

# Ruby Pipeline Project Land Exchange on Sheldon National Wildlife Refuge

Supplemental Information to the Ruby Pipeline Project  
Final Environmental Impact Statement

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U.S. Department of the Interior

U.S. Fish and Wildlife Service



Ruby Pipeline Project Land Exchange on Sheldon National Wildlife Refuge:  
Supplemental Information to the Ruby Pipeline Project Final Environmental Impact  
Statement

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## **Introduction**

This supplemental information pertains to the National Environmental Policy Act (NEPA) process conducted for the Ruby Pipeline Project (Project). The *Ruby Pipeline Project Final Environmental Impact Statement* (Project FEIS) was released to the public in January 2010. On April 5, 2010, the Federal Energy Regulatory Commission (FERC) released its finding and ordered the issuance of a certificate for the proposed pipeline route. The Project FEIS included an assessment of impacts related to access roads to/from the proposed pipeline route. Some of those access roads are located on the Sheldon National Wildlife Refuge (Sheldon Refuge). The project proponent, Ruby Pipeline, LLC (Ruby), has worked closely with Sheldon Refuge to develop a transportation plan for the use of the access roads within the Sheldon Refuge.

A preliminary version of Ruby Pipeline's *Draft Transportation Plan for Use of Access Roads within Sheldon NWR* (Sheldon Transportation Plan) was provided in Appendix X (Transportation Plans, Attachment C) of the Project FEIS. Since that preliminary draft release, Ruby and Sheldon Refuge have continued to refine the Sheldon Transportation Plan (Ruby Pipeline LLC, June 2010) including addition of details related to a proposed land exchange. The land exchange represents a connected action to the Project, which includes Ruby's request to use refuge roads. The effects of the proposed land exchange are being disclosed in this document to satisfy U.S. Fish and Wildlife Service (USFWS or Service) NEPA requirements prior to issuing its Record of Decision.

The information contained in this supplemental NEPA analysis relies heavily on the final version of the Sheldon Transportation Plan. Therefore, the final version of the Sheldon Transportation Plan is included as an attachment for reference while reviewing this supplemental material.

## **Purpose and Need for Action**

The Project, proposed by Ruby, is composed of approximately 675.4 miles of 42-inch-diameter natural gas pipeline, along with associated compression and measurement facilities, located between Opal, Wyoming, and Malin, Oregon. The pipeline would cross four states: Wyoming, Utah, Nevada, and Oregon.

The proposed pipeline route would cross northern Nevada in an east-to-west direction. Part of the route would run approximately 1 to 1.5 miles south of the Sheldon Refuge, which is managed by the USFWS. The pipeline would not cross Sheldon Refuge lands; however, several roads in the southern portion of Sheldon Refuge are in close proximity to the pipeline. Ruby has requested the use of some roads on Sheldon Refuge to serve as access routes for pipeline construction vehicles traveling to and from the pipeline route.

In response to the request from Ruby to use Sheldon Refuge roads, Sheldon Refuge is proposing to permit Ruby access, with stipulations, to most of the improved refuge roads that Ruby has requested to use. Ruby had also sought permission to use some unimproved (two-track) roads as well as Route 34A (an improved refuge road); those

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permissions have been denied. In order to gain the extent of access Ruby requires for pipeline construction, Ruby has acquired approximately 20 acres of private inholding land, previously owned by William and Linda Kennedy, and is proposing to exchange that property for an easement to approximately 3.64 acres of Sheldon Refuge lands, which Ruby would then use to access the pipeline route (see Figure 1).

Acquiring the private inholding property would allow Sheldon Refuge to manage fish and wildlife resources on that property consistent with surrounding refuge lands. In addition, it would preclude the need to provide access to a private inholding, an action which would further fragment important fish and wildlife habitats.

Authority of the USFWS for the proposed exchange derives from the National Wildlife Refuge Administration Act of 1966 (16 U.S.C. 668dd(a)(3)), as amended.

## **Affected Environment**

### ***USFWS Exchange Lands***

Refuge lands for which Ruby will receive an easement are located in the southeast quarter (SE  $\frac{1}{4}$ ) of the southeast quarter (SE  $\frac{1}{4}$ ) of Section 33 and the southwest quarter (SW  $\frac{1}{4}$ ) of the southwest quarter (SW  $\frac{1}{4}$ ) of Section 34, Township 43 North, Range 23 East, and the west half (W  $\frac{1}{2}$ ) of the northwest quarter (NW  $\frac{1}{4}$ ) and east half (E  $\frac{1}{2}$ ) of the southwest quarter (SW  $\frac{1}{4}$ ) of Section 3, Township 42 North, Range 23 East of the Mount Diablo Meridian. This 30-foot-wide tract of land extends along the centerline of Wall Canyon Road (W-1) in Washoe County, covering 3.64 acres at the southeast boundary of Sheldon Refuge.

The information describing the characteristics of the proposed easement is summarized from *Appendix X Attachment C: Transportation Plan for Use of Access Roads and Routes within Sheldon National Wildlife Refuge* (Sheldon Transportation Plan) of the Project FEIS. This previous version of the Sheldon Transportation Plan has been updated (Ruby Pipeline LLC, June 2010) and is made available with this document on the land exchange (see Attachment B). Additional details may be found in that document. Sensitive resources have been identified within the approximately one-mile length of W-1 extending from Wall Canyon Spring to the Sheldon Refuge fence line. Vegetation surrounding the Sheldon Refuge proposed easement road is dominated by sagebrush steppe, with minimal riparian and pinion-juniper plant communities. Data collected by Ruby identify a wetland area at the northwestern portion of the proposed easement.

According to mapped wildlife use areas developed from Sheldon Refuge records, the proposed easement area is important non-winter range for pronghorn antelope and is within the range of mule deer (USFWS 2009 [combined GIS files]). Data collected by Ruby also indicate greater sage grouse, an inactive lek has been observed near the northern portion of the proposed easement length, and three raptor nests have been identified within 1 mile line-of-sight of the proposed easement setting. There is no

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suitable pygmy rabbit habitat identified within or adjacent to the proposed easement property.

### **Ruby Exchange Lands**

The property that Ruby has acquired and proposes to use in the land exchange is located in the south half (S ½) of the southwest quarter (SW ¼) of the southeast quarter (SE ¼) of Section 12, Township 44 North, Range 23 East of the Mount Diablo Base and meridian. This private inholding is a 20-acre property in Washoe County near the summit of Fish Creek Mountain and is wholly located within the Sheldon Refuge. There are no improvements or structures located on it. The elevation of the site ranges from approximately 6,200 to 6,800 feet above mean sea level. Vegetation mapping of Sheldon Refuge indicates the property is predominantly covered in mountain big sagebrush with areas of low sagebrush and Wyoming big sagebrush coverage (Tagestad 2009). The percentage of canopy coverage ranges from 10 percent to 30 percent throughout the property (Tagestad 2009). One spring or seep is present on the property.

According to mapped wildlife use areas on the Sheldon Refuge, several species use the habitat and area in and around the property. Greater sage grouse use the area for non-lekking activities. Pygmy rabbit habitat, which is closely linked to big sagebrush species, is known to occur in and around the property. Important mule deer winter habitat is adjacent to the site. Habitat is also found at this site for a variety of migratory birds and other sagebrush-obligate species such as Brewer's sparrow, sage thrasher, sage sparrow, kit fox, sagebrush vole, and Great Basin pocket mouse. The property is also located on the border of crucial pronghorn summer range (USFWS 2009 [combined GIS files]). Because this land has not been under the jurisdiction or ownership of Sheldon Refuge, no wildlife surveys have been conducted on the property.

Sheldon Refuge may be required to provide and maintain access to private inholdings within refuge lands. In addition, Sheldon Refuge has no authority to exercise any control over the development of private inholdings located within its boundaries. For example, an inholding owner could develop a destination lodging or commercial enterprise on the property without regard to its location within a national wildlife refuge. The property is located in the center of Sheldon Refuge in a popularly traveled and used area. Development of the property would be inconsistent with the purpose of the surrounding refuge lands.

### **Effects of Exchange**

Positive effects would result from acquisition of the 20-acre Kennedy property. Currently, one percent of land within the Sheldon Refuge boundary consists of private inholdings, which are not afforded refuge protection or subject to its resource management strategies. The Ruby property is located more than 5 miles from the Sheldon Refuge boundary and is surrounded by refuge lands. Acquisition of this property would protect the habitat in a manner consistent with surrounding Sheldon Refuge lands. It would also aid the Service in achieving management objectives for species where habitat

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loss or degradation is a major cause of decline or where buffers are needed to protect sensitive areas.

Under private ownership, the 20-acre Kennedy property could be developed, resulting in negative impacts to Sheldon Refuge resources including wildlife, habitat integrity, and the viewshed. New dwellings, structures, and roads could be built by private landowners, resulting in impacts to surrounding habitats and downstream water sources, introducing and facilitating proliferation of invasive species, and serving as a deterrent to Sheldon Refuge visitors. Acquisition of the inholding would improve Sheldon Refuge's ability to apply consistent management strategies with reduced fragmentation. Management of invasive species, fire suppression, habitat restoration, habitat connectivity, and protection of cultural and paleontological resources would be applied equally to the acquired property as it would to the existing Sheldon Refuge lands. Costs related to fencing around the private land, conducting land surveys, and maintaining access roads to the property would decrease because those measures would no longer be required nor implemented.

Impacts associated with granting the road easement along an approximately 1-mile stretch of W-1 would also occur. Although Ruby is not proposing to construct any new roads on Sheldon Refuge, Ruby would use existing roads to access the pipeline road easement. Vehicle traffic on Sheldon Refuge roads would increase temporarily during pipeline construction, resulting in a corresponding increase in impacts to Sheldon Refuge resources. As discussed in the Transportation Plan, vehicle traffic can result in the following impacts: direct injury or death to wildlife from collisions; increased air pollution; high levels of heavy metals in adjacent soil and plants; and noise-related behavioral and physiological changes in animals. Increased traffic on access roads would increase this probability. However, the increase in traffic would be temporary and is not expected to result in a significant increase in the number of vehicle/animal collisions, accumulation of pollutants, or behavioral or physiological changes in animals sensitive to noise.

The monetary appraised value of the Ruby exchange lands exceeds that of the USFWS exchange lands; consequently, the land exchange is also economically favorable to the public.

The land exchange would allow Sheldon Refuge to absorb a 20-acre private inholding that is surrounded by refuge lands, restoring habitat connectivity and protection to this portion of the landscape. Whereas the 3.64-acre road easement, located at the southern boundary of Sheldon Refuge, is bordered on three sides by Bureau of Land Management lands that are not managed consistently with Sheldon Refuge strategies or afforded refuge protection. Although there are both positive and negative impacts related to the land exchange, the benefits that would be realized from the land exchange far outweigh any negative impacts.

### ***Potential Irretrievable and Irreversible Commitments***

The anticipated increases in traffic and other human uses of Sheldon Refuge roads during pipeline construction may result in irretrievable and irreversible effects on resources, such as a reduction in biological, cultural, and paleontological resources in the vicinity of the road system. However, the protection and restoration emphasis of the mitigation elements in the Transportation Plan is expected to greatly diminish the potential for irretrievable and irreversible effects on these resources. Implementation of the biological agreements and conservation plans would protect and reduce impacts to wildlife and habitat resources (Appendix M of the Project FEIS). Implementation of the Unanticipated Discoveries Plan and Paleontological Resources Monitoring Plan filed by Ruby with FERC would reduce impacts to cultural and paleontological resources. The land exchange would be subject to all impact reduction plans associated with the Ruby Pipeline Environmental Impact Statement.

### ***Relationship between Short-term Uses of the Human Environment and Enhancement of Long-term Productivity***

As described in preceding sections, implementation of the land exchange is expected to result in some short-term negative effects to refuge resources. These include temporary effects on habitat connectivity, localized wildlife use of the site, hydrology, and the physical environment.

However, the following mitigation and enhancement actions are expected to improve long-term productivity within the refuge: restoration of native vegetation; improved hydrology with culvert replacement; management of invasive species; habitat connectivity through acquisition of the private inholding; and protection of cultural and paleontological resources.

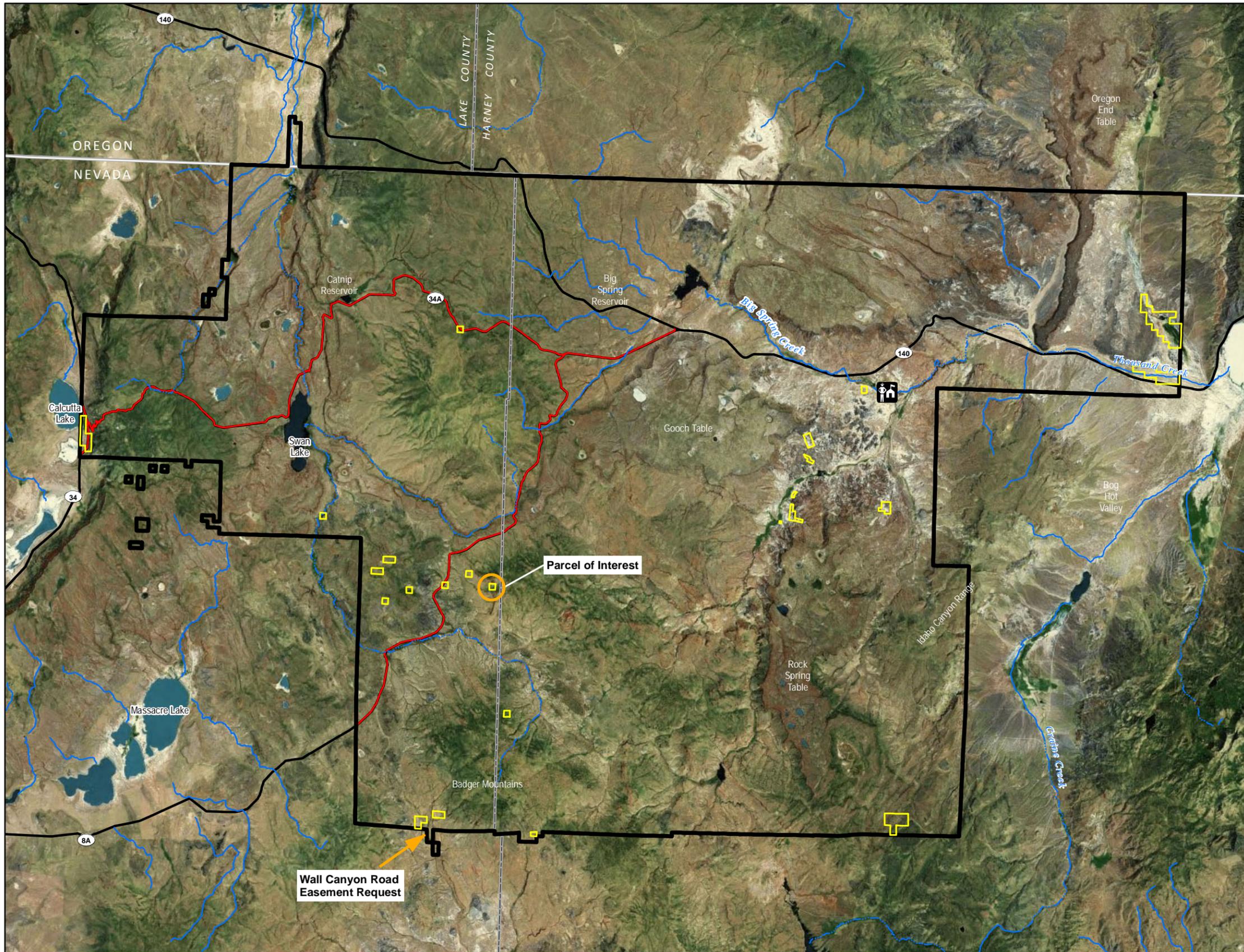
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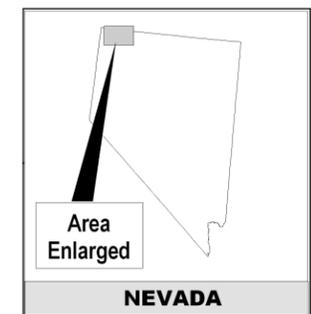
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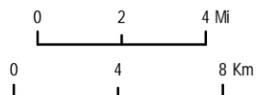
## **Attachment A - Figure 1**



