lands. Upon transfer, Cultural Resources located on lands proposed to be transferred would lose federal protection provided by the NHPA, ARPA, NAGPRA, and Executive Order 13007. Senate Bill 81 (SB 81), a new cultural resources statute was enacted in the last session of the Nevada legislature (Date of Enactment: May 31, 2005). SB 81 authorizes the Office of Historic Preservation of the Department of Cultural Affairs to enter into agreements with state agencies or political subdivisions regarding the preservation of historic or prehistoric sites. The State Historic Preservation Officer is developing regulations to implement SB 81. Once these regulations are developed, Reclamation will evaluate whether SB 81 could assist in compliance with 36 CFR 800, the implementing regulations for Section 106 of the NHPA.

Section 106 regulations state that adverse effects on historic properties include, but are not limited to the “[t]ransfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property’s historic significance” [36 CFR Part 800.5(a)(2)(vii)].

Section 106 regulations of the NHPA provide that “[t]he agency official shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey” [36 CFR Part 800.4(b)(1)]. Identification efforts suggested for this undertaking will comply with the aforementioned regulation, and will include the following:

1. Reclamation is developing a strategy for the identification of historic properties in the title transfer. This inventory will emphasize archaeological resources, but specific methods are being developed to identify historic resources and traditional cultural properties. PCWCD, interested parties, and tribal entities will have an opportunity to comment on the development of this plan. The final inventory strategy will be determined by Reclamation in consultation with the SHPO per 36 CFR 800.4(a). To comply with the identification process in 36 CFR 800.4(b) additional inventories will be necessary following the initial inventory.
2. Identified cultural resources will be evaluated for inclusion into the NRHP per 36 CFR 800.4(c) and 36 CFR 63. Any historic properties identified will be subject to adverse effects as a result of the title transfer (36 CFR 800.5(a)(2)(vii)).

The total range and complexity of historic properties remain to be determined. A Programmatic Agreement (PA) would be developed among SHPO, Reclamation, and consulting parties to describe responsibilities of recipient entities towards consideration of historic properties.

The means of resolving adverse effects to historic properties recorded within the title transfer areas are difficult to project at this time because identification efforts have not yet been completed. One or more of

the following measures may be used to resolve adverse effects, acknowledging that actual mitigating measures will occur through consultation between Reclamation, the Nevada SHPO, and consulting parties in the Section 106 process. These include:

1. Preparation of a management plan to guide consideration of known historic properties. This plan may also provide for inventory and evaluation of resources on as yet unsurveyed portions of transferred lands. The plan can investigate alternatives for protection of historic properties through fencing, road closures, and other forms of limiting access. Any management plan will include a monitoring section to evaluate the effectiveness of the proposed actions.
2. Other strategies to comply with 36 CFR Part 800.5(a)(2)(vii) are also being considered including imposing “adequate and legally enforceable restrictions or conditions” on the properties to ensure long-term preservation of the property’s historic significance as well as leaving or returning certain historically significant properties to federal ownership. The latter may be considered if some historic properties exist that are of such significance that excising them from the transfer would be considered.
3. Mapping, excavation, or other forms of data recovery may be required at some historic properties. All work done under this approach would be preceded by a research design that follows SHPO’s Guidelines for Section 106 Submissions and the Secretary of Interior’s Standards and Guidelines for Archeology and Historic Preservation.
4. Existing notes of previously recorded archaeological sites housed at the University of California, Berkeley and other institutions may can be obtained and reproduced. Recovered assemblages curated at such institutions may be analyzed and a report prepared as part of mitigating measures. The results of some early work have never been presented, and some collections remain unanalyzed. Some sites are now covered with sediment and no longer have visible surface materials.

As consultation continues and the Section 106 compliance process for the Humboldt title transfer progresses, strategies for resolving adverse effects will continue to be discussed and developed. The Record of Decision (ROD) for the EIS will identify any environmental commitments that must be met prior to transferring lands to the receiving entities, including compliance with Section 106 of the NHPA. When Reclamation has completed Section 106 on federally designated portions of the Humboldt Project (e.g., Rye Patch Area), transfer of those areas to the receiving entities may occur separately from the other portions.

3.11.3.2. No Action Alternative

Under the No Action Alternative, ownership of federal lands would not be transferred to any entity being considered under this proposal. Provided that Reclamation adheres to applicable cultural resources laws, no historic properties would be adversely affected by the No Action Alternative. Cultural resources would remain in federal stewardship and be subject to consideration under federal legislation such as NEPA, ARPA, NHPA, and NAGPRA.

3.12. INDIAN TRUST ASSETS

Indian trust assets are legal interests in property or natural resources held in trust by the United States for Indian Tribes or individuals. The Secretary of the Interior is the trustee for the United States on behalf of Indian Tribes. Examples of trust assets are lands, minerals, hunting and fishing rights, and water rights. The Western Nevada Office of the Bureau of Indian Affairs was contacted in May 2004. Indian Trust Assets were assessed in this EIS for the Lovelock Paiute Tribe, the Battle Mountain Band of the Te-Moak

Tribe and the Fallon Paiute-Shoshone Tribe.

The Battle Mountain Band of the Te-Moak Tribe has its colony 1 mile west of the unincorporated town of Battle Mountain near the Battle Mountain Community Pasture portion of the project. There is an ongoing dispute and litigation brought by the Te-Moak Tribe concerning tribal lands claimed under the treaty of Ruby Valley. Until final settlement of the claim, trust assets must be assessed based on the current status. Therefore, there are no trust assets affected by the project.