- LEGEND**
- Refuge Headquarters
  - Inholding
  - Approved Refuge Boundary
  - State Line
  - County Boundary
  - Intermittent Stream
  - Perennial Stream
  - Road- Improved Gravel
  - Road- Paved
  - Highway



Produced by USFWS Region 1  
 Refuge Information Branch  
 Portland, Oregon  
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 File: 10-102-1.mxd



**Attachment B – Transportation Plan for Use of Access Roads  
and Routes within Sheldon National Wildlife Refuge**

**Transportation Plan for Use of  
Access Roads and Routes within  
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## List of Abbreviations and Acronyms

APE	Area of Potential Effect
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
DOT	Department of Transportation
FERC	Federal Energy Regulatory Commission
FRCC	fire regime condition class
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
NHPA	National Historic Preservation Act
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NRS	Nevada Revised Statute
NWR	National Wildlife Refuge
POD	Plan of Development
Project	Ruby Pipeline Project
ROW	right-of-way
Ruby	Ruby Pipeline, LLC
Sheldon NWR	Sheldon National Wildlife Refuge
SNWR Transportation Plan	Ruby Pipeline Sheldon National Wildlife Refuge Transportation Plan
SUP	Special Use Permit
USFWS	U.S. Fish and Wildlife Service
WSA	Wilderness Study Area

# 1.0 Introduction

The Ruby Pipeline Project (Project), proposed by Ruby Pipeline, LLC (Ruby), is composed of approximately 675.2 miles of 42-inch diameter natural gas pipeline, along with associated compression and measurement facilities, located between Opal, Wyoming, and Malin, Oregon. The Project includes an approximate 2.6-mile lateral, to be constructed from the pipeline termination point north to the Malin Hub in Klamath County, Oregon. The pipeline right-of-way (ROW) would cross four states: Wyoming, Utah, Nevada, and Oregon. Four new compressor stations would also be installed as part of the Project.

The proposed route for the ROW would cross northern Nevada in an east-to-west direction. Part of the route would run approximately 1 to 1.5 miles south of Sheldon National Wildlife Refuge (Sheldon NWR), which is managed by the U.S. Fish and Wildlife Service (USFWS). This transportation plan has been developed specifically for access to the proposed route through the Sheldon NWR. The Sheldon NWR is located in the northern portions of Washoe and Humboldt counties in northwestern Nevada and in the southeastern portion of Lake County, Oregon (USFWS 2008a). It encompasses 575,813 acres of land; of this, 575,186 acres are in Nevada and 627 acres are in Oregon (USFWS 2008a).

The pipeline ROW would not enter the Sheldon NWR boundaries. However, several roads and other access routes in the southern portion of the Sheldon NWR lead to the pipeline ROW and have been proposed as access roads for pipeline construction vehicles traveling to and from the ROW. Two-tracks in the Sheldon NWR are referred to as access routes. These routes are unimproved travel lanes and are maintained through occasional passage. The USFWS would require a Special Use Permit (SUP) for usage of access roads and routes on the Sheldon NWR, as required by 50 Code of Federal Regulations (CFR) 25.21 under the National Wildlife Refuge (NWR) Administration Act, see regulations below. Provided that the Ruby Sheldon NWR Transportation Plan (SNWR Transportation Plan) includes complete environmental information (including natural and cultural resource information) that can be included in the Federal Energy Regulatory Commission's (FERC's) environmental impact statement (EIS), it can also serve as the SUP application for access roads/routes within the Sheldon NWR. This will ensure that the USFWS is compliant with the National Environmental Policy Act (NEPA) requirements for actions and decisions involving the federal lands under its jurisdiction and avoid the need for a separate NEPA process for the SUP.

**50 C.F.R. 25.21 “When and how do we open and close areas of the National Wildlife Refuge System to public access and use or continue a use?”**

- (a) Except as provided below, all areas included in the National Wildlife Refuge System are closed to public access until and unless we open the area for a use or uses in accordance with the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd–668ee), the Refuge Recreation Act of 1962 (16 U.S.C. 460k–460k–4) and this subchapter C. See 50 CFR 36 for details on use and access restrictions, and the public participation and closure process established for Alaska national wildlife refuges. We may open an area by regulation, individual permit, or public notice, in accordance with §25.31 of this subchapter”.

USFWS policy on ROWs states, in part, that, “...short term and temporary use of an existing road . . . can best be accommodated through special use permits” (340 FW 3).

The USFWS’ special use permit policy (5 RM 17) defines Ruby’s proposed use of the Sheldon NWR for access to the pipeline as an economic use because it includes activities “involving the use of a refuge or its resources for a profit.” Economic uses of a refuge are considered specialized uses and are authorized through issuance of an SUP or an equivalent legal document.

In reviewing the SUP application/Sheldon NWR Transportation Plan, the Refuge Project Leader is required to heed the guidance of the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997. The following section summarizes that guidance.

**National Wildlife Refuge System Administration Act (of 1966) as amended by the National Wildlife Refuge System Improvement Act (of 1997)**

The 1966 Act (16 U.S.C. 668dd) provides guidelines and directives for administration and management of all areas in the system, including “wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas.” This act gives the Secretary of the Interior the authority to permit by regulations the use of any area within the system provided “such uses are compatible with the major purposes for which such areas were established.”

The 1997 amendment builds upon the National Wildlife Refuge System Administration Act of 1966 to ensure that the National Wildlife Refuge System is managed as a national system of related lands, waters, and interests for the protection and conservation of the United States’ wildlife resources. The amendment provides guidance to the Secretary of the Interior for the overall management of the Refuge System. The Act’s main components are a strong and singular wildlife conservation mission for the Refuge System; a requirement that the Secretary of the Interior maintain the biological integrity, diversity, and environmental health of the Refuge System; a process for determining compatible uses of refuges; a recognition that wildlife-

dependent recreational uses involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when determined to be compatible, are legitimate and appropriate public uses of the Refuge System; that these compatible wildlife-dependent recreational uses are the priority general public uses of the Refuge System; and a requirement for preparing comprehensive conservation plans.

The purpose of this transportation plan is to describe the proposed usage of roads and access routes on the Sheldon NWR, the potential impacts from those uses, and the terms of access that will be employed, where appropriate and feasible. The analysis in this plan will be appended to the SUP application so that the USFWS will have adequate information upon which to base its decision to grant a SUP to Ruby for the purpose of using specific access roads and routes to the proposed pipeline route.

## 1.1 Sheldon National Wildlife Refuge

The Sheldon NWR is part of the high desert, which is characterized by wide, open spaces and a variety of landforms, the most common of which are narrow canyons and broad, flat tables (USFWS 2008b; USFWS 2009a). Elevations range from approximately 4,200 to 7,294 feet (USFWS 2008b; USFWS 2009a). Annual precipitation averages 6 inches on the east side of the Sheldon NWR and 13 inches on the west side. Most of this precipitation occurs in the form of snow during the winter; surface water and soil moisture are scarce in the summer (USFWS 2008b). Soils are generally semiarid, very young, and poorly developed, with slow chemical and biological soil development processes (USFWS 2008a). Sagebrush steppe is the most abundant habitat type in the Sheldon NWR (USFWS 2008a; USFWS 2009a). However, when sagebrush steppe is un-grazed by domestic livestock, as at the Refuge, this habitat is one of the Nation's more endangered ecosystems (Noss and Peters, Dec. 1995; Noss, R.F. et al., 1995). For further discussion regarding sagebrush steppe please see section 3.6.

As a U.S. National Wildlife Refuge, the Sheldon NWR's primary goal is wildlife conservation, with biological integrity, diversity, and environmental health being the critical factors (USFWS 2008a). The Sheldon NWR was established by Executive Orders in 1931 and 1936, with refinement of establishing purpose in 1976 (Game Range Act). These documents established the following specific management goals:

- Provide habitat for pronghorn (*Antilocapra americana*) (primary species) and other native wildlife of the sagebrush ecosystem, such as mule deer (*Odocoileus hemionus*), greater sage-grouse (*Centrocercus urophasianus*), and song birds (order Passeriformes);
- Conserve threatened and endangered species; and
- Provide a migratory bird sanctuary (USFWS 2009a).

The sagebrush steppe ecosystem is currently one of North America's most imperiled ecosystems due to impacts from livestock grazing, alteration of natural fire regimes, and

invasion of non-native plant species (USFWS 2008a). Livestock were removed from the Sheldon NWR in 1994. There are still feral horses and burros in the area, but a USFWS management program attempts to limit the extent of their grazing pressure on the ecosystem (USFWS 2008a).

A December 2008 plant inventory for both the Sheldon NWR and Hart Mountain NWR (together, the Sheldon-Hart Mountain NWR Complex) identified over 800 plant species, with forbs and graminoids (grasses, sedges, and rushes) exhibiting the greatest species diversity in the area (USFWS 2008a). The most abundant species in the Sheldon NWR are big sagebrush (*Artemisia tridentata*, including mountain, basin, and Wyoming forms); low sagebrush (*Artemisia arbuscula*); rabbitbrush (*Chrysothamnus* spp. and *Ericameria* spp.); and bitterbrush (*Purshia tridentata*). Mountain mahogany (*Cercocarpus* spp.) and western juniper (*Juniperus occidentalis*) are found at high elevations, and aspens (*Populus tremuloides*) and willows (*Salix* spp.) are found within a few limited areas around water sources or snow pockets at the refuge (PNNL 2009 and Ruby field data). There are also approximately 30 species of non-native, often noxious, vegetation documented at the Sheldon NWR, including cheatgrass (*Bromus tectorum*) and perennial pepperweed (*Lepidium* spp.) (USFWS 2008a).

A survey for invertebrate fauna at the Sheldon NWR identified a plentiful diversity of invertebrate species in the aquatic areas (USFWS 2008a). Fish habitat, however, is limited. Of the 16 fish species present, only three are native: the Tui chub (*Gila bicolor*), the Alvord chub (*Gila alvordensis*), and the Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), which is a federally listed threatened species (USFWS 2008a).

Amphibian habitat is also limited due to the arid climate. The Great Basin spadefoot toad (*Spea intermontana*) and the Pacific tree frog (*Pseudacris regilla*) are the only two native amphibian species. The bullfrog (*Rana catesbeiana*) was introduced and is considered invasive (USFWS 2008a). Reptile diversity is greater than that of amphibians (see Table A-3, Appendix A).

The Sheldon NWR is regularly utilized by at least 192 different bird species, and another 27 species have also been recorded there (USGS 2006). The Sheldon NWR is designated as an Important Bird Area in northwestern Nevada for greater sage-grouse and other sage obligate avian species. The most abundant bird order at the Sheldon NWR is Passeriformes, the perching birds and song birds (USFWS 2008a). Numerous passerine bird species of the Great Basin have shown precipitous declines across their range. Those species readily found on the Sheldon NWR are identified in table 3.3-1. Raptors with ideal nesting habitat at the Sheldon NWR include golden eagles (*Aquila chrysaetos*), prairie falcons (*Falco mexicanus*), and red-tailed hawks (*Buteo jamaicensis*). American kestrels (*Falco sparverius*), northern harriers (*Circus cyaneus*), and owls (order Strigiformes) are also relatively common, and there is a small number of bald eagles (*Haliaeetus leucocephalus*) (USFWS 2008a). Waterbirds include various species of ducks (family Anatidae), Great Basin Canada geese (*Branta canadensis*), swans (*Cygnus* spp.), killdeer (*Charadrius vociferous*), Virginia rail (*Rallus limicola*), common snipe (*Gallinago gallinago*), and American coot (*Fulica americana*). Greater sage-grouse are

native to the Sheldon NWR and appear to have stable or increasing populations (USFWS 2008a). Mountain quail (*Oreortyx pictus*) is also native, while California quail (*Callipepla californica*), chukar (*Alectoris chukar*), and gray partridge (*Perdix perdix*) are introduced (USFWS 2008a).

There is an abundance of small mammals in the Sheldon NWR, including various rats, mice, shrews, squirrels, bats, and others. American pika (*Ochotona princeps*) has been newly rediscovered on the Sheldon NWR, found in talus areas on escarpments (Steblein 2009). Pronghorn antelope and mule deer are the predominant large mammals at the Sheldon NWR. Bighorn sheep (*Ovis canadensis*) were extirpated from the refuge, but have since been reintroduced. A limited number of mountain lions (*Puma concolor*), bobcats (*Lynx rufus*), and American badgers (*Taxidea taxus*) live at the Sheldon NWR, while coyotes (*Canis latrans*) are relatively abundant. Feral horses (*Equus ferus caballus*) and burros (*Equus africanus asinus*) are being managed to keep their numbers in check to limit the extent of their grazing pressure on the ecosystem (USFWS 2008b).

For lists of species found at the Sheldon NWR, including mammals, birds, reptiles, amphibians, and fish, please see Appendix A.

## 2.0 Proposed Use of Roads and Other Access Routes

### 2.1 Location and Characteristics of Roads and Routes Proposed for Use

The USFWS has jurisdiction over all roads and routes within the Sheldon NWR. There is only one paved road in the Sheldon NWR: Nevada State Route 140, which runs in a northwest-southeast direction across the northern portion of the refuge in Humboldt County. The Nevada Department of Transportation (NDOT) has a right-of-way for Highway 140, which grants them authority to construct and maintain the roadway and allow highway-related uses. Nevada State Route 140 will be used for the Project but will not be under the SUP because commercial traffic is regulated by NDOT. Routes 34, 34A, 8A, and Summit Lake/Badger Mountain Road are unpaved but improved with graded and drained gravel. Routes 34 and 34A will not be used for the Project. The Sheldon NWR will only allow use of 34A for medical emergencies. Route 8A and Summit/Lake Bader Mountain Road will be used for the Project and are under a joint use agreement with the USFWS, Humboldt County, and Washoe County. The majority of the travel routes on the Sheldon NWR are unimproved two-track. Roads and other access routes within the Sheldon NWR that are proposed for Ruby construction vehicle use during pipeline construction are shown in Figure B1<sup>1</sup> and listed in Table 2.1-1. The USFWS would require that Ruby obtain an SUP prior to use or improvement of any road or route in the Sheldon NWR, other than Nevada State Route 140. The USFWS will also require Ruby to post signs on access roads, which will be signed as either Access or No Access. The area between access road 8A and Knot Creek Road will be posted with the Sheldon NWR boundary blue goose signs.

During an on-site field meeting between Ruby and the USFWS on September 14, 2009, it was determined that access routes H-53 and H-54 would not be needed for the Project because the USFWS has agreed to process Ruby's application to use Route H-50 for light duty trucks only. Ruby will take measures to avoid rutting and damaging the road (i.e., using matting over wet areas). If damage occurs, Ruby will consult with the Sheldon NWR to seek approval to blade or take other corrective action. Additionally, due to sensitive resources and recreation use, route H-52 will not be used for the Project. There is a small portion of H-50 on the Sheldon NWR; however, the actual fence line along the southern boundary of the Sheldon NWR excludes this road from refuge's boundaries. There is a mixture of ownership outside of the fence line, so improvements will be low impact. Based on the ownership, H-50 will be included in the SUP. In addition, the fence on the southern boundary excludes about two miles of access route W-1, which is actually within the Sheldon NWR.

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<sup>1</sup> All figures are located in Appendix B

**Table 2.1-1 Refuge Roads and Two-Tracks Proposed for Ruby Construction Vehicle Use.**

Access Road/Route	Type of Road/Route and Current improvements	Road/Route Width (ft)	Road/Route Length (miles)	Improvements Needed**
Nevada State Route 140	Paved two-lane; maintained	Standard two-lane highway	34.2 inside Sheldon NWR	None identified
8A	Improved, unpaved; bladed and maintained	25–30	26.6 inside Sheldon NWR	Mowing at blind corners
W-1	Unimproved; previously bladed and ditched on each side	8–10	4.56	Blade as needed; mat and bridge over two existing culverts
H-46 - east side of Sheldon NWR (Summit Lake/Badger Mountain Road***)	Unimproved; previously bladed	10–12	3.43	Blade as needed
H-46A	Unimproved; previously bladed	10–12	0.48	Gravel to prevent road degradation;
H-46B south central portion of Sheldon NWR (Summit Lake/Badger Mountain Road***)	Unimproved; bladed and maintained	10–12	18.54	Blade as needed; mow sagebrush and lay back east edge of road at one location for visibility; mat one dry wash
H-50	Unimproved; previously bladed	10–12	0.60	Blade if significant rutting or erosion occurs; mat a crossing over a spring.

Note:

\*\* Ruby conducted on-site assessments on September 29, 2009 to determine improvements that would needed to each road/route utilized during construction.

\*\*\* Summit Lake/Badger Mountain Road traverses south out of Sheldon NWR and crosses the ROW and then turns north again. The Project will not utilize the portion of the road south of the ROW because it is on Summit Lake Paiute Tribe land. For purposes of this report and for clarity, the two road names (H-46B and H-46) are used to delineate which road is being discussed.

## 2.2 Proposed Duration and Intensity of Road/Route Use

Construction of the Project would move progressively east to west down the ROW at approximately one mile a day. The access roads and routes through the Sheldon NWR would be used for approximately eight months, from May through December. The vehicle count would vary from day to day. For the months before and after construction, the volume of traffic on the roads/routes would be less. Use prior to construction (May–August) would be for the construction companies to stage equipment as well as for the foreman and environmental monitors to inspect and survey the ROW. Higher volume of vehicles on the roads/routes would occur from approximately early August through early to mid-November. After construction (December), construction companies would use roads/routes for revegetation and final clean-up. Construction should be complete by the end of December 2010, approximately December 31, 2010. Tables 2.2-2 through 2.2-4 list the types and the potential number of vehicles that would use the access roads/routes on a daily basis. Table 2.2-5 lists vehicle weight when at maximum capacity and length.

**Table 2.2-2 Sheldon NWR Road/Route use Prior to Start of Construction -  
Approximate Start Date: May 1, 2010**

Type of Vehicle	Approximate Number of Vehicles	Route	Number of trips per day	Days of use	Total Trips
Stringing Trucks	30	Hwy 140, 8A	1	1	30
Contractor Vehicles	40	Hwy 140, 8A	1	2	80
Contractor Buses	13	Hwy 140, 8A	1	1	13
Water Trucks	6	Hwy 140, 8A	1	1	6
Fuel Trucks	3	Hwy 140, 8A	1	1	3
Mechanic Trucks	5	Hwy 140, 8A	1	1	5
Trucks using Flatbed Trailers	10	Hwy 140, 8A	1	12	120
Trucks using Lowboy Trailers	10	Hwy 140, 8A	1	8	80
Hydro Testing Equipment/Dryers and Compressors	4	Hwy 140, 8A	2	2	16
Motor Graders	2	Hwy 140, 8A	1	2	4
<b>Total</b>				<b>31</b>	<b>357</b>

**Table 2.2-3 Sheldon NWR Road/Route Use after Start of Construction - Approximate Start Date: August 1, 2010**

Type of Vehicle	Approximate Number of Vehicles	Route A	# of trips per day	Days of Use	Route B	# of trips per day	Days of Use	Route C	# of trips per day	Days of use	Route D	# of trips per day	Days of use	Total Trips
Foreman Pick-up Trucks	10	Hwy 140, H40, H46	1	20	8A, H46B, H46A	1	20	8A, H46B, H46A, H50, W1	1	20	8A, W1	1	5	245
Stringing Trucks	30	Hwy 140, H40, H46	2	7	8A, H46B, H46A	2	7	8A, H46B, H46A, H50, W1	1	10	8A, W1	2	5	454
Welding Rigs	25	Hwy 140, H40, H46	1	7	8A, H46B, H46A	1	7	8A, H46B, H46A, H50, W1	1	10	8A, W1	1	5	197
Inspector Vehicles	28	Hwy 140, H40, H46	1	7	8A, H46B, H46A	1	7	8A, H46B, H46A, H50, W1	1	10	8A, W1	1	5	218
Environmental and Cultural Monitor Vehicles	10	Hwy 140, H40, H46	1	7	8A, H46B, H46A	1	7	8A, H46B, H46A, H50, W1	1	10	8A, W1	1	5	92
Contractor Vehicles	40	Hwy 140, H40, H46	1	7	8A, H46B, H46A	1	7	8A, H46B, H46A, H50, W1	1	10	8A, W1	1	5	302
Contractor Buses	13	Hwy 140, H40, H46	1	7	8A, H46B, H46A	1	7	8A, H46B, H46A, H50, W1	1	10	8A, W1	1	5	113
Water Trucks	6	Hwy 140, H40, H46	2	10	8A, H46B, H46A	2	10	8A, H46B, H46A, H50, W1	2	14	8A, W1	2	7	182
Fuel Trucks	3	Hwy 140, H40, H46	2	7	8A, H46B, H46A	2	7	8A, H46B, H46A, H50, W1	2	10	8A, W1	2	5	86
Mechanic Trucks	5	Hwy 140, H40, H46	1	7	8A, H46B, H46A	1	7	8A, H46B, H46A, H50, W1	1	10	8A, W1	1	5	57
Trucks using Flatbed Trailers	1	Hwy 140, H40, H46	1	8	8A, H46B, H46A	1	10	8A, H46B, H46A, H50, W1	1	12	8A, W1	1	6	36

**Table 2.2-3 Sheldon NWR Road/Route Use after Start of Construction - Approximate Start Date: August 1, 2010**

Type of Vehicle	Approximate Number of Vehicles	Route A	# of trips per day	Days of Use	Route B	# of trips per day	Days of Use	Route C	# of trips per day	Days of use	Route D	# of trips per day	Days of use	Total Trips
Trucks using Lowboy Trailers	2	Hwy 140, H40, H46	1	8	8A, H46B, H46A	1	10	8A, H46B, H46A, H50, W1	1	12	8A, W1	1	6	44
Hydro Testing Equipment/ Dryers and Compressors	2	Hwy 140, H40, H46	2	7	8A, H46B, H46A	2	7	8A, H46B, H46A, H50, W1	2	10	8A, W1	2	5	72
Motor Graders	2	Hwy 140, H40, H46	1	8	8A, H46B, H46A	1	10	8A, H46B, H46A, H50, W1	1	10	8A, W1	1	5	41
<b>Total</b>	<b>177</b>		<b>18</b>			<b>18</b>			<b>17</b>			<b>18</b>		<b>1894</b>

**Table 2.2-4 Sheldon NWR Road/Route use after Construction – Approximate begin date: Dec 1, 2010**

Type of Vehicle	Approximate Number of Vehicles	Route A	Number of trips per day	Days of use	Total Trips
Stringing Trucks	30	8A, Hwy 140	1	1	30
Welding Rigs	25	8A, Hwy 140			0
Inspector Vehicles	28	8A, Hwy 140			0
Environmental and Cultural Monitor Vehicles	20	8A, Hwy 140			0
Contractor Vehicles	40	8A, Hwy 140	1	2	80
Contractor Buses	13	8A, Hwy 140	1	1	13
Water Trucks	6	8A, Hwy 140	1	1	6
Fuel Trucks	3	8A, Hwy 140	1	1	3
Mechanic Trucks	5	8A, Hwy 140	1	1	5
Trucks using Flatbed Trailers	10	8A, Hwy 140	1	12	120
Trucks using Lowboy Trailers	10	8A, Hwy 140	1	12	120
Hydro Testing Equipment/Dryers and Compressors	4	8A, Hwy 140	2	2	16
Motor Graders	2	8A, Hwy 140	1	2	4
<b>Total</b>				<b>35</b>	<b>397</b>

**Table 2.2-5 Vehicle Weight When at Maximum Capacity and Length**

Type of Vehicle	Weight (1000lbs)	Length (feet)
Stringing Trucks	23	80
Welding Rigs	5	15
Inspector Vehicles	PU's	15
Environmental and Cultural Monitor Vehicles	PU's	15
Contractor Vehicles	5-30	15-18
Contractor Buses	20	60
Water Trucks	15	35
Fuel Trucks	25	35
Mechanic Trucks	15	30
Trucks using Flatbed Trailers	70	65
Trucks using Lowboy Trailers	120	90
Hydro Testing Equipment/Dryers and Compressors	75	65
Motor Graders	50	35

KEY: PU – Pick up Truck

## 3.0 Environmental Analysis and Terms of Access

### 3.1 Environmental Analysis of Roads/Routes and Terms of Access

Unpaved roads and routes require periodic maintenance to repair ruts, potholes, and sags. Regular maintenance is even more important on unpaved roads and routes used by vehicles with heavy axle loads. There are various terms of access to keep access roads/routes in good condition. First, the list of access roads/routes in Table 2.1-2 includes the improvements that will be needed prior to industrial vehicle use. In addition, culverts will be assessed prior to construction to determine their pre-construction condition, as well as assessed after construction to determine if replacement is necessary. Table 3.1-1 includes specific concerns expressed by the USFWS and Humboldt and Washoe County Departments of Transportation (DOTs), as well as ways Ruby will attempt to alleviate these concerns. Prior to use, all access roads and routes will be bladed, as needed, to ensure a properly shaped and graded road surface to eliminate sitting water on the road. This would help prevent ruts, potholes, and sags.

During the construction period, Ruby will inspect roads/routes periodically and repair them, as needed. Addressing maintenance issues as they arise rather than waiting until the end of the Project will prevent small maintenance issues from developing into more extensive road/route damage. Following construction, the roads/routes will be repaired as close as practicable to their original condition or better. Culverts will also be assessed to determine if they need to be repaired or replaced.

Mowing of vegetation along access roads will only be allowed on blind corners for safety, and in specific agreed-upon places where additional road treatments are needed (e.g., pull outs). Ruby and the USFWS will conduct a site visit to select the specific locations where additional mowing of vegetation will be needed for pull outs.

**Table 3.1-1 Sheldon NWR Roads/Routes Proposed for Construction Vehicle Use and Concerns Identified by USFWS, DOTs and Terms of Access**

Access Road/Route	Concerns	Terms**
Nevada State Route 140	No outstanding concerns	Typical maintenance required
8A	<ol style="list-style-type: none"> <li>1. Overburden on culverts</li> <li>2. Areas where gravel is worn away</li> <li>3. Invasive weeds</li> </ol>	<ol style="list-style-type: none"> <li>1. Perform before and after construction assessments to determine if culverts will need to be replaced</li> <li>2. Maintain gravel cover before and during construction</li> <li>3. Spray and re-seed with natives</li> </ol>

**Table 3.1-1 Sheldon NWR Roads/Routes Proposed for Construction Vehicle Use and Concerns Identified by USFWS, DOTs and Terms of Access**

Access Road/Route	Concerns	Terms**
	4. Visibility	4. Mow sagebrush and post caution and speed limit signs
W-1	1. Passing of vehicles 2. Narrow and rocky area from Wall Canyon to Sheldon NWR Boundary 3. Culvert needed at Wall Canyon X: 301193.5, Y: 4607646.6	1. Pull-offs every mile or one-way traffic 2. Mow 2–3 feet on both sides of road, sheer rocks, where needed. Mowing will not occur for the last mile of W-1 near Wall Canyon Ranch on lands owned by the Sheldon NWR. 3. Use culvert or mats
H-46 - east side of Sheldon NWR (Summit Lake/Badger Mountain Road***)	No outstanding concerns	Typical maintenance required
H-46A	Deep two-track ruts	Lay down road base where stabilization is needed. Road base to remain after construction and seed over top of it.
H-46B south central portion of Sheldon NWR (Summit Lake/Badger Mountain Road***)	1. Boulders sticking out of road 2. Ten Mile Spring and feral horse and vegetation study 3. Dry Wash before Summit Lake Paiute Tribe land 4. Road curves and narrow area X: 333996.3, Y: 4607434.7	1. Sheer rock before construction 2. Relocate road; coordinate the ripping and seeding of the abandoned portion of the road with the Sheldon NWR 3. Culvert or matting 4. Grade 2–3 feet up slope on north side of road.
H-50	1. Culvert needed X: 308033.3, Y: 4607172.4 2. Visibility Issues	1. Install culvert or 20-inch pipe or mats 2. Mow 2–3 feet on both sides of road, sheer rocks, where needed. Mowing will not occur outside of the fence line where there is mixed ownership.

Note:

\*\* Ruby conducted on-site assessments on September 29, 2009 to determine improvements that would be needed to each road utilized during construction.