The Lovelock Paiutes are located in the town of Lovelock, Nevada. The Fallon Paiute-Shoshone are located near the town of Fallon, Nevada. No trust assets were identified for either tribe.

Reclamation initiated Government-to-Government consultation with the Lovelock Paiute Tribe, Battle Mountain Band and the Fallon Paiute-Shoshone Tribe via a letter dated January 29, 2004. The Fallon-Paiute Shoshone Tribe expressed no interest in obtaining further information about the project.

Reclamation was contacted by the Lovelock Paiute Tribe following the scoping meetings. The Tribe followed up with a letter to Reclamation (received March 1, 2004) outlining their desire to receive a portion of the lands to be transferred and their concerns about inclusion in the transfer process.

Reclamation responded in a letter dated March 24, 2004 to clarify the process and the steps involved in the transfer.

Reclamation met with the Battle Mountain Band on April 29, 2004 to describe the project and the Section 106 compliance process.

Reclamation met with the Lovelock Paiute Tribe on May 13, 2004 to more fully describe the project and discuss their concerns with being left out of the legislation.

The Lovelock Paiute Tribe provided written comments to the Draft EIS on March 21, 2005 to which Reclamation responded in a letter dated April 21, 2005.

Reclamation will continue to coordinate with Native American Tribes in the project area throughout the title transfer process.

CHAPTER 4: OTHER NEPA CONSIDERATIONS

4.0 OTHER NEPA CONSIDERATIONS

4.1. CUMULATIVE IMPACTS

A cumulative impact is an impact that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes other such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The Proposed Action would transfer lands from federal ownership to the PCWCD, the State of Nevada, and Pershing and Lander Counties. With the exception of the 5,850 acres in the Community Pasture proposed to be transferred to the State of Nevada, and the isolated parcels proposed to be transferred to Pershing and Lander Counties, there would be no substantial change in overall resource management by the receiving entities. PCWCD would continue to operate the Rye Patch Dam and Reservoir in a manner consistent with its current contract(s) with Reclamation. The 22,500 acres within the Community Pasture will continue to be managed and operated for livestock grazing by PCWCD patrons. The State would continue to manage lands within the Humboldt Sink as a Wildlife Management Area and would continue to manage the Rye Patch State Recreation Area.

Future uses of the land proposed for transfer to the State of Nevada in the Community Pasture and the isolated parcels proposed to be transferred to Pershing and Lander Counties, may result in cumulative land use impacts when considered in combination with the effects of development by others (existing and planned) within the project area.

Under the Proposed Action, Pershing County would receive withdrawn lands adjacent to Derby Airfield, the county's airport. Pershing County is planning to develop an Airport Master Plan, which may include economic development of the transferred lands. With the development of Derby Field, county planners anticipate that the site could provide additional growth to the local economy, although the current pattern of use is unlikely to be affected.

Lander County would receive title to approximately 1,100 acres of lands in or near the Community Pasture. The proposed expansion of the County Fairgrounds adjacent to the Livestock Events Center and the reuse of the maintenance shop would occur on lands that are already developed.

The 932-acre parcel adjacent to the sewage treatment plant will transfer to Lander County for potential industrial development. The area is currently zoned as Industrial. Transfer of these lands from federal to county ownership may change the rate of growth in this area because these lands would be available for industrial development in the future. Any development would be subject to applicable Lander County Zoning regulations. The county should review future proposed industrial development to assure that there would be no adverse effects to groundwater quantity and quality that could impact the Humboldt River and either no direct discharges to the Humboldt River or limited discharges that meet federal and State requirements. Provided that future industrial development did not affect the quality of water in the Humboldt River and associated lowland riparian habitats, no adverse secondary or indirect impacts of industrial development of this parcel are anticipated.

Development of a low-maintenance primitive day-use recreational area, parking lot, and river easement adjacent to State Route 806 and the Humboldt River south of White Bridge has the potential to increase recreation use in the area. The parking and primitive recreation area and access easement along the river would provide public access to the river and riparian corridor and offer hiking, hunting, fishing, and wildlife viewing opportunities. Impacts of increased use include soil compaction, litter control, and

safety issues. The easement provides an official dedication of an area unofficially used by hunters, fishermen, and other recreational users to access the Humboldt River with PCWCD permission and establishes Lander County as the official entity responsible for managing this easement. Potential impacts resulting from increased public use of the river corridor resulting from the establishment of an official parking lot and public access easement could be offset by improved management by the county, including controlled access gates, signage, and regular patrols.

Under the Proposed Action, the State of Nevada would receive title to approximately 5,850 acres of Community Pasture lands. These lands are proposed for management by NDOW for the purpose of wetland development. It is NDOW's goal to restore up to 2,000 acres of wetlands and lowland riparian habitat, but specific management plans, including water sources for recovery and vector control, have not been finalized. Restoration of these lands would attract hunters, anglers, wildlife watchers, and other recreational users and tourists, potentially providing added economic benefit and diversity to the region. These benefits would be directly related to the ability of the State to obtain the water rights and successfully implement the comprehensive master plan for wetland and riparian restoration.

In conclusion, no adverse cumulative impacts on the environment are expected to occur as a result of the proposed title transfer when considered together with other past, present, or reasonably foreseeable future actions.

4.2. SHORT-TERM USES OF THE ENVIRONMENT AND LONG - TERM PRODUCTIVITY

NEPA requires consideration of the relationship between short-term uses of the environment and long-term productivity associated with a proposed action. The Proposed Action is an administrative action that would not result in a direct physical change to the environment.