\*\*\* Summit Lake/Badger Mountain Road traverses south out of Sheldon NWR and crosses the ROW and then turns north again. The Project will not utilize the portion of the road south of the ROW because it is on Summit Lake Paiute Tribe land. For purposes of this report and for clarity, the two road names are used to delineate which road is being discussed.

### 3.2 Safety Analysis and Terms of Access

The ability of the roads and routes within the Sheldon NWR to safely accommodate an increase in traffic must be considered in Ruby's analysis of access roads and routes for the Project. One road in particular, 8A, has blind corners that Sheldon NWR and the DOTs have identified as a safety risk. An increase in traffic on these roads/routes would further increase the danger at these blind corners. Such safety concerns would be mitigated by mowing vegetation up to 10

feet up the side slope to give 100 feet of visibility, where feasible, as well as placing caution and speed limit signs.

Additionally, most of the roads/routes at the Sheldon NWR are unpaved and, therefore, dangerous when wet. A wet, unpaved road/route can have the same traction as an ice-covered road (USDOI NPS May 2009). Unpaved roads/routes can also become muddy when wet, and vehicles driving on them risk becoming stuck, especially if they are heavy or do not have four-wheel drive. In the fall, winter, and spring, unpaved roads/routes at the Sheldon NWR may be impassable due to snow drifts. Gravel has worn away from portions of 8A; Ruby would alleviate any damage to these sections by performing pre-construction maintenance and continual assessment/maintenance of the road during construction, as stated in Section 3.1. During rain and/or snow conditions, dirt roads/routes or areas where gravel has worn away will rut when driven on. If road conditions become unsafe on the Sheldon NWR access roads/routes, or excessive ruts are created, then Ruby will use the pipeline ROW or will cease the use of these roads/routes until rutting is no longer a concern or Ruby installs gravel to prevent rutting.

Ruby has a Fire Prevention and Suppression Plan (see Plan of Development [POD], Appendix L) that identifies the procedures that will be used to prevent and suppress fires during the construction of the Project and defines responsibilities for reporting, suppressing, and investigating fire ignitions. The Fire Prevention and Suppression Plan delineates the minimum requirements that shall be followed for Project construction activities. Ruby shall work with its construction contractors to assign specific roles and responsibilities consistent with this Plan.

### **3.3 Environmental Analysis of Wildlife and Terms of Access**

#### **3.3.1 General Impacts to Wildlife**

Roads can affect wildlife in a number of ways. As discussed in other sections of this report, they can impact the physical and vegetative environment, which ultimately impacts the wildlife that depend on that habitat. Roads also produce habitat fragmentation, which impacts wildlife by reducing landscape connectivity, and decreasing intra- and inter-specific interactions (USGS 2007). However, this effect “may be more pronounced where routes create major structural gaps in forests than where the contrast between vehicular route corridors and the surrounding landscape is more subtle, such as in shrublands” (USGS 2005). The sagebrush steppe habitat in the Sheldon NWR is one such shrubland. Ruby is not proposing to construct any new roads in the Sheldon NWR to access the pipeline ROW, so significant impacts contributing to habitat fragmentation would not occur. The USFWS has requested Ruby to realign Summit Lake/Badger Mountain Road where it traverses an area between Ten Mile Spring, and a feral horse enclosure study area. For more details see Section 5.4.

Vehicles traveling on roads can cause direct injury or death to wildlife from collisions. Increased traffic on the access roads/routes would increase this probability. However, this increase would be temporary and is not expected to be great enough to significantly raise the

number of vehicle/animal collisions. The probability of such collisions would also be reduced by ensuring that construction vehicles adhere to safe speeds.

Heavily traveled roads can lead to significant amounts of air pollution from vehicle exhaust, and studies show that this can result in high levels of heavy metal in the soil and plants within 20 to 200 meters of the road (USGS 2005). The proposed increase in traffic on access roads/routes would be temporary, lasting approximately eight months; however, the higher volume of traffic would occur for 90 days. Due to the temporary nature of this increase, accumulation of pollutants is not likely to be a problem for the access road/route corridors.

Vehicles traveling on roads produce noise, affecting animals that have behavioral and physiological responses to noise (USFHWA 2004). Various species are affected by noise to varying degrees. A noise may be undetected by one species, while another species might hear it and respond to it. An increase in vehicles traveling on access roads/routes at the Sheldon NWR would generate a corresponding increase in ambient noise levels. It is possible that wildlife may hear the noise and move away from the roads/routes into other areas to avoid it. As the increased traffic and noise would be temporary, these animals may return to the areas near the access roads/routes after Project construction in the vicinity is complete.

A variety of studies have been conducted to determine the impacts of roads and road noise on birds. While some bird species exhibit reduced density near roads, others demonstrate increased density near roads (USFHWA 2004). For example, among the bird species documented at the Sheldon NWR, turkey vultures (*Cathartes aura*) and house finches (*Cardodacus mexicanus*) tend to move away from roads, while song sparrows (*Melospiza melodia*) tend to have a greater population density near roads (USGS 2006; USFHWA 2004).

### **3.3.2 Pronghorn and Mule Deer**

One of the Sheldon NWR's specific goals is to provide habitat for pronghorn and mule deer. Both often migrate annually between a summer range and a winter range, with the winter range typically located at lower altitudes with less snow accumulation and a milder climate.

Pronghorn is the primary species for which the Sheldon NWR was created to provide habitat. The refuge was initially established in 1931 as the Charles Sheldon Wild Life Refuge (Exec Order [EO] 5540, 1931/01/26) and enlarged in 1936 (EO 7364, 1936/05/06). On December 21, 1936, EO 7522 established an additional protected area specific to the conservation of pronghorn antelope and named it Charles Sheldon Antelope Range. In 1978, PLO 5630 consolidated the Refuge and Range into one: Sheldon National Wildlife Refuge. Pronghorn is the only extant species of genus *Antilocapra* and is only found in North America (NDOW May 2003). Pronghorn typically live in groups of eight to ten individuals during the summer season and twenty or more in the winter (NDOW May 2003).

Low sagebrush communities of the table and bench lands are the pronghorn's preferred habitats (NDOW May 2003). Big sagebrush and bitterbrush are important browse species for

the pronghorn in summer and fall (NDOW May 2003). In the winter, pronghorn will sometimes inhabit salt desert shrub environments, which are characteristically dominated by shadscale saltbush (*Atriplex confertifolia*) and four-wing saltbush (*Atriplex canescens*) (NDOW May 2003). However, populations of pronghorn that find sagebrush to graze on in the winter may be less likely to starve (Krejci et. al 2009).

Pronghorn prefer to feed on small amounts of a variety of plants (Krejci et. al 2009). Studies have shown that although Nevada may have sufficient quantities of the pronghorn's primary browse species, it lacks diversity in forbs and grasses (NDOW May 2003).

At the Sheldon NWR, pronghorn typically gather at Swan Lake in the western portion of the refuge in late summer and fall, spending winter at Big Springs Table in the north or on other tables where the wind prevents snow from accumulating (USFWS March 2002).

Mule deer, like pronghorn, feed on sagebrush and bitterbrush. Other browse species utilized by mule deer include serviceberry (*Amelanchier* spp.), snowbrush (*Ceanothus velutinus*), and snowberry (*Symphoricarpos* spp.) (NDOW August 2004). Although they are ruminants, mule deer have a limited ability to digest highly fibrous roughage and must eat approximately as much herbaceous forage as woody forage (Misuraca 1999).

Trees such as pinyon pine (*Pinus monophyla*, *Pinus edulis*), western juniper, and mountain mahogany provide valuable shelter for mule deer (NDOW August 2004; USFWS March 2002). However, if pinyon-juniper habitat is not kept under control by wildfire, this habitat grows unnaturally dense and reduces understory productivity and diversity, thereby reducing the mule deer's available food (NDOW August 2004). There is also typically a fair amount of mountain mahogany in the Badger Mountain area in the southwestern portion of the refuge, which the mule deer utilize for winter habitat. However, the mountain mahogany is currently recovering from large wildfires in 1994 and 1999, making it less available as a winter food source (Steblein July 2009).

With regards to the effect of roads on movement of these large game species, the results of a study of pronghorn in Wyoming by the Wyoming Cooperative and Wildlife Research Unit at the University of Wyoming showed that while unfenced roads did not appear to impede pronghorn movement, fences did pose a serious barrier to movement, especially net wire fence (Sheldon and Lindzey n.d.). The study recommended that if a fence must be used in pronghorn habitat, a "wildlife friendly" fence with a gap between the bottom wire and the ground causes less disruption to pronghorn movement (Sheldon and Lindzey n.d.). Although unfenced roads do not generally impede pronghorn movement, heavy traffic on the roads could form barriers.

Habitat diversity is important to both species. As described in Ruby's Upland Erosion Control, Revegetation, and Maintenance Plan (POD, Appendix D) and the Noxious and Invasive Weed Control Plan (POD, Appendix H), Ruby would revegetate all land disturbed by Project-related activities with seed mixes recommended by local authorities, including the Sheldon NWR.

Access roads and routes on the Sheldon NWR would be revegetated with seed mixes approved by the Sheldon NWR manager. The use of recommended seed mixes would help restore habitat diversity, thereby providing food for pronghorn and mule deer. Treatment of invasive weeds is detailed in the Noxious and Invasive Weed Control Plan (POD, Appendix H).

### **3.3.3 Feral Horses and Burros**

Feral horses and burros are present at the Sheldon NWR, and in May 2008, the USFWS signed a Finding of No Significant Impact for continuation of its feral horse and burro management program in the refuge. The program is currently under review for modification as part of the refuge's comprehensive conservation planning process. The refuge controls the feral horse and burro population by maintaining boundary fences and conducting horse gathers using horseback wranglers and helicopters. See Section 5.0, Added Terms, Conditions, and Stipulations, which addresses the southern boundary fence.

An increase in traffic on the Sheldon NWR access roads/routes would raise the potential of a collision between a vehicle and a horse or burro. To reduce the chance of a vehicle collision with a horse, burro, or any other animal, Ruby would post signs on the access roads/routes alerting drivers of the animals' possible presence in order to decrease the risk of accidental vehicle/animal collisions. Ruby will implement strict operational prohibitions against cutting or damaging fences along the boundary of the Sheldon NWR; fences are intended to define the refuge boundary as well as to keep feral horses and burros from entering the Sheldon NWR from adjacent lands. Ruby will also work with the refuge to maintain the integrity of the fences, gates, and cattle guards. In addition, Ruby will ensure that workers and other site personnel are educated regarding the legal status of feral horses and burros.

Currently, a biologist with the Sheldon NWR is conducting a study at Ten Mile Spring. This area contains research plots that are fenced to keep horses from eating the vegetation. Summit Lake/Badger Mountain Road traverses the area between the spring and the research plots. Increased traffic will most likely deter the horses from accessing the spring, which would skew the study results. The USFWS has requested Ruby to re-align this road due to the increase in traffic during Project construction. For further details on the re-alignment of Summit Lake/Badger Mountain Road, see Section 5.4.

### **3.3.4 Special Status Species**

Special status species are those listed or proposed for listing as threatened, endangered, or candidate species or that have no formal special status but are thought by experts to be rare or in serious decline.

Ruby conducted wildlife surveys of special status species on all proposed access roads/routes. Special status species encountered at the Sheldon NWR are shown in Figures B2 through B6, and information about them is provided in Tables 3.3-2 through 3.3-7. Care would be taken not to harm these or any other species during access road/route use. An overview of the regulatory

status of the special status species discussed in this section is given in Table 3.3-1. See Table A-5 for a comprehensive list of species of conservation priority in Nevada.

**Table 3.3-1 Regulatory Status of Special Status Wildlife Species Observed in the Vicinity of Sheldon NWR Access Roads/Routes**

Species	Regulatory Status*
Pygmy rabbit	Petitioned for federal listing
Greater sage-grouse	Candidate Species
Loggerhead shrike	Nevada State Sensitive, USFWS Birds of Conservation Concern 2008 (USFWS 2008c)
Prairie Falcon	
Sage thrasher	Nevada State Sensitive, USFWS Birds of Conservation Concern 2008 (USFWS 2008)
Brewer's sparrow	Nevada State Sensitive
Long-billed curlew	USFWS Birds of Conservation Concern 2008 (USFWS 2008)
Burrowing owl	USFWS Birds of Conservation Concern 2008 (USFWS 2008)
Golden eagle	USFWS Birds of Conservation Concern 2008 (USFWS 2008)
Short-eared owl	USFWS Birds of Conservation Concern 2008 (USFWS 2008)
Ferruginous hawk	USFWS Birds of Conservation Concern 2008 (USFWS 2008)
Sage Sparrow	USFWS Birds of Conservation Concern 2008 (USFWS 2008)

Note:

\*All species on Sheldon NWR are subject to the NWRS Administration Act. All migratory birds on the Sheldon NWR are subject to Migratory Bird Treaty Act (MBTA). All MBTA-protected species are also protected by the State of Nevada under the Nevada Revised Statutes (NRS) 501.

### 3.3.4.1 Pygmy Rabbits

During Ruby wildlife surveys, colonies of pygmy rabbits (*Brachylagus idahoensis*) were identified in the vicinity of access roads/routes H-46A and W-1 (Table 3.3-2), and individual pygmy rabbits were sighted in the vicinity of access road/route W-1 (Table 3.3-3); see Figure B3. It is currently unknown if the proposed access roads/routes would require improvement in the specific areas containing pygmy rabbit burrows. Ruby proposes to conduct additional evaluations in the spring of 2010 prior to construction to determine whether these pygmy rabbit populations would be disturbed by required road/route improvements. If road/route improvements are needed within pygmy rabbit colonies, those activities will be limited to the footprint of the road/route. If potential impacts are demonstrated, Ruby would coordinate with the Sheldon NWR to determine if conservation measures proposed for impacts to pygmy rabbits along the Ruby ROW in other areas are appropriate for the Sheldon NWR as well.

**Table 3.3-2 Pygmy Rabbit Burrow Colonies Within 66 feet of Road/Route Center Line Identified During Ruby Field Surveys 2009\***

Access Road/Route	Acreage of Pygmy Rabbit Colonies within the 66-foot-wide Access Road/Route Buffer
8A	236.47
H-46A	24.16
H-46B	125.83
H-50	57.78
W-1	32.07

Note: \*Data from Sheldon NWR combined with Ruby field data. Data received from Sheldon NWR were masked; therefore, the data were analyzed using acreage to compare with Ruby field data.

**Table 3.3-3 Pygmy Rabbit Sightings Within 66 feet of Access Road/Route Center Line during Ruby Field Surveys 2009**

Access Road/Route	Distance of Animal from Access Road/Route Center Line (Feet)	Observation Type	Number of Individuals
W-1	34.28	Specimen and Pellets	1
W-1	6.02	Specimen	1
W-1	24.83	Specimen	1

Pygmy rabbits live in dense sagebrush and are reluctant to cross open areas such as roads (Larrucea 2007). With regards to pygmy rabbits in the proximity of access roads, their reluctance to cross the road makes them less likely to fall victim to collision-related mortality (Larrucea 2007).