Under the Proposed Action, PCWCD would obtain legal title to land, water, and facilities for which it has paid in full. This ownership change will allow greater control and accountability of lands currently managed by PCWCD. Centralized control of lands currently managed by PCWCD will provide greater certainty and financial stability for future planning. The State of Nevada would obtain legal title to lands it has historically managed at the Humboldt WMA and at Rye Patch Reservoir. This ownership change will allow the State to better plan for future recreational and wildlife resource needs in these areas. PCWCD has agreed to maintain a 3,000 acre-foot minimum operational pool at Rye Patch Reservoir, thereby allowing the State to manage fishery resources more effectively.

The State would receive approximately 5,850 acres of lands within the Battle Mountain Community Pasture for the potential development of wetland habitat. Transfer of these lands to the State would impose a short-term economic impact to PCWCD by reducing the number of acres available for livestock grazing. Under the Conceptual Memorandum of Agreement between PCWCD and the State of Nevada, PCWCD may continue to graze livestock on these lands until development of wetlands begins. Subsequent to wetlands development, NDOW would allow continued grazing in restored habitat if it is a viable invasive and noxious weed control/vegetation management practice, with the grazing pursuant to a Grazing Plan developed by a mutually accepted range consultant.

Pershing County would receive ownership of lands occupied by the Derby Airport, allowing better control of future airport development and expansion. Lander County would receive lands beneath the existing rodeo grounds and surrounding acreage for future expansion of the facilities, industrial lands adjacent to the sewage treatment plant, and lands for the potential development of enhanced recreational opportunities along the Humboldt River. Ownership of these lands will allow Lander County to

incorporate these lands in future planning decisions.

Receipt of these lands by the PCWCD, State of Nevada, and Pershing and Lander Counties would reduce the amount of lands in federal control, but will allow greater control and future planning by the receiving entities.

4.3. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irreversible commitments are decisions affecting renewable resources such as soils, wetlands, and waterfowl habitat. Such decisions are considered irreversible because their implementation would affect a resource that has deteriorated to the point that renewal can occur only over a long period of time or at great expense, or because they would cause the resource to be destroyed or removed.

Irretrievable commitment of natural resources means loss of production or use of resources as a result of a decision. It represents opportunities forgone for the period of time that a resource cannot be used. Irretrievable refers to the permanent loss of a resource including production, harvest, or use of natural resources. For example, production or loss of agricultural lands can be irretrievable, while the action itself may not be irreversible.

The transfer of land from the federal government to the PCWCD, State of Nevada, and Pershing and Lander Counties would not cause any direct physical impacts to existing biological, cultural, or physical resources. The title transfer in and of itself would not result in any operational changes or other physical impacts that would irreversibly or irretrievably commit renewable resources from this federal action. Development of lands near project lands may occur in the future. However, because these decisions are vague, speculative, and will depend on a number of future political, planning, zoning, and economic factors, they cannot be solely attributed to this federal title transfer action, but instead will result from the outcomes of these future, uncertain decisions and processes.

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CHAPTER 5: CONSULTATION & COORDINATION

5.0 CONSULTATION AND COORDINATION

This chapter summarizes the consultation and coordination that Reclamation has conducted with various state, federal, and local agencies while preparing for and compiling the EIS. The PCWCD participated in the consultation and coordination activities as a cooperating agency in this EIS.

5.1. PROJECT SCOPING

The scoping process provides the federal, state, and local agencies; organizations; tribes; and interested individuals the opportunity to provide input on key issues and concerns that they believe should be evaluated in the EIS.

The objectives of scoping for the Proposed Project included:

- Identification of significant issues related to the proposed title transfer,
- Determination of the range of alternatives to be evaluated,
- Identification of environmental review and consultation requirements,
- Identification of interested and affected public, and
- Provision of information to the public regarding the project.

Two notices were published in the Federal Register regarding the proposed title transfer. The first notice was published on February 26, 2003 [68 FR 8924] and indicated Reclamation's intent to prepare an EIS. The second notice, a Notice of Public Scoping, was published in the *Federal Register* on January 14, 2004 [69 FR 2157] and announced that two scoping meetings would be conducted in February 2004 to receive public input on issues to be addressed in the draft EIS. In addition, a scoping letter was mailed to approximately 250 federal, state, and local agencies; organizations; tribes; and interested individuals. Notices were also placed in four local newspapers (Reno-Gazette Journal, February 15-19, 2004; The Humboldt Sun, February 13-16, 2004; The Lovelock Review-Miner, February 12, 2004; and the Elko Daily Free Press, February 9, 2004).

The scoping meetings were held on the dates and locations listed below:

- February 18, 2004, Battle Mountain Civic Center, Battle Mountain, Nevada
- February 19, 2004, Washoe County Bartley Ranch Park, Reno, Nevada

Approximately 26 people attended the Battle Mountain and Reno meetings. An interagency scoping meeting was also held during the day on February 19. Sixteen comments were received during the scoping meetings and 23 letters and e-mails were received by Reclamation during and immediately after the comment period.

A Notice of Availability of the Draft Environmental Impact Statement (DEIS) was published in the *Federal Register* on January 28, 2005. A 60-day minimum review period began after the EPA's notice of DEIS availability was published. Public hearings were held on the dates and locations listed below:

- March 14, 2005, Lovelock Community Center, Lovelock Nevada
- March 14, 2005, Battle Mountain Civic Center, Battle Mountain, Nevada
- March 15, 2005, Washoe County Department of Water Resources, Reno, Nevada

The hearings were held to receive comments from the public. A court reporter and Reclamation Hearing Officer were present during the public hearings. All written comments received during the public hearing and the 60-day review period, and responses given to each comment, are provided in **Appendix K**.

5.2. FEDERAL AGENCY COORDINATION

5.2.1. U.S. Fish and Wildlife Service

Under Section 7(a)(2) of the ESA, 16 USC. § 1536(a)(2), each federal agency must, in consultation with the Secretary of the Interior, ensure that any discretionary action authorized, funded, or carried out by the agency “is not likely to jeopardize the continued existence of any [listed] species or result in the destruction or adverse modification” of designated critical habitat. To assist agencies in complying with the requirements of Section 7(a)(2), the statute and implementing regulations set out a detailed consultation process for determining the biological impacts of a proposed discretionary activity. The consultation is described in regulations promulgated at 50 CFR § 402.

By letter to the FWS on February 14, 2003, Reclamation requested a list of special status species (i.e., endangered, threatened, and candidate species) in the project area to help focus the biological resources assessment (**Appendix H**). The FWS responded by letter on March 3, 2003 to Reclamation providing a list of endangered species that may potentially occur in the project area. Greystone staff biologists met with FWS and NDOW in April 2004 to obtain additional information regarding habitat conditions and potential species that may occur on lands proposed to be transferred.

5.2.2. National Historic Preservation Act Compliance

Section 106 of the NHPA of 1966 requires that federal agencies take into account the effects of their actions on historic properties and to afford the Advisory Council on Historic Preservation (Council) a reasonable opportunity to comment when an action will have an effect on historic properties. The “Protection of Historic Properties” (36 CFR Part 800) defines the process of implementing requirements of Section 106, including procedures for determining project effects and mitigating adverse effects on historic properties, in consultation with the appropriate State Historic Preservation Office, the Council, relevant Tribes, and other parties.

Pursuant to Section 106 regulations, Reclamation shall involve consulting parties in findings and determinations made during the Section 106 process pursuant to 36 CFR 800.02 (4). In addition to the State Historic Preservation Officer and Indian tribes, representatives of local government with jurisdiction over the area in which the effects of an undertaking may occur are entitled to participate as consulting parties (36 FR 800.2(3)).

The first step of the Section 106 process, as set forth at 36 CFR 800.3(a), is for the agency official to “determine whether the proposed federal action is an undertaking as defined in § 800.16(y) and, if so, whether it is a type of activity that has the potential to cause effects to historic properties.” Reclamation has determined that the Proposed Action/Preferred Alternative meets the definition of an undertaking, and that the undertaking has the potential to affect historic properties because lands will be transferred from federal ownership. Reclamation is consulting with the Nevada SHPO regarding the identification of historic properties in the project area. Because title transfer, by definition, is an adverse effect to historic properties, Reclamation will notify the Council of the finding pursuant to 36 CFR 800.6(a)(1) once the inventory and evaluation are complete. If the consulting parties agree that a PA should be prepared pursuant to 36 CFR 800.14(b), Reclamation shall invite the Council to participate in the consultation as

specified at CFR 800.6(a)(1)(I)(C).

Senate Bill 81 (SB 81), a new cultural resources statute was enacted in the last session of the Nevada legislature (Date of Enactment: May 31, 2005). SB 81 authorizes the Office of Historic Preservation of the Department of Cultural Affairs to enter into agreements with state agencies or political subdivisions regarding the preservation of historic or prehistoric sites. The State Historic Preservation Officer is developing regulations to implement SB 81. Once these regulations are developed, Reclamation will evaluate whether SB 81 could assist in compliance with 36 CFR 800, the implementing regulations for Section 106 of the NHPA.

5.3. STATE AND LOCAL AGENCY COORDINATION

Since 1996, Reclamation in cooperation with the PCWCD has been engaged in ongoing communications and negotiations with the Nevada Department of Conservation and Natural Resources, including the Division of State Parks and the Division of Water Resources, the Nevada Department of Wildlife, representatives from Lander and Pershing Counties, and members of the Office of the Governor, and other elected officials at the state and local level.

Subsequent to these negotiations, terms and conditions of the title transfer were drafted and set forth in the MOA between PCWCD and Lander County dated January 24, 2000; the Letter of Agreement between Pershing County and State of Nevada dated April 16, 2002; and the MOA between PCWCD and the U. S. Bureau of Reclamation dated May 6, 2004. Consultation and coordination activities with affected state and local agencies will continue throughout the NEPA process.

5.4. NON-GOVERNMENTAL ORGANIZATIONS AND GENERAL PUBLIC COORDINATION

Since 1996, Reclamation and PCWCD have met with a number of environmental groups, mining groups, and citizens interested in the project area. Coordination with these groups has included individual and group meetings, followed by written correspondence and telephone calls.

Prior to the Notice of Intent (NOI) to prepare this EIS, Reclamation staff and PCWCD met with members of the Lahontan Audubon Society, the Toiyabe Chapter of the Sierra Club, Ducks Unlimited, Barrick Mining Group, the Humboldt River Basin Water Authority, and other stakeholders to solicit comments and to understand areas of concern.

5.5. DISTRIBUTION LIST

Reclamation sent the following offices, organizations, individuals, and media outlets either a copy of the EIS, a letter notifying the recipient of the EIS availability, or a press release. An asterisk [*] denotes those who commented on the DEIS.