The Ruby Greater Sage-grouse and Pygmy Rabbit Conservation Measures Plan (POD, Appendix S) lists conservation measures for pygmy rabbits that Ruby would implement based on final input from federal and state agencies. Potential measures that could be used on access roads/routes where pygmy rabbits are present include avoiding road expansion in areas containing pygmy rabbit burrows, mowing prior to construction to encourage the pygmy rabbits to move a safe distance away from the road, trapping and relocating pygmy rabbits to suitable habitat a safe distance away from the road, and establishing off-site soil mounds that could be used by pygmy rabbits impacted by construction.

#### **3.3.4.2 Greater Sage-grouse**

Greater sage-grouse seasonal habitats, leks, and nesting areas occur in the sagebrush steppe habitat at the Sheldon NWR. The Ruby Greater Sage-grouse and Pygmy Rabbit Conservation Measures Plan (POD, Appendix S) lists conservation measures for greater sage-grouse in the Project area. As appropriate, Ruby would implement conservation measures such as minimizing activity when leks are active or when nesting and early brood rearing are occurring; the time frame for this would be approximately mid-March to mid-June. Efforts will be made to locate all Project facilities, including access roads/routes, at least two miles from the perimeter of active leks; where this is not possible, human activity will be avoided between dawn and

10:00 a.m. from March 1 to May 15 within 0.25 miles of the perimeter of occupied leks. Greater sage-grouse leks located within two miles of proposed access road/route center lines are listed in Table 3.3-4; greater sage-grouse specimen and scat sightings are listed in Table 3.3-5; also see Figure B5.

**Table 3.3-4 Greater Sage-grouse Leks within Two Miles of Access Road/Route Center Lines Identified During Ruby Field Surveys 2009**

Access Road/Route	Distance (miles)	Lek Name	NDOW Agency Status	Ruby Field Survey Lek Status
8A*	0.01	Unnamed	N/A	N/A
H-46	0.1	Idaho Canyon North	Historic	Inactive
H-46	0.16	Idaho Canyon	Historic	Inactive
H-46	1.78	Crane Creek 2	Active	Active
H-46B	0.14	Rodero Flat	Historic	Inactive
W-1	0.14	Wall Canyon	Historic	Inactive
W-1	0.16	Little Cottonwood	Historic	Inactive
W-1	0.19	Wall Canyon	Historic	Inactive
W-1	0.21	Wall Canyon Ranch	Historic	Active
W-1	0.74	Badger Mountain	Inactive	Inactive
W-1	1.37	Wall Canyon Upper	Historic	Inactive

Note: Source of data from NDOW. Ruby Field Surveys verified if leks were active or inactive.

\* Masked Sheldon NWR Lek data.

**Table 3.3-5 Greater Sage-grouse Specimen and Scat Sightings within Two Miles of Access Road/Route Center Lines during Ruby Field Surveys 2008 and 2009**

Access Road/Route	Distance (Miles)	Observation Type (Specimen or Scat)	Number of Individuals	Year Observed
8A	0.56	Specimen	1	2009
H-46	0.54	Scat	0	2009
H-46A	0.35	Specimen	1	2009

**Table 3.3-5a Greater Sage-grouse Area Delineated by Sheldon NWR within Two Miles of Access Road/Route Center Lines\***

Access Road/Route	Area (Acreage)	Data Source
8A	214.5	Sheldon NWR
H-46	56.8	Sheldon NWR
H-46A	147.11	Sheldon NWR
H-46B	11.65	Sheldon NWR
H-50	9.00	Sheldon NWR
W-1	32.12	Sheldon NWR

Note: \*Data received from Sheldon NWR. Sheldon NWR data were masked with a two-mile buffer; therefore, they were analyzed in acreages.

### 3.3.4.3 Raptors and Migratory Birds

Ruby conducted wildlife surveys of raptors and raptor nests on all proposed access roads/routes; raptors and raptor nests encountered at the Sheldon NWR are shown in Figure B5 and listed in Table 3.3-6. A protective buffer would be maintained around all raptor nests; the size of the buffer would depend on the species of raptor. A description of raptor species and their required spatial buffers can be found in the Ruby Biological Resources Conservation Plan (POD, Appendix I), which also explains raptor best management practices.

**Table 3.3-6 2010 Raptor Nest Sightings within Two Miles of Access Road/Route Center Lines during Ruby Field Surveys 2010**

Access Road/Route	Distance (miles)	Raptor	Nest Status	Nest Condition	Number of Eggs	Number of Young	Habitat	Nest Substrate
W-1	0.30	Prairie Falcon	DID NOT LOCATE	UNKNOWN	0	0	Sagebrush Steppe	Rock cavity
H-52	0.01	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Cliff
H-52	0.01	Un-id Raptor	INAC ALT NEST	GOOD	0	0	Sagebrush Steppe	Cliff
W-2	0.83	Short-eared Owl	INAC NEST	GOOD	0	0	Sagebrush Steppe	Rock cavity
W-2	0.66	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	0	3	Sagebrush Steppe	Rocky ledge
W-2	0.60	Un-id Raptor	DID NOT LOCATE	GONE	0	0	Sagebrush Steppe	Rock cavity
W-2	0.66	Un-id Raptor	INAC DILAPIDATED	REMNANTS	0	0	Sagebrush Steppe	Rock cavity
W-1	0.10	Un-id Raptor	INAC NEST	GOOD	0	0	Sagebrush Steppe	Rocky ledge
W-1	0.10	Un-id Raptor	INAC DILAPIDATED	REMNANTS	0	0	Sagebrush Steppe	Rocky ledge
W-1	0.09	Long-eared Owl	INAC NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-50B	0.85	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-50B	0.94	Un-id Raptor	INAC NEST	GOOD	0	0	Aspen Stands	Aspen tree
H-10WS	0.20	Un-id Raptor	INAC NEST	GOOD	0	0	Riparian	Willow
H-10WS	0.34	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-50B	0.50	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-52	0.73	Un-id Raptor	INAC DILAPIDATED	REMNANTS	0	0	Sagebrush Steppe	Rocky ledge
H-52	0.57	Common Raven	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-52	0.22	Prairie Falcon	DID NOT LOCATE	UNKNOWN	0	0	Sagebrush Steppe	Rock cavity

**Table 3.3-6 2010 Raptor Nest Sightings within Two Miles of Access Road/Route Center Lines during Ruby Field Surveys 2010**

Access Road/Route	Distance (miles)	Raptor	Nest Status	Nest Condition	Number of Eggs	Number of Young	Habitat	Nest Substrate
H-52	0.04	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-50	0.71	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	2	0	Sagebrush Steppe	Rocky ledge
H-50A	0.67	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-47	0.60	Un-id Raptor	INAC NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-47	0.69	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-48	0.12	Un-id Raptor	INAC NEST	GOOD	0	0	Aspen Stands	Aspen tree
H-45	0.02	Un-id Raptor	INAC ALT NEST	GOOD	0	0	Sagebrush Steppe	Aspen tree
H-45	0.07	Un-id Raptor	INAC ALT NEST	GOOD	0	0	Aspen Stands	Aspen tree
H-45	0.08	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	0	2	Aspen Stands	Aspen tree
H-46	0.96	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-50	0.05	Burrowing Owl	DID NOT LOCATE	UNKNOWN	0	0	SAGEBRUSH	GROUND
H-46B	0.66	Un-id Raptor	INAC NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-50	0.24	Common Raven	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-46B	1.09	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rock cavity
H-46B	0.54	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.61	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.61	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.91	Peregrine Falcon	ACTIVE NEST	EXCELLENT	0	3	Sagebrush Steppe	Rocky ledge
H-46B	0.88	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	3	0	Sagebrush Steppe	Rocky ledge
H-46B	0.42	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.95	Great Horned Owl	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.96	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.57	Red-tailed Hawk	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge

**Table 3.3-6 2010 Raptor Nest Sightings within Two Miles of Access Road/Route Center Lines during Ruby Field Surveys 2010**

Access Road/Route	Distance (miles)	Raptor	Nest Status	Nest Condition	Number of Eggs	Number of Young	Habitat	Nest Substrate
H-50	0.41	Common Raven	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.45	Common Raven	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.50	Red-tailed Hawk	INAC DESTROYED	REMNANTS	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.15	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.11	Un-id Raptor	INAC NEST	GOOD	0	0	Sagebrush Steppe	Rocky ledge
H-50B	0.75	Common Raven	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-50B	0.22	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-50B	0.58	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-50B	0.31	Un-id Raptor	INAC NEST	GOOD	0	0	Sagebrush Steppe	Rocky ledge
W-1	0.15	Common Raven	ACTIVE NEST	EXCELLENT	7	0	Sagebrush Steppe	Rocky ledge
W-1	0.20	Common Raven	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
W-1B	0.59	Un-id Raptor	INAC NEST	GOOD	0	0	Sagebrush Steppe	Rocky ledge
W-1B	0.61	Un-id Raptor	INAC NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
W-1B	0.68	Prairie Falcon	DID NOT LOCATE	UNKNOWN	0	0	Sagebrush Steppe	Rocky ledge
H-46C	0.47	Prairie Falcon	ACTIVE NEST	EXCELLENT	0	3	Sagebrush Steppe	Rocky ledge
H-46C	0.12	Common Raven	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-46C	0.47	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-46C	0.11	Red-tailed Hawk	INAC DESTROYED	REMNANTS	0	0	Sagebrush Steppe	Rocky ledge
H-46C	0.41	Golden Eagle	INAC ALT NEST	GOOD	0	0	Sagebrush Steppe	Rocky ledge
H-46C	0.87	Golden Eagle	INAC ALT NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-46C	0.97	Un-id Raptor	INAC NEST	GOOD	0	0	Sagebrush Steppe	Rocky ledge
H-46C	0.71	Un-id Raptor	INAC NEST	GOOD	0	0	Sagebrush Steppe	Rocky ledge
H-46C	0.36	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	0	2	Sagebrush Steppe	Rocky ledge

**Table 3.3-6 2010 Raptor Nest Sightings within Two Miles of Access Road/Route Center Lines during Ruby Field Surveys 2010**

Access Road/Route	Distance (miles)	Raptor	Nest Status	Nest Condition	Number of Eggs	Number of Young	Habitat	Nest Substrate
H-46B	0.11	Un-id Raptor	INAC NEST	GOOD	0	0	Sagebrush Steppe	Rock pillar/pinnacle
H-46B	0.10	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	2	0	Sagebrush Steppe	Rock pillar/pinnacle
H-46B	0.83	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.71	Un-id Raptor	INAC NEST	FAIR	0	0	Sagebrush Steppe	Rocky ledge
H-46B	0.74	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	3	0	Sagebrush Steppe	Rocky ledge
W-1	0.14	Prairie Falcon	DID NOT LOCATE	UNKNOWN	0	0	Sagebrush Steppe	Rocky ledge
W-1	0.46	Common Raven	ACTIVE NEST	EXCELLENT	0	0	Sagebrush Steppe	Rocky ledge
H-45	0.01	Un-id Raptor	INAC ALT NEST	GOOD	0	0	Sagebrush Steppe	Aspen tree
H-45	0.01	Un-id Raptor	INAC ALT NEST	GOOD	0	0	Sagebrush Steppe	Aspen tree
H-45	0.00	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	0	0	Riparian	Aspen tree
H-45	0.01	Un-id Raptor	INAC ALT NEST	GOOD	0	0	Sagebrush Steppe	Aspen tree
H-45	0.01	Un-id Raptor	INAC ALT NEST	GOOD	0	0	Sagebrush Steppe	Aspen tree
H-45	0.00	Red-tailed Hawk	ACTIVE NEST	EXCELLENT	0	0	Riparian	Aspen tree
H-45	0.00	Common Raven	ACTIVE NEST	EXCELLENT	0	0	Salt Desert Scrub	Manmade structure

**Table 3.3-6a Raptor Nesting Areas Delineated by Sheldon NWR within Two Miles of Access Road/Route Center Lines\***

Access Road/Route	Area (Acreage)	Data Source
8A	77.20	Sheldon NWR
H-46	10.61	Sheldon NWR
H-46B	77.75	Sheldon NWR
H-50	44.97	Sheldon NWR
W-1	0.80	Sheldon NWR

Note: \*Data received from Sheldon NWR. Sheldon NWR data were masked with a two-mile buffer, therefore analyzed in acreages.

Other migratory birds, such as song birds, were not surveyed. Ruby is in the process of preparing a Memorandum of Understanding (MOU), as recommended by the USFWS, for the

protection of species protected by the Migratory Bird Treaty Act (MBTA) during construction. Ruby will adhere to the terms and conditions outlined in the MBTA MOU, and any request for waivers to the MOU will be approved by the USFWS Migratory Bird Office in Sacramento, California. The Ruby Biological Resources Conservation Plan (POD, Appendix I) describes temporal and spatial mitigation measures that would be employed to avoid harming and/or harassing migratory bird species.

The construction of the Project has the potential to impact birds protected under the MBTA. Habitat for one or more MBTA-protected nesting bird species is found along the Sheldon NWR roads/routes.

During construction, Ruby would avoid both temporal and spatial direct impacts to birds protected under the MBTA. The primary nesting season is from the beginning of April through mid-July. In accordance with the MBTA and the MOU, migratory bird surveys will be conducted from late May through mid-July. After July 15<sup>th</sup>, any nests that are active will be monitored until the chicks fledge. After chicks fledge, construction will continue in those areas. This type of temporal avoidance eliminates impact to nesting birds by constructing outside the nesting season. This can be accomplished by starting construction prior to the onset of nesting, so that nesting cannot be initiated that would then be impacted by construction. Spatial avoidance is used when construction occurs during the nesting season and nests are present, but construction would be avoided within a protective “buffer” around the nest.

#### 3.3.4.4 Additional Special Status Species

The remaining special status species surveyed in the vicinity of the Sheldon NWR are listed in Table 3.3-7, along with all raptors surveyed. Birds, which are generally more mobile than other fauna, would generally disperse safely away from access roads, provided that the construction traffic vehicles maintain mandated safe speeds. All raptors, whether special status species or not, are included because raptor nests have special protection afforded to them, as will be discussed in the next section of this report. Common raven (*Corvus corax*) nests are also included because some raptor species use established nests interchangeably with common ravens from year to year. See Table A-5, for a comprehensive list of species of conservation priority in Nevada.