3-H Corporation, Karl Hostman
Am-Arcs of Nevada
Anker RanchAnkers Inc.
Arias, Jose C.
ATI Systems International
Audubon Society, Phyllis Jo Dean
Aufdermaur, John & Bobbie
Bales, Steven & Nancy
Barajas, Federico – U. S. Bureau of Reclamation

Battle Mountain Band - Te-Moak Shoshone, Greg Holley
Battle Mountain Band - Te-Moak Shoshone, Joe Holley
Battle Mountain Band - Te-Moak Shoshone, Lydia Johnson
Battle Mountain Branch Library
Battle Mountain Bugle, Jan Ehlert
Battle Mountain Chamber of Commerce, Shar Peterson
Battle Mountain Rod & Gun Club, Herb Buhl
Bendure, Ted
Bennett, Mark

Benolkin, Philip & Gail
 Bing, Peter
 Bishop, Franklin
 Borison, Scott – Schroeder Law Office, PC
 BLM - Battle Mountain, Jim Curri van
 BLM - Battle Mountain, Jon Sherve
 BLM - Battle Mountain, Mike Neff
 BLM – Elko, Bill Fawcett
 BLM – Elko, Cathie Jensen
 BLM – Elko, Donna Nyrehn
 * BLM – Reno, Gene Seidlitz
 BLM – Reno, Bob Abbey
 BLM – Reno, Dennis Samuelson
 BLM – Winnemucca, Barbara Kehberg
 BLM - Winnemucca, Jeff Johnson
 BLM – Winnemucca, Craig Drake
 BLM – Delores Cates
 Bray, Terry
 Brinkerhoff Ranches
 Brinkerhoff, Allen
 Brinkerhoff, Gene & Teresa
 Brinkerhoff, Walter
 Brooks, Tom & Joan
 Bumpus, Carle & Patrick
 Bureau of Indian Affairs, Tom Strekal
 Bureau of Reclamation - Bob Shaffer
 Burrows, Ronnie
 Busby, Colin I. – Basin Research Associates
 * Carpenter, Craig
 Carpenter, John Kenneth
 Carter, Lawrence & Gwen
 Ceresola, Cyndy
 Cerini, Frank & Diane
 Cerini, Susan
 Chadek, Lynne M.
 Chazier, Jerry
 Christian, Beth, Lovelock Review Miner
 Church of Jesus Christ of Latter Day Saints, David Knight
 Churchill County Museum, Jane Pipelow
 Clinger Ranch
 Consolidated Farm Service Agency, Bob Baldwin
 Consolidated Land & Livestock
 Cooney, Robert & Loretta
 Crimmins, Duane D.
 Crofoot, Dan
 Daoust, Robert & Carol
 Davenport, Jerry
 Davidson, Paul – Munk Brothers Ranch
 Davis, Dave
 Denier, William & Dale
 Denio, Karen
 Dennler, Herman
 Detweiler, Ken
 Dickerson, Richard
 Ducks Unlimited, Inc., John Nagel
 Dupree, Gale and Elise – Nevada Wildlife Federation
 Echeverria, Paul & Sally
 Elko County Conservation Association, Merlin McColm
 Elko County Library, Patrick Dunn
 Elko Daily Free Press, Adella Harding
 Elko Daily Free Press, Jeff Mullins
 Elko Land & Livestock, Ron Powell
 Environmental Defense Fund, David Yargas
 Espinosa, Ray
 Fallon Paiute-Shoshone Tribe, Alvin Moyle
 Fairbanks, Antonio – Tetra Tech Inc.
 Fawcett, Bill (Dr.), BLM Elko Field Office
 Fischer, Jay
 Fisk, Walter M.
 Fox, Daniel & Susan
 Francke, Robert
 French, Jim – Nevada Division of Wildlife
 Fuji, Laura – EPA, Region 9
 Gibbons, James A.
 Gibson, Bob
 Giudici, Jim
 Gonsalves, Stanley
 Goodin, James
 Goodman, Bob
 Gottschalk, John & Eleanor
 Gottschalk, Mike & Mikey
 Great Basin Bird Observatory, Ed Eidel
 Great Basin Bird Observatory, Elizabeth Ammon
 Hansen, Vernice
 Harman, Mike
 Heap, Richard
 Heinz, Dan
 Himelspach, Gerald
 Hinze, Deborah – Lander County Econ. Development
 Hoevet, Janet
 Holcher, Paul
 Hooper, Bobby W.
 Karl Hostman - 3-H Corporation
 Humboldt County Commissioner, Dan Cassinelli
 Humboldt County Court House Library
 Humboldt County Library, Jeff Marcinik
 Humboldt Feeding Inc.
 Humboldt Museum, Judy Adams
 * Humboldt River Basin Water Authority, Paul Miller
 Humboldt-Toiyabe National Forest, Tom Baker
 Intermountain Farm Credit, Scott McKinley
 Intermountain Range Consultants, Bob Schweigert
 Intermountain West Joint Venture, Jim Cole
 Irvin, Larry
 Jackson, Jason
 Jackson, Shelly
 Johnson, Dale – Johnson Ranch
 Johnson, Eric – Nevada State Parks
 Jones, Stephen – BOR Mid-Pacific Regional Office
 Kamine, Jay, URS Corporation
 Kernen, Joyce R.
 Kiel, Ronald
 King, Donald
 Knight, Dan
 Knisley, C. Ray & Barbara
 Knisley, Dan & Tracey
 L. & B. Galli, H. & S. Van Vliet
 Lahontan Audubon Society, Ed Mark
 Lahontan Audubon/Wetlands Coalition, Jane Sunday
 Lahontan Wetland Coalition, Bob Goodman
 Lahontan Wetland Coalition, Ed Tilzey
 * Lahontan Wetland Coalition, Norm Saake
 * Lahontan Wetland Coalition, Rose Strickland
 Landa, John & Kathryn

Lander County Advisory Board, Tony Carone
 Lander County Assessor's Office, Luva Duvall
 Lander County Commissioner, Mickey Yarbro
 Lander County Commissioners Office
 Lander County Conservation District, Jerry Nuefeld
 Lander County Court House Library
 Lander County District Attorney
 Lander County Economic Development Authority
 Lane, Chuck – BLM Elko Field Office
 Leland Campsey, Natural Resource Conservation Service
 Lenz, Joel
 List Cattle Co.
 List, Jim
 * Lovelock Paiute Tribe, Alfred Happy,
 Lovelock Paiute Tribe, Harry & Nancy Summerfield
 Lovelock Paiute Tribe, Monte George
 Lovelock Paiute Tribe, Richard Happy
 Lovelock Paiute Tribe, Stephanie Stairwalt
 Lovelock Review Miner
 MacDougall, Steven
 Mancero, Roger
 Marcuerquiaga, Rosie
 Martin, Les
 Marvel, John
 Maxwell, Frank R. - Nevada Wildlife Federation, Inc.
 McDougal Livestock Co.
 McDougal, Richard
 Medeiros, John
 Meinle, Leona
 Mendenhall, Frank & Marion
 Monroe, Ethel U.
 Monroe, Robert T. & Robin
 Montrosc, Karl Hugh & Sharon
 * Mori Ranches, Nelo Mori
 Moura, Tom & Darlene
 Moyle, Alvin, Fallon Paiute-Shoshone Tribe
 Munk Brothers Ranch
 Munk, Devoy
 Munk, Gerald
 * Nappe, Tina
 National Audubon Society
 Natural Resource Conservation Service, Craig Plummer
 Natural Resource Conservation Service, Jim Evans
 Natural Resource Conservation Service, Mel Cheney
 Natural Resources Defense Council, Hal Candee
 Neeley, Dorothy
 Nevada Archaeological Association, Alanah Woody
 * Nevada Archaeological Association, Daron G. Duke
 Nevada Archaeological Association, Oyvind Frock
 Nevada Cattlemen's Association
 Nevada Cattlewomen's Association, Mary Eldridge
 Nevada Department of Water Resources, Hugh Ricci, P.E.
 Nevada Department of Water Resources, Michael
 Anderson
 Nevada Department of Water Resources, Robert Martinez
 Nevada Department of Wildlife, Jim French
 Nevada Department of Wildlife, Doug Hunt
 Nevada Department of Wildlife, Terri Crawford
 * Nevada Department of Wildlife, Dave Pulliam
 * Nevada Division of Minerals, Christy Morris
 Nevada Division of State Lands Pam Wilcox
 Nevada Division of State Lands, Ruth Danner

Nevada Division of State Parks
 Nevada Division of State Parks, Allen Newberry
 Nevada Division of State Parks, David Morrow
 Nevada Division of State Parks, Gary Orr,
 Nevada Division of State Parks, Steve Weaver
 Nevada Division of State Parks, Wayne Perock
 Nevada Farm Bureau
 Nevada Important Bird Areas Program, Don McIvor
 Nevada Rock Art Foundation
 Nevada State Clearinghouse
 Nevada State Library
 Nevada State Museum, Eugene Hattori,
 Nevada State Historic Preservation Office, Alice Baldrice
 * Nevada State Historic Preservation Office, Rebecca
 Palmer
 Nevada Waterfowl Association, Clint Wells
 Nevada Waterfowl Association, Hugh Judd
 Nevada Waterfowl Association, John Rogers
 * Nevada Waterfowl Association, Norm Saake
 Nevada Wildlife Federation, Chris Miller
 Nevada Wildlife Federation, Gale and Elsie Dupree
 Nevada Wildlife Federation, Karen Boeger
 Nevada Wildlife Federation, Ruby Rowan
 Odle, Keith & Diane
 Oregon California Trail Association, Leslie Fryman
 PCWCD, Bennie Hodges
 Pennington, Rebecca
 Pershing County Board of Education
 Pershing County Court House Library, Elizabeth Gonzalez
 Pershing County District Attorney's Office, Jim Shirley
 Pershing County Library, Jeanne Munk,
 Phelps, R. C.
 Prohaska, Holly – Tetra Tech, Inc.
 Public Resource Associates, Susan Lynn
 Pulver, Ken
 Quadrio, Lawrence
 Renfroe, John & Nancy
 Reno County Library
 Reno Gazette-Journal, Jeff Delong
 Rezek, Shirley
 Rhoads, Dean
 Rodabaugh, Kelly Ray
 Rose, Peggy
 Safford, James
 * Saake, Norm (Nevada Waterfowl Association)
 Sample, Calvin & Billie
 Saralegui, Geraldine
 Schein, Robert
 Schroeder Law Offices
 Senators Harry Reid's Office, Mary Connelly
 Sevon, Mike
 * Sherve, Jon
 Sill, Marge
 Sims, Don & Martha
 Smith, Douglas
 Smith, Judy – Colorado State University
 Souza, Dick and Pauleta
 Stafford, Michael – Nevada State Clearinghouse
 Starr, Craig
 State of Nevada, Governor Kenny Guinn's Office
 Stovall, Sean & Nan
 * Strickland, Rose (Toiyabe Chapter of the Sierra Club)