**Table 3.3-7 Wildlife Sightings of Special Status Species\* and/or Raptors within 2 Miles of Access Road/Route Center Lines during Ruby Field Surveys 2009**

Access Road/Route	Distance (Miles)	Common Name	Scientific Name	Observation Type	Number of Individuals
H-46	0.00	American kestrel	<i>Falco sparverius</i>	Specimen	1
H-46B	0.00	Sage thrasher	<i>Oreoscoptes montanus</i>	Specimen	1
H-46B	0.00	Sage thrasher	<i>Oreoscoptes montanus</i>	Specimen	2
H-46B	0.01	Sage thrasher	<i>Oreoscoptes montanus</i>	Specimen	1
H-46B	0.02	Mountain bluebird	<i>Sialia currucoides</i>	Specimen	2
H-46B	0.03	Sage thrasher	<i>Oreoscoptes montanus</i>	Specimen	3
H-50	0.00	American kestrel	<i>Falco sparverius</i>	Specimen	1

**Table 3.3-7 Wildlife Sightings of Special Status Species\* and/or Raptors within 2 Miles of Access Road/Route Center Lines during Ruby Field Surveys 2009**

Access Road/Route	Distance (Miles)	Common Name	Scientific Name	Observation Type	Number of Individuals
H-50	0.00	Sage thrasher	<i>Oreoscoptes montanus</i>	Specimen	1
W-1	0.00	American kestrel	<i>Falco sparverius</i>	Specimen	1
W-1	0.00	Unidentified raptor	Unidentified	Specimen	1
W-1	0.00	Golden eagle	<i>Aquila chrysaetos</i>	Specimen	1
W-1	0.00	Unidentified	Unidentified	Nest in shrub	0
W-1	0.00	Red-tailed hawk	<i>Buteo jamaicensis</i>	Specimen	1
W-1	0.00	Loggerhead shrike	<i>Lanius ludovicianus</i>	Specimen	1
W-1	0.01	Unidentified accipiter species	<i>Accipiter</i> species	Specimen	1
W-1	0.15	American kestrel	<i>Falco sparverius</i>	Specimen	1
W-1	0.18	American kestrel	<i>Falco sparverius</i>	Specimen	1
W-1	0.19	Prairie falcon	<i>Falco mexicanus</i>	Specimen	1
W-1	0.23	Common raven	Nonsensitive	Nest on cliff	1
W-1	0.68	Sage thrasher	<i>Oreoscoptes montanus</i>	Specimen	2
W-1	0.81	Golden eagle	<i>Aquila chrysaetos</i>	Specimen	1
W-1	0.90	American kestrel	<i>Falco sparverius</i>	Specimen	1

\*Note: Distances of 0.00 are because individuals were seen in close proximity of the road.

Additionally, it should be noted that the Sheldon NWR contains American pika (*Ochotona princeps*), white-throated swift (*Aeronautes saxatalis*), prairie falcon (in the cliff and talus throughout the Sheldon NWR in particular areas at the McGee Mountain area) (Steblein July 2009), and nine species of bats, including big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), California myotis (*Myotis californicus*), western small-footed myotis (*Myotis ciliolabrum*), western long-eared myotis (*Myotis evotis*), little brown bat (*Myotis lucifugus*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanensis*), and Brazilian free-tailed bat (*Tadarida brasiliensis*) (Collins 2009). The white-throated swift is a Partners in Flight Species of Continental Importance. The prairie falcon, as listed in Table 3.3-1, is Nevada Department of Wildlife (NDOW) state-protected under NRS 501 and is a BLM Special Status Species.

### American Pika

In February 2010, the USFWS determined that listing the American pika as threatened or endangered under the Endangered Species Act is not warranted. However, it is still a BLM special status species in the Winnemucca district. American pika is a small mammal that inhabits fields fringed by suitable vegetation in alpine and subalpine mountains. This species is temperature sensitive and cannot survive in temperatures greater than 77.9 degrees (USFWS 2009b). Habitat for American pika on the Sheldon NWR has been delineated by the USFWS and is exhibited in Figure B6.

### Bats

A bat species inventory began this summer on the Sheldon NWR. Mist nets and remote call stations were set up in three locations. Sagebrush steppe is the most common habitat type

along access roads/routes and would represent the most substantial habitat alteration in terms of area affected. The removal of sagebrush and other desert shrubs would remove potential roosting sites for species like the California myotis; however, most species encountered on the Sheldon NWR do not commonly roost in shrubs. Rather, many of these species would use these open habitats to forage and would likely roost in caves, rock crevices, and any mines present within the shrubland. Any bats roosting in nearby caves, crevices, and mines would be subject to noise and visual disturbance during removal of vegetation. The severity of these disturbances would depend on the proximity of the roost sites to the construction activities and the species affected. Bats using the shrublands to forage would not likely be affected by these disturbances as construction activities would primarily occur during daylight hours and bats are crepuscular or nocturnal. Figure B6 shows wildlife sightings from field surveys and from Sheldon NWR data.

### **3.4 Environmental Analysis of the Physical Environment and Terms of Access**

Roads and routes, whether paved or unpaved, affect the physical environment in a number of ways, including.

- Obstruction of the surface flow of natural watercourses;
- Obstruction of the subsurface flow of water at road cuts;
- Generation of more sediment runoff than the land would generate in the absence of a road;
- Alteration of soil chemistry when road dust is deposited on soil surfaces;
- Potential for road to rut or to break through gravel by intense use of heavily loaded vehicles; and
- Potential clogging of soil pores, which reduces infiltration rates, when road dust is deposited on soil surfaces (USGS 2007).

Ruby would employ a variety of maintenance measures to reduce or eliminate these effects on the physical environment (see Table 3.1-1). Obstruction of surface and subsurface water flow alters the pattern of flow and affects the hydrology of the area. Surface flow will be discussed in Section 3.5.

Because soil compaction makes the surface of roads impervious, roads generate more sediment runoff than the land would typically generate. Ruby does not propose to construct any new roads to access the ROW, but Ruby has been requested by the Sheldon NWR to realign Summit Lake/Badger Mountain Road 1,330 feet to avoid a sensitive area and ongoing studys; see Section 5.4 for more details. In addition, pullouts may be necessary in limited areas for safety purposes. Pullouts will be minimized by using strategic mowing wherever possible. Actual mowing and pullout locations will be determined during a site visit with Ruby and the Sheldon NWR. The refuge will approve all mowing and pullout locations and work with Ruby to flag appropriate limits for those alterations. This would increase the impervious surface and,

therefore, increase the amount of sediment runoff. However, Ruby's Traffic and Transportation Management Plan (POD, Appendix O) includes a provision that, following construction, widened roads/routes can be returned to their preconstruction condition at the discretion of the landowner.

It should also be noted that areas of the semiarid and arid west with intense rainstorms typically have relatively high sediment runoff from roads (USGS 2007). However, most precipitation at the Sheldon NWR occurs in the form of snowfall (USFWS 2008a). Compared to other areas of the semiarid and arid west, the general lack of intense rainstorms at the Sheldon NWR would lessen the amount of sediment runoff. During the course of construction, erosion and sediment control measures would be implemented to prevent the transport of sediment. In the event of intense rainstorms, maintenance measures that may be employed include re-grading of roads/routes, constructing swales along one side of the access road/route to collect and direct runoff, and/or the halting of construction until roads/routes are dry enough to continue work. If road conditions become unsafe on the Sheldon NWR access roads/routes, or excessive ruts are created, Ruby will then use the pipeline ROW for access and will cease the use of these roads/routes until rutting is no longer a concern or Ruby installs gravel to prevent rutting.

The alteration of soil chemistry and clogging of soil pores from road dust deposited on soil surfaces can be reduced by effective dust control. Ruby has a Project-wide fugitive dust control plan to meet state requirements for dust control (POD, Appendix N).

### **3.5 Environmental Analysis of Streams and Wetlands and Terms of Access**

Ruby conducted field surveys of streams and wetlands on all proposed access roads/routes. Streams and wetlands in the vicinity of proposed access roads/routes in the Sheldon NWR are shown in Figure B7 and listed in Tables 3.5-1 and 3.5-2. Ruby also surveyed for the presence of check dams and culverts and places where culverts are needed. This information is shown as construction obstacles in Figure B8 and is listed in Table 3.5-3. No check dams or places needing culverts have been identified during the Ruby field surveys to date, but several existing culverts have been mapped. If an access road has water flowing over the road bed at the time of construction that would not require culvert placement, Ruby would place equipment mats to help reduce rutting of the road bed. Prior to Ruby's use of the access roads/routes, engineers would survey the roads/routes to ensure that the existing culverts are of sufficient size and to determine whether any additional culverts are needed. Proper installation of culverts is an important way to ensure that surface water flows remain unobstructed.

Currently, Summit Lake/Badger Mountain Road traverses the area between Ten Mile Spring (a perennial spring) and a feral horse study area where the USFWS is studying the effects of feral horses on vegetation. Ruby would re-reroute a portion of this road to ensure that horses are not disturbed by the increase in traffic along this road.

On Sheldon NWR lands, Ruby will not use herbicides or pesticides in or within 100 feet of a wetland, except as allowed by the USFWS. In addition Ruby does not intend to use fertilizers; however, if requested, Ruby will not use fertilizer, lime, or mulch in or within 100 feet of a wetland unless required in writing by the USFWS. Further information regarding Ruby's approach to construction in the vicinity of waterbodies and wetlands is found in Ruby's Wetland and Waterbody Construction and Mitigation Procedures (POD, Appendix F).

**Table 3.5-1 Streams within 66 feet of the Center Line of Proposed Access Roads/Routes in Sheldon NWR**

Access Road/Route	Stream Name	Stream Crosses Access Road/Route	Flow Type	Flow Direction	Depth at time of Field Survey Spring 2009)	Natural or Man-altered	County
H-50	Unnamed tributary to Cottonwood Creek	Yes	Ephemeral	NE	No Water Present	Man-altered	Humboldt
H-50	Unnamed tributary to Cottonwood Creek	Yes	Ephemeral	NE	No Water Present	Man-altered	Humboldt
H-50	Cottonwood Creek	Yes	Perennial	S	0–6 inches	Man-altered	Humboldt
W-1	Unnamed tributary to Badger Creek	No	Ephemeral	SW	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Badger Creek	Yes	Ephemeral	NE	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Badger Creek	No	Ephemeral	N	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	Yes	Ephemeral	NE	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	No	Ephemeral	SE	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	No	Ephemeral	E	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	No	Ephemeral	S	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	No	Ephemeral	S	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	Yes	Ephemeral	NE	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	Yes	Ephemeral	NE	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	Yes	Ephemeral	NE	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	No	Ephemeral	S	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	No	Ephemeral	S	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	Yes	Ephemeral	SE	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	No	Ephemeral	SE	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	Yes	Ephemeral	E	No Water Present	Natural	Washoe
W-1	Unnamed tributary to Wall Canyon Creek	No	Ephemeral	S	No Water Present	Natural	Washoe
W-1	Unnamed tributary to	No	Ephemeral	S	No Water	Natural	Washoe

**Table 3.5-1 Streams within 66 feet of the Center Line of Proposed Access Roads/Routes in Sheldon NWR**

Access Road/Route	Stream Name	Stream Crosses Access Road/Route	Flow Type	Flow Direction	Depth at time of Field Survey Spring 2009)	Natural or Man-altered	County
	Wall Canyon Creek				Present		
W-1	Unnamed tributary to Wall Canyon Creek	Yes	Ephemeral	SE	No Water Present	Natural	Washoe
W-1	Wall Canyon Creek	Yes	Intermittent	S	0 – 6 inches	Man-altered	Washoe

**Table 3.5-2 Wetlands within 66 feet of the Center Line of Proposed Access Roads/Routes in Sheldon NWR**

Access Road/Route	Wetland Acreage within 66 feet of center line	Distance of Nearest Part of Wetland to access road center line (in feet)
W-1	0.00	32.51
W-1	0.01	7.60
W-1	0.04	13.40
W-1	0.03	1.20

**Table 3.5-3 Existing Culverts on Proposed Access Roads/Routes in Sheldon NWR**

Access Road/Route	Number of Existing Culverts
8A	TBD
H-46B	2
W-1	2

## 3.6 Environmental Analysis of Vegetation and Terms of Access

### 3.6.1 General Habitat Surrounding the Proposed Access Roads and Routes

Roads affect vegetation in a number of ways. First, an increased roadbed footprint from the creation and/or widening of roads eliminates vegetation and habitat. However, sometimes there is increased vegetative productivity adjacent to roads because the land tends to be moist from increased water runoff (USGS 2007; USGS 2005). In addition, roads and increased traffic on roads have the potential to increase the risk of introducing invasive species. The general types of habitat at the Sheldon NWR have been mapped and are shown in Figure B9. Tables 3.6-1 to 3.6-7 provide the acreage of the various types of habitat within 66 feet of the proposed Ruby access roads/routes.

**Table 3.6-1 Acreage of Habitat within 66 feet of Access Road 8A**

<b>Vegetation Cover Type</b>	<b>Acreage within 66 feet of Access Road</b>
Basin Big Sagebrush	58.50
Columbia Plateau Low Sagebrush Steppe	42.33
Inter-Mountain Basins Big Sagebrush Shrubland	108.57
Inter-Mountain Basins Greasewood Flat	14.36
Inter-Mountain Basins Mixed Salt Desert Scrub	12.09
Inter-Mountain Basins Montane Sagebrush Steppe	46.69
Inter-Mountain Basins Playa	10.75
Inter-Mountain Basins Semi-Desert Grassland	5.46
North American Arid West Emergent Marsh	0.08
Northern Rocky Mountain Lower Montane-Foothill Deciduous Shrubland	< 0.01

Source: PNNL 2009.

**Table 3.6-2 Acreage of Habitat within 66 feet of Access Road H-46**

<b>Vegetation Cover Type</b>	<b>Acreage within 66 feet of Access Road</b>
Barren	0.11
Basin Big Sagebrush	3.39
Columbia Plateau Low Sagebrush Steppe	21.07
Inter-Mountain Basins Big Sagebrush Shrubland	44.86
Inter-Mountain Basins Greasewood Flat	3.39
Inter-Mountain Basins Mixed Salt Desert Scrub	8.40
Inter-Mountain Basins Montane Sagebrush Steppe	18.15
Inter-Mountain Basins Playa	0.10
Inter-Mountain Basins Semi-Desert Grassland	1.35
Northern Rocky Mountain Lower Montane-Foothill Deciduous Shrubland	0.15

Source: PNNL 2009.

**Table 3.6-3 Acreage of Habitat within 66 feet of Access Route H-46A**

<b>Vegetation Cover Type</b>	<b>Acreage within 66 feet of Access Route</b>
Basin Big Sagebrush	0.016
Columbia Plateau Low Sagebrush Steppe	0.15
Inter-Mountain Basins Big Sagebrush Shrubland	0.72
Inter-Mountain Basins Juniper Savanna	< 0.01
Inter-Mountain Basins Montane Sagebrush Steepe	22.98
Northern Rocky Mountain Lower Montane-Foothill Deciduous Shrubland	0.25
Rocky Mountain Aspen Forest and Woodland	< 0.01

Source: PNNL 2009.

**Table 3.6-4 Acreage of Habitat within 66 feet of Access Road H-46B**

<b>Vegetation Cover Type</b>	<b>Acreage within 66 feet of Access Road</b>
Basin Big Sagebrush	17.46
Columbia Plateau Low Sagebrush Steppe	26.12
Inter-Mountain Basins Big Sagebrush Shrubland	53.51
Inter-Mountain Basins Greasewood Flat	11.18
Inter-Mountain Basins Juniper Savanna	0.14
Inter-Mountain Basins Mixed Salt Desert Scrub	0.70
Inter-Mountain Basins Montane Sagebrush Steppe	24.61
Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland	0.78
Inter-Mountain Basins Playa	trace
Inter-Mountain Basins Semi-Desert Grassland	33.80
Rocky Mountain Aspen Forest and Woodland	0.18
Rocky Mountain Subalpine-Montane Mesic Meadow	0.11

Source: PNNL 2009.

**Table 3.6-5 Acreage of Habitat within 66 feet of Access Route H-50**

<b>Vegetation Cover Type</b>	<b>Acreage within 66 feet of Access Route</b>
Basin Big Sagebrush	0.75
Columbia Plateau Low Sagebrush Steppe	30.44
Inter-Mountain Basins Big Sagebrush Shrubland	33.25
Inter-Mountain Basins Greasewood Flat	1.97
Inter-Mountain Basins Juniper Savanna	<0.01
Inter-Mountain Basins Montane Sagebrush Steppe	33.21
Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland	0.35
Inter-Mountain Basins Playa	0.22
Inter-Mountain Basins Semi-Desert Grassland	29.85
Rocky Mountain Aspen Forest and Woodland	0.05
Rocky Mountain Subalpine-Montane Mesic Meadow	0.82

Source: PNNL 2009.

**Table 3.3-6 Acreage of Habitat within 66 feet of Access Route W-1**

<b>Vegetation Cover Type</b>	<b>Acreage within 66 feet of Access Route</b>
Basin Big Sagebrush	18.24
Columbia Plateau Low Sagebrush Steppe	14.40
Inter-Mountain Basins Big Sagebrush Shrubland	40.38
Inter-Mountain Basins Cliff and Canyon	0.06
Inter-Mountain Basins Greasewood Flat	2.45
Inter-Mountain Basins Mixed Salt Desert Scrub	0.47

**Table 3.3-6 Acreage of Habitat within 66 feet of Access Route W-1**

Vegetation Cover Type	Acreage within 66 feet of Access Route
Inter-Mountain Basins Montane Sagebrush Steppe	22.73
Inter-Mountain Basins Playa	2.54
Inter-Mountain Basins Semi-Desert Grassland	4.52
North American Arid West Emergent Marsh	0.16
Rocky Mountain Subalpine-Montane Mesic Meadow	0.01

Source: PNNL 2009.

### 3.6.2 Special Status Plant Species

Biological surveys, including special status plant species surveys, were conducted from April through July 2009 along the Sheldon NWR access roads/routes. These surveys focused on resources within a 66-foot-wide corridor along access roads/routes. Data collected were logged using global positioning system units and then plotted on U.S. Geological Society (USGS) 1:24,000 scale topographic maps. A list of special status plant species that were surveyed for can be found in Table A-6.

No special status plant species were documented along the access road/route corridors during Ruby field surveys. If any such species are discovered in the future, they will be given appropriate protection, as described in the Ruby Biological Resources Conservation Measure Plan (POD, Appendix I).

### 3.6.3 Noxious and Invasive Weeds

Roads can increase the introduction of invasive plant species to an area. Seeds or other propagules can be inadvertently transported by vehicles using the road, and edge habitat at the side of a road can provide a point of entry for the exotic invasive species (USGS 2007). Once introduced, invasive species can spread away from a road, having an even greater impact on the surrounding habitat. As stated in the introduction to this report, there are approximately 30 species of non-native, often invasive vegetation documented at the Sheldon NWR, including cheatgrass (*Bromus tectorum*) and perennial pepperweed (*Lepidium latifolium*) (USFWS 2008a). Until this year, ongoing practices by the DOTs included blading outside of the road and side ditch, which has increased invasive species occurrences along 8A. Road 8A, in particular, has cheatgrass, halogeton (*Halogeton glomeratus*), and Russian thistle (*Salsola iberica*), with small areas of perennial pepperweed and white top, also called hoary cress (*Cardaria draba*, *Cardaria pubescens*) (Steblein July 2009). Both DOTs have agreed to cease blading the sides of the road outside of the road crown and ditch on 8A (Steblein May 2010). Ruby field surveys have also located Canada thistle (*Cirsium arvense*) within 14 feet of the centerline of access route H-50, outside of the Sheldon NWR boundary (see the noxious weed point on access route H-50 in Figure B9).

Ruby has a Noxious and Invasive Weed Control Plan that details preventative measures to inhibit the spread of noxious weeds and post-construction weed control methods to be used in areas specifically requiring treatment (POD, Appendix H).

### **3.6.4 Vegetation and Road Dust**

Another impact that roads can have on vegetation is that road dust settles on the leaves of plants near the road, causing a reduction in photosynthetic rates (USGS 2007). This impact can be reduced by effective dust control. Ruby has a Project-wide Fugitive Dust Control Plan that will meet state requirements for dust control (POD, Appendix N). The objective of the fugitive dust control plan is to identify potential dust emission sources and provide guidance to construction and field personnel on measures to control the generation of fugitive dust during construction activities associated with the Project. It will be the responsibility of Project contractors, working with designated environmental inspectors, to identify all activities generating fugitive dust, implement feasible control measures, and ensure compliance with applicable fugitive dust regulations.

## **3.7 Environmental Analysis of Recreation and Wilderness Study Areas and Terms of Access**

### **3.7.1 Recreation**

The use of access roads/routes in the Sheldon NWR would be in close proximity to campgrounds. There are 14 campgrounds—12 semi-primitive, one developed (Virgin Valley), and one private (Royal Peacock)—on the Sheldon NWR utilized for active and passive recreation, including hunting, fishing, hiking, wildlife viewing, and photography, as well as users attracted to the area for opal mining and rock hounding. Dispersed primitive camping is also allowed with a permit. Recreationists may be inconvenienced and the quality of their visit diminished by increased congestion, temporary loss of access, potential impacts to wildlife (which would affect hunting and fishing activities), dust, and noise. Environmental analysis of wildlife and terms of access are discussed in Section 3.3. Overall, effects would be short-term and limited to the duration of construction. During construction, workers will be restricted to off-site housing facilities. In the case of increased use of the campgrounds, workers will be restricted to using the campgrounds for the stated purposes and durations. In addition, Ruby would restore lands affected by the use of the access roads/routes and perform appropriate reclamation in accordance with Ruby's Upland Erosion Control, Re-Vegetation, and Maintenance Plan (POD, Appendix D).

### **3.7.2 Wilderness Study Areas**

Of the nine Wilderness Study Areas (WSAs) in the Sheldon NWR, access routes would be adjacent to two WSAs along 8A. Access routes H-52 and H-46A begin at the edge of Alkali Peak WSA. Use of the roads/routes adjacent to WSAs would add to impacts on vegetation because of dust settling on the leaves of plants near the road/route, causing a reduction in photosynthetic rates (USGS 2007). This impact can be reduced by effective dust control. Ruby has a Project-wide Fugitive Dust Control Plan that will meet state requirements for dust control (POD, Appendix N).

Access road and route use by pipeline construction vehicles would also generate aesthetic effects (noise and sights of human-created vehicles) that would penetrate the WSAs, reducing the quality of their wilderness character.

## 4.0 Cultural Resources

### 4.1 Summary

FERC has been identified as the Ruby Pipeline Project lead federal agency and, per the Energy Policy Act of 2005, is the agency responsible for coordinating all applicable federal authorizations and for complying with NEPA. FERC is also the lead federal agency for National Historic Preservation Act (NHPA) compliance. Although FERC is the lead federal agency, the Bureau of Land Management (BLM) has substantial permitting responsibilities, and FERC is coordinating with the USFWS and other federal agencies regarding historic preservation compliance. Studies completed and reported herein were conducted principally to comply with NEPA and Section 106 of the NHPA, consistent with FERC regulations at 18 CFR 380.12(f), 380.14, Appendix A to Part 380, and 385.2201 per section 7c of the Natural Gas Act. Consulting agencies include the Nevada State Historic Preservation Office, USFWS, BLM, and the U.S. Forest Service.

In the Sheldon NWR, Ruby proposes to use, maintain, and/or improve access roads to facilitate construction and maintenance of the pipeline and related facilities. In most cases, however, Ruby proposes to use these access roads “as is,” with no modifications. Such roads may eventually require certain limited and localized construction modifications (e.g., pull-outs, passing areas, or drainage or crossing features), at which point these locations will be identified and subject to Section 106 site identification and treatment protocols, as outlined in the Treatment Plan for cultural resources located in Nevada (Hildebrandt 2010a).

Some access roads, however, are more likely to require substantial modification (widening, grading, straightening, etc.) in preparation for pipeline construction and are, therefore, included in the current Area of Potential Effect (APE) and Class I and III inventory. The APE for this class of access roads (the zone to which Ruby will limit all ground disturbances related to road modification) is 30 feet (15 feet on each side of the road centerline). To provide added flexibility, an additional 70-foot buffer (for a total of 50 feet on each side of the road centerline) was added to the survey coverage of these roads.

Pacific Legacy, Inc., was tasked with conducting a Class I and Class III cultural resources inventory survey of the proposed Ruby Sheldon NWR access roads/routes. The results of this effort are reported in the Interim Survey and Evaluation Report prepared by Far Western Anthropological Research Group (Hildebrandt 2010b).

Subsequent to the submittal of the Interim Survey and Evaluation Report in March of 2010, there have been a number of design and engineering re-assessments of those roads that will require substantial modifications. Some have been dropped from the list of Project access

roads (e.g., H-53 and H-54), while others have been re-assessed regarding their need for substantial modifications (e.g., H-46, H46A, and H-46B). As of June 1, 2010, 54.3 miles of access road have been identified in the Sheldon NWR that will require substantial modification. Located within the APE of these roads are 28 sites (Table 4.1-1). As per the Interim Survey and Evaluation Report (Hildebrandt 2010b), all of these sites have been determined eligible for listing in the National Register of Historic Places. Prior to issuance of a Special Use Permit by the USFWS, large-scale maps depicting the historic property and the proposed road modification will be submitted to the USFWS. These sites can then be scheduled for data recovery treatment as per the procedures and protocols outlined in the FERC-approved Treatment Plan for Nevada (Hildebrandt 2010a).

While the design and engineering review of access roads in the Sheldon NWR is now mostly complete, additional changes are still possible. Furthermore, some roads that are proposed for use “as is” may eventually require certain limited and localized construction modifications (e.g., pull-outs, passing areas, or drainage or crossing features). Any such changes will require review by Sheldon NWR cultural resources staff and be subject to the Adjustments to the Area of Potential Effect clause in the Treatment Plan (Hildebrandt 2010a:34). In the event that human remains or other unanticipated discoveries are made during the course of access road improvements in the Sheldon NWR, procedural protocols will follow the Monitoring and Cultural Resources Discovery Plan in the Treatment Plan (Hildebrandt 2010a:88–99).

**Table 4.1-1 Summary of Cultural Resource Sites Along Access Roads within the Sheldon National Wildlife Refuge**

Temp No.	Trinomial	Components	Owner
NV-SV-D-029	WA5086/WA5087	Multi-Component	BLM/USFWS/Private
NV-WN-B-172		Historical	USFWS/Private
NV-SV-D-038		Prehistoric	BLM/USFWS
NV-HR-D-027	HU1248	Prehistoric	USFWS
NV-HR-D-028		Prehistoric	USFWS
NV-HR-D-029		Prehistoric	USFWS
NV-HR-D-033		Prehistoric	USFWS
NV-HR-E-028		Multi-Component	USFWS/Private
NV-SV-D-031		Prehistoric	USFWS
NV-SV-D-032		Prehistoric	USFWS
NV-SV-D-033		Prehistoric	USFWS
NV-SV-D-034		Prehistoric	USFWS
NV-SV-D-035		Multi-Component	USFWS
NV-SV-D-036		Prehistoric	USFWS
NV-SV-D-037		Prehistoric	USFWS
NV-SV-E-013		Prehistoric	USFWS
NV-SV-E-014		Prehistoric	USFWS
NV-SV-E-015		Prehistoric	USFWS
NV-SV-E-017		Prehistoric	USFWS
NV-SV-E-018		Prehistoric	USFWS
NV-SV-E-019		Prehistoric	USFWS
NV-SV-E-020		Multi-	USFWS

**Table 4.1-1 Summary of Cultural Resource Sites Along Access  
Roads within the Sheldon National Wildlife Refuge**

<b>Temp No.</b>	<b>Trinomial</b>	<b>Components</b>	<b>Owner</b>
		Component	
NV-SV-E-021		Prehistoric	USFWS
NV-SV-E-022		Prehistoric	USFWS
NV-SV-E-023		Prehistoric	USFWS
NV-SV-E-024		Prehistoric	USFWS
NV-SV-E-025		Prehistoric	USFWS
NV-WN-B-161	HU1244	Prehistoric	USFWS

## **5.0 Additional Terms, Conditions, and Stipulations**

The USFWS has requested additional measures and conditions per the SUP. Ruby would need to discuss these conditions with the USFWS to determine the appropriate level of maintenance. Upon completion of construction, Ruby will request an additional SUP to allow maintenance of block-valves within the Sheldon NWR.

### **5.1 Graveling of Proposed Access Roads and Routes**

Roads and routes within the Sheldon NWR where gravel has been placed during seasonal maintenance have been worn down. The USFWS has requested Ruby to gravel roads and routes that are in need of new gravel.

### **5.2 Fencing and Signage**

Fences along the southern boundary of the Sheldon NWR should be inspected to be sure they are sturdy and would not need repair. The USFWS is particularly concerned that the construction activities would push BLM-managed wild horses onto the refuge. The integrity of the fences, cattle guards, and grates would need to be inspected to ensure that they would resist extra pressure from horses, burros, cattle, and human traffic associated with construction.

There are 33 miles along the southern boundary of the refuge that would need to be posted with the Sheldon NWR signs to inform workers and contractors whether they are outside the boundaries of the Sheldon NWR or on the refuge and, therefore, subject to different rules and regulations. The USFWS has signs that Ruby would use for this purpose.

### **5.3 Invasive Weed Management along 8A**

Invasive weeds along 8A include halogeton, Russian thistle, and small areas of hoary cress. The USFWS has requested that Ruby spray these weeds prior to construction to prevent the transport of weed seed along access roads/routes through the Sheldon NWR and to the construction site. Post-construction, the USFWS has requested Ruby to re-seed the edges of 8A with a native seed mix.

The Sheldon NWR Weed Plan states that the DOTs should discontinue the blading of roads outside the road and roadside ditch (Bennett 2009). The blading has been occurring for 10 years, and the seed bed has been lost. Measures for invasive weed control would be to spray and then either wait a year to see if natives come back, or re-seed. Due to the

scarcity of water, natives will most likely not come back in a year (Bennett 2009). Re-seeding would be the more successful measure to control invasive weeds.

## **5.4 Re-route Summit Lake/Badger Mountain Road (H-46B)**

The Sheldon NWR has requested Ruby to realign a small stretch of Summit Lake/Badger Mountain Road near Ten Mile Spring to bypass an ongoing research study area. The current location of Summit Lake/Badger Mountain Road traverses between Ten Mile Spring, a perennial spring, and the study area. The study area has an electric fence around it to keep feral horses out, so biologists can measure the effects horses have on riparian vegetation. The Sheldon NWR has indicated that the increase in traffic will deter feral horses from retreating to the spring for food and water, which would skew the results of the study. The SUP will give Ruby authorization to realign the road in order to bypass the study area (See Figure B10).

### **5.4.1 Construction Details**

The realignment of Summit Lake/Badger Mountain Road would be approximately 1330 feet in length and would be constructed as wide as the existing road, which is currently 16 feet. The current alignment of the road is located at the foot of a hill on the south side; however, to avoid the study and Ten Mile Spring, the road would have to be constructed uphill of the existing alignment. The back slope would be bladed on the uphill side, to acquire a 2:1 slope to prevent loose material from caving off. After realigning the road, 32 yards of road base would be hauled in and spread out on the road.

The road would require two 24-inch elliptical culverts, or as needed for proper drainage and a bar ditch to be cut in, along the uphill side (south side) of the road. The road would take four to five days to construct in late July/early August. Restoration discussions are still ongoing between Ruby and the Sheldon NWR.

### **5.4.2 Habitat Assessment**

Surveys for biological and archeological features are complete for the re-alignment of Summit Lake/Badger Mountain Road. Surveys did not detect sensitive species or features, including sage-grouse leks, pygmy rabbit burrows, wetlands, springs, or streams. The habitat is sagebrush steppe. Dominant vegetation includes; big sagebrush, bitterbrush, rabbitbrush (*Chrysothamnus nauseosus*), Sandberg bluegrass (*Poa secunda*), and intermediate wheatgrass (*Agropyron intermedium*). The soils are a sandy loam, and there is less than 1% invasive species present.

### **5.4.3 Conservation Values**

The current alignment of Summit Lake/Badger Mountain Road traverses through the downward flow of water from Ten Mile Spring. The spring water moves in a northeast direction, across the road and into the study area. The re-alignment of the road would avoid the spring, allowing water to flow freely. After the new road construction is complete, the abandoned portion of the road will be left in a roughened condition and will be reseeded.

Below is an analysis of conservation values using the Nevada Habitat Matrix (July 29, 2009 version) to define habit quality for greater sage-grouse, pygmy rabbit, migratory birds, and sagebrush steppe habitat quality (Appendix C). The visibility assessment of the road realignment will determine potential impacts to wildlife habitat. The width of the road for the assessment is assumed to be 30 feet, with a 15-foot buffer on each side, which is 2.5 acres. For more details on the assessment approach, see Section 6.2.

### Existing Vegetation Cover

Existing vegetation cover for the road realignment H-46B is sagebrush steppe.

### Habitat Integrity

All of the area associated with the access road realignment of H-46B is high quality habitat for sage-grouse, big game, and migratory birds (Table 5.4-1). The area was placed in Category 3 for pygmy rabbit habitat because the presence of active or recently active burrows is not known. Total acres for the road alignment are 2.5.

Habitat integrity is judged based on fire regime condition class (FRCC) and R-value (Table 5.4-1). Habitat integrity is predominately in excellent condition, as the area is in FRCC 1 and R0 vegetation.

**Table 5.4-1 Habitat Quality for Road Realignment H-46B (Acres) as Defined by the Nevada Habitat Matrix<sup>1</sup>**

Habitat type	Category 1	Category 2	Category 3	Category 4
Habitat integrity (FRCC)	2.1	0.1	0.3	-- <sup>2</sup>
R-value	2.5	0	0	0
Greater sage-grouse	2.5	0	0	0
Pygmy rabbit		0	2.5	0
Big game	2.5	0	0	--
Migratory birds	2.5	0	0	0

<sup>1</sup> See Appendix C;

<sup>2</sup> Not Defined

### Visual

None of the sensitive natural resource features would have visibility of this planned road re-route, see Figure B11. Topographic obstructions and the distant location of the sensitive natural resource features prevent visibility of the realignment of H-46B.

## 6.0 Proposed Land Exchange to Preserve Conservation Value

Access route W-1 has sensitive resources located along the route from Wall Canyon Spring to the Sheldon NWR fence line, about one mile in length. These resources include a spring and high quality sagebrush steppe community, which provides habitat for sagebrush-obligate species. This section of W-1 has quality resource values, and use as an access route may not be compatible with the Sheldon NWR's purposes. As such, the USFWS and Ruby are exploring mutually beneficial solutions to allow Ruby access without losing collective refuge resources. One such solution is a land exchange. In order for Ruby to acquire usage of the route, a Compatibility Determination must be developed.

To date, one percent of land within the Sheldon NWR boundary is private and not protected by the Sheldon NWR or subject to its resource management strategies. Development of these in-holdings can cause disproportionate impact that can disrupt all other conservation values, including viewshed, wildlife, habitat fragmentation, and the introduction of invasive weeds. Private landowners can build new roads, as well as new dwellings and other structures. These new development can cause impacts to surrounding habitats and downstream water sources, introduce invasive species, and deter recreationalists from visiting the Sheldon NWR.

Ruby and the USFWS are working together to identify in-holdings within the Sheldon NWR boundary that may be acquired from a willing seller. The in-holdings would have at least equal fair market value, as well as at least equal conservation values. Ruby plans to participate in a land exchange with Sheldon NWR for the use of the last mile of W-1. In exchange for acquiring an inholding, the USFWS would grant Ruby an easement in perpetuity for the one-mile section of W-1. Ruby would place bench marks at the start and end of the easement road and stake the width limits of the easement road to clearly delineate the boundaries.

If the land exchange becomes implausible, Ruby may explore the possibility of building a spur off of W-1 to avoid the last mile of sensitive habitat on the Sheldon NWR. Below is a conservation value assessment of the blocks of land along W-1 where sensitive resources exist.

### 6.1 Conservation Value of access route W-1

Access route W-1 is located within land blocks 6c and 6d and will be used by Ruby for access pipeline ROW. Land blocks 6c and 6d are 96.4 and 236.1 acres, respectively. The conservation value assessment will provide information to help determine the monetary value of land blocks 6d and 6c.

## 6.2 Assessment Approach

### 6.2.1 Environmental Setting

The two land blocks occur in areas of sagebrush steppe, with basin big sagebrush (*Artemisia tridentata* spp. *Tridentata*) and Wyoming big sagebrush (*Artemisia tridentata* Nutt. ssp. *Wyomingensis*), bitterbrush, rabbitbrush, Sandberg bluegrass, bluebunch wheatgrass (*Agropyron spicatum*), needle and thread grass (*Hesperostipa comata*), Thurber's needlegrass (*Achnatherum thurberianum*), Indian ricegrass (*Achnatherum hymenoides*), and bottleneck squirreltail (*Hordeum jubatum*) as characteristic plant species. The area is important sage-grouse and pronghorn habitat. Elevations vary from approximately 5,660 to 6,670 feet. Soil textures range from clayey loams to sandy loams, with variable depths depending on topographic positions.

### 6.2.2 Datasets

The Nevada Habitat Matrix (July 29, 2009 version) was used to define habitat quality for greater sage-grouse, pygmy rabbit, migratory birds, and sagebrush steppe habitat quality (Appendix C). The habitat matrix was developed in response to the USFWS' request to define habitat quality along the ROW for special management lands; federal and state threatened, endangered, proposed, candidate species, and critical habitat; migratory birds; big game range; non-Endangered Species Act-listed species; greater sage-grouse, pygmy rabbit; and habitat integrity. The habitat matrix was developed by Ruby and then refined at meetings with the BLM, NDOW, and USFWS. Category 1 represents high quality habitat, and Category 4 represents non-suitable habitat as defined.

LANDFIRE ([www.landfire.gov](http://www.landfire.gov)) existing vegetation cover and FRCC datasets were used to determine vegetation cover and habitat integrity for the two land blocks and road re-route. FRCC was used to define habitat integrity. FRCC measures existing vegetation composition with a reference condition such as pre-settlement vegetation or potential natural vegetation. FRCC is divided into three classes: FRCC1 contains vegetation composition similar to the reference condition and represents excellent quality habitat; FRCC2 contains vegetation composition that is slightly altered from the reference situation and represents good habitat condition; and FRCC3 contains vegetation composition that is greatly altered from the reference condition and represents poor habitat quality.

Another way of evaluating habitat integrity of sagebrush steppe vegetation is by means of R-value. R-value habitats were identified by NDOW as a way to prioritize habitat quality based on the dominant plant type: R0 = intact sagebrush vegetation; R1 = perennial grass; R2 = Wyoming big sagebrush; R2a = Wyoming big sagebrush with cheatgrass; and R2b = cheatgrass. Within the habitat matrix, R-values are coded as follows: R0 = Category 1; R1 = Category 2; R2 = Category 3; R2a and R2b = Category 4.

Datasets for the conservation value analysis for sage-grouse, pygmy rabbit, and R-values were obtained from NDOW; big game data sets from NDOW and USFWS; and migratory bird habitats from the Nevada State Steering Committee on the Intermountain West Joint Venture.

For the visual analysis a 10-meter Digital Elevation Model was downloaded from the USGS website. This model was used to determine elevations and spatial relationships of the habitat features and the proposed road upgrade.

Visibility analysis was conducted from the proposed Project to sensitive habitat features which included:

- Raptor points;
- Habitat;
- Hydro-features that included seeps/springs, ponds, and streams;
- Rock outcrops; and
- Sage-grouse and pygmy rabbit polygons.

A geographical information systems visibility analysis point was assigned to each line vertex found on the existing two track roads considered for upgrade in two blocks of land known as 6c and 6d. The visibility analysis “looked” across the landscape out to three miles to determine what sensitive natural resource features would have visibility of the proposed Project. The analysis focused on visibility from ground level of the proposed Project to the ground level of the sensitive natural resource feature. Vegetation was not included as a potential obstruction to visibility.

## 6.3 Results

### 6.3.1 Existing Vegetation Cover

Existing vegetation cover for the land blocks 6c and 6d is predominately sagebrush steppe, with minimal riparian and pinion-juniper plant communities.

### 6.3.2 Habitat Integrity

All of the area in blocks 6c and 6d for greater sage-grouse, big game, and migratory birds is high quality (Table 6.3-1). Total acreage for blocks 6c and 6d is 96.4 and 236.1, respectively. Neither blocks 6c nor 6d are suitable pygmy rabbit habitat.

Habitat integrity is judged based on FRCC and R-value (Table 6.3-1). Habitat integrity for both blocks 6c and 6d is in good or excellent or condition. FRCC 2, or good quality habitat covers, 71 and 74 percent of the areas in blocks 6c and 6d, respectively. FRCC, or excellent quality habitat, accounts for 29 and 24 percent of blocks 6c and 6d, respectively. Sagebrush steppe vegetation in both 6c and 6d is categorized as R0, high quality sagebrush vegetation.

Category 1 represents high quality habitat, and Category 4 represents non-suitable habitat, as defined by the Nevada Habitat Matrix.

**Table 6.2-1 Habitat Quality for Land Blocks 6c and 6d (Acres) as Defined by the Nevada Habitat Matrix<sup>1</sup>**

Habitat Type	Category 1		Category 2		Category 3		Category 4	
	6c	6d	6c	6d	6c	6d	6c	6d
Habitat integrity (FRCC)	27.7	57.4	68.5	175.4	0.2	3.4	-- <sup>2</sup>	--
R-value	96.4	236.1						
Greater sage-grouse	96.4	236.1	0	0	0	0	0	0
Pygmy rabbit	0	0	0	0	0	0	96.4	236.1
Big game	96.4	236.1	0	0	0	0	--	--
Migratory birds	96.4	229.1	0	7.0	0	0	0	0

<sup>1</sup> See Appendix C;

<sup>2</sup> Not Defined

### 6.3.3 Visual

Several of the sensitive natural resource features would have visibility of this road easement/exchange—see Figure B12. The three raptor nests located approximately 1/8 mile north of the proposed access road improvement in parcel 6c have a clear line-of-sight visibility of the proposed Project. Two grouse areas located 1/3 mile from parcel 6d would also have line-of-sight visibility of the proposed Project. Rock outcrops, hydro-features, and sagebrush steppe habitat each would also have visibility of the proposed Project with variable distances shown on Figure B1. Pygmy rabbit habitat located 2.3 miles away from parcel 6d would not have visibility of the proposed Project.

## 7.0 Summary of Terms of Access

Roads and the traffic traveling on them can impact the environment in a variety of ways. Appropriate maintenance strategies can significantly reduce this impact. Below is a comprehensive list of terms of access Ruby would employ, where appropriate. Ruby understands that the Sheldon NWR's primary goal is wildlife conservation and would work with the USFWS to ensure environmentally responsible use of the refuge's access roads and routes. For some measures below, such as determining appropriate locations for mowing and road blading/sheering, Ruby will consult with the refuge for express permission regarding locations in which these measures could be implemented.

### Road and Route Maintenance

- Periodic maintenance throughout construction;
- Blading and sheering of road/route, as needed, to ensure a properly graded road surface to eliminate standing water;
- Before and after assessments of culverts to determine if culverts will need to be replaced after construction; and
- Mowing of vegetation at blind corners for visibility.

### Safety

- Placement of caution signs where there is a blind spot;
- Placement of gravel in areas where the road/route is worn down to prevent the road/route from becoming slippery when wet;
- Pullouts may be necessary in limited areas; pullouts will be minimized by using strategic mowing wherever possible. Actual mowing and pullout locations will be determined during a site visit with Ruby and the Sheldon NWR; and
- Use of Project ROW, as a contingency if roads/routes in the Sheldon NWR become unsafe to drive.

### Sensitive Areas

- Use of culverts or matting where streams or wetlands cross access road/route;
- Re-alignment of Summit Lake/Badger Mountain Road to avoid a feral horse study area and perennial spring;
- Ensuring that construction vehicles adhere to speeds to reduce collisions with wildlife and for safety;
- Ensuring that workers are educated regarding protection of animals and habitat in the NWR;
- Revegetation of all land disturbed by Project-related activities with seed mixes recommended by local authorities, including the Sheldon NWR;
- Spraying of vehicles for cleaning, invasive weeds would be done in designated areas;

- Use of herbicides and pesticides would not be allowed in or within 100 feet of a wetland, except as allowed by the USFWS; and
- Ruby does not intend to use fertilizer; however, if requested, fertilizer, lime, or mulch would not be allowed in or within 100 feet of wetland unless required in writing by the USFWS.

### **Pygmy Rabbits**

- Mowing prior to road/route use to move the pygmy rabbits away from access roads/routes;
- Trapping and relocating pygmy rabbits to suitable habitat away from access road/route; and
- Planting of larger container sagebrush species within certain pygmy rabbit