Tenente, Alfonso
The Humboldt Sun
The Lovelock Review-Miner
The National Wildlife Federation
The Nature Conservancy of Nevada
The Oasis at Rye Patch, Astrid & Casey Mahaney
Thompson, Helen
Thoms, Al
Thomsen, Olaf & Maxine
Three Bar S Ranch, Craig Starr
Toiyabe Chapter of the Sierra Club, Dennis Ghiglien
Toiyabe Chapter of the Sierra Club, Rose Smith
* Toiyabe Chapter of the Sierra Club, Rose Strickland
Tomera Ranches, Dan Tomera
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GLOSSARY

6.0 GLOSSARY

Abutment - a structure that supports the ends of a dam or a bridge.

Acquired lands - lands where title has been obtained from non-federal sources by purchase, donation, exchange, or condemnation, and some portion of whose cost has been charged to the project's construction costs. This term applies to easements as well as fee title lands.

Acre-foot - measure of volume that would cover 1 acre to a depth of 1 foot. One acre-foot is approximately 325,851 gallons.

Active storage - reservoir capacity that can be used for authorized purposes.

Advisory Council - refers to the Advisory Council on Historic Preservation.

Affected environment - existing biological, physical, social, and economic conditions of an area subject to change, both directly and indirectly, as the result of a proposed human action.

Allocation, allotment - refers to a distribution of water through which means specific persons or legal entities are assigned individual rights to consume pro rata shares of a specific quantity of water under legal entitlements.

Alluvium - sedimentary material transported and deposited by the action of flowing water.

Ambient - surrounding natural conditions (or environment) in a given place and time.

Apportionment - refers to the distribution of water available to each water right holder.

Aquifer - a geologic formation that contains sufficient saturated materials to be capable of storing and transmitting water in usable quantities to a well.

Benthic - bottom of rivers, lakes, or oceans; organisms that live on the bottom of water bodies.

Candidate species - plant or animal species not yet officially listed as threatened or endangered, but which is undergoing status review by the FWS.

Catch - at a recreational fishery, refers to the number of fish captured whether they are kept or released.

Consumptive use - the use of water by plants, animals, or humans. This includes evapotranspiration but does not include water that returns to the surface or groundwater system.

Cooperating Agency - with respect to the NEPA process, an agency having jurisdiction by law or special expertise concerning an aspect of a proposed project action that is requested by the lead agency to participate in the preparation of an Environmental Impact Statement.

Court - United States Supreme Court.

Criteria - standards used for making a determination.

Critical Habitat - specific areas with physical or biological features essential to the conservation of a listed species and which may require special management considerations or protection.

Cubic foot per second (cfs) - A rate of water flow equal to 1 cubic foot of water passing a point in 1 second of time.

Cultural resource - a site or structure that is part of the heritage of an area and typifies a particular stage of human activity in the area. Includes archeological, historic, and undisturbed natural sites that have historic or prehistoric associations.

Discharge (flow) - volume of water that passes a given point within a given period of time; expressed in this document in cfs.

Drawdown - lowering of a reservoir's water level; process of depleting reservoir or groundwater storage.

Easement - a right to the use of land that does not involve change of ownership.

Endangered Species - a species or subspecies whose survival is in danger of extinction throughout all or a significant portion of its range.

Endangered Species Act of 1973, as amended (P.L. 93-205, 16 U.S.C. 1531 et seq.) - a law enacted by Congress to provide for the conservation of endangered or threatened species of fish, wildlife, and plants, and for other purposes.

Flash streams - streams that have a sudden or flash flow or flush flow for a comparatively brief period of time, while such stream is draining the particular basin or source of supply fed by melting snows.

Forage Fish - generally, small fish that reproduce prolifically and are consumed by predators.

Fry - life stages of fish between the egg and fingerling stages.

Gaging station - specific location on a stream where systematic observations of hydrologic data are obtained through mechanical or electrical means.

Headwater - the source and upper part of a stream.

Highly sensitive uses - schools, hospitals, convalescent homes, daycare centers, and other areas where large numbers of people concentrate, who because of their age, physical condition, or large number may require assistance to evacuate.

Impoundment - body of water created by a dam.

Indian Trust Assets - legal assets associated with the rights or property held in trust by the United States for the benefit of federally recognized Indian tribes or individuals.

Inflow - water flowing into a lake or reservoir from a river and its tributaries; or water entering a river from its tributaries.

Irretrievable commitment - of natural resources means loss of production or use of resources as a result of a decision.

Irreversible commitments - are decisions affecting renewable resources such as soils, wetlands, and water fowl habitat. Such decisions are considered irreversible because their implementation would affect a resource that has deteriorated to the point that renewal can occur only over a long period of time or at great expense, or because they would cause the resource to be destroyed or removed.

Irrigation return flows - excess Irrigation Water not consumed that returns to the main stem (or a collection ditch) from surface runoff, subsurface underflow, or groundwater inflows.

Irrigation season - usually the 6-month period beginning March 15 and ending September 15 of any given year.

Juvenile - young fish older than 1 year but not having reached reproductive age.

Landslide - refers to rock or debris descending down a slope slowly to very rapidly due to gravity.

Larval fish - fish in an immature stage that develop from the fertilized egg before assuming the characteristics of the adult.

Lead agency - the agency initiating and overseeing the preparation of an Environmental Impact Statement or other NEPA compliance document.

Liquefaction - a phenomenon in which saturated soils lose strength and cohesion when subjected to dynamic forces, such as shaking during an earthquake. Liquefaction can also occur in unsaturated soils with low cohesion, such as sand.

Mean monthly flow - average flow for the month, usually expressed in cfs.

Memorandum of Agreement (MOA) - a written agreement between two willing parties that expresses the explicit intent of the agreed-upon action.

Milligram per liter - equivalent to one part per million.

National Environmental Policy Act (NEPA) of 1969, as amended (P.L. 91-190, 42 U.S.C. 4321-4347) - a law enacted by Congress to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

National Historical Preservation Act of 1966, as amended (P.L. 89-665, 16 U.S.C. 470) - a law enacted by Congress to establish a program for the preservation of additional historic properties throughout the nation, and for other purposes.

National Performance Review - a federal government review enacted by President Bill Clinton that was designed to review federal procedures and operations and to ultimately create a government that works better and costs less.

Non-point source - is a diffuse source, such as runoff from a large area of land. Chemical constituents from these sources are often the result of natural background sources. However, NPS pollution can result from agriculture (e.g., irrigation and grazing of livestock), urban storm water runoff, leaking septic tanks, and erosion from disturbed areas (e.g., highway construction, mining, or off-road vehicles).

Open space - undeveloped areas, golf courses, beaches, and other areas.

Permeability (soil) - ease with which water flows through a layer of soil.

Point source - discharges from an identifiable point (e.g. pipe, pond, culvert, or drain) into a water body.

Prime (agricultural) farmland - is defined by the U.S. Department of Agriculture, NRCS as best suited to the production of row, forage, and fiber crops.

Public domain lands - refer to lands that have never left federal ownership under the jurisdiction of the BLM. Public domain lands are also known as public lands. Public land is a term used for the federal land of the western United States, much of which is administered by the BLM.

Public involvement - process of obtaining citizen input into each stage of development of planning documents.

Quitclaim Deed - a written instrument that transfers a party's rights concerning particular property to another party.

Recognized environmental condition - a recognized environmental condition is defined as the presence or likely presence of any hazardous substance or petroleum product on a property under conditions that indicate an existing release, a past release, or a material threat of a release of hazardous substance or petroleum product into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws.

Reclamation - the United States Department of Interior, Bureau of Reclamation.

Reclamation Project - any irrigation of multiple-purpose project constructed by the Secretary through Reclamation, the purposes of which are authorized by federal Reclamation law (the Act of June 17, 1902 and Acts supplementary to and amendatory thereof).

Reclamation Project Lands - real property owned by the United State and administered by the Secretary, acting through the Commissioner of Reclamation, including all acquired and withdrawn lands and water areas under jurisdiction of Reclamation.

Riparian - pertaining to the bank of a river, pond, or lake.

Rural land uses - agricultural areas, farms, orchards, and nurseries.

Salinity - a term used to refer to the dissolved minerals in water, also referred to as total dissolved solids.

Secretary - the Secretary of the Interior or a duly authorized representative.

Sediment - unconsolidated solid material that comes from weathering of rock and is carried by, suspended in, or deposited by water or wind.

Sediment load - mass of sediment passing through a stream.

Seepage - relatively slow movement of water through a medium such as sand.

Spills - water releases from a dam in excess of power plant capacity.

Spillway - overflow facility at a dam.

Stage - elevation of the water surface.

Stock water diversions - irrigation diversion outside the irrigation season to provide water for livestock.

Stream flow station - a site where a continuous record of discharge is obtained. Within the USGS, the term is used only for a station where a continuous record of discharge is obtained.

Subsidence - A dropping of the land surface as a result of ground water being pumped. Cracks and fissures can appear in the land. Subsidence can be caused by various natural phenomena such as tectonic movement, consolidation, hydro-compaction, or rapid sedimentation; additionally, subsidence can also result from a variety of human activities, including withdrawal of water or petroleum from the subsurface. Subsidence resulting from over pumping is usually an irreversible process.

Tailwater - water immediately downstream of the outlet from a dam or hydroelectric power plant.

Traditional cultural property (TCP) - a site or resource that is eligible for inclusion in the National Register of Historic Places because of its association with cultural practices or beliefs of a living community.

Tributary - river or stream flowing into a larger river or stream.

Turbidity - a measure of clarity or cloudiness of water, measured by how deeply light can penetrate into the water from the surface.

Unique farmland - is defined by the NRCS as farmland that is not classified as “prime farmland,” but has special combinations of soil quality, location, topography, growing season, and moisture supply necessary to produce high yields of specialty crops such as fruits and vegetables.

Urban land uses - residential, commercial, and industrial areas.

Watershed - the drainage area upstream of a specified point on a stream.

Wetlands - areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions.

Withdrawn lands - federal lands withheld from settlement, sale, location of minerals, or entry under some or all of the general lands laws for the purpose of limiting activities in order to maintain other public values, reserve the area for a particular public purpose, or transfer jurisdiction of this area from one federal agency to another. When that public purpose is a Reclamation project, withdrawn lands are made available by the United States for project use at no cost to the repayment entity. Withdrawals from the public domain transfer jurisdiction from the BLM to Reclamation; withdrawn lands are not public lands.

Young-of-year- small fish hatched from eggs spawned in the current year.

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7.0 LIST OF PREPARERS

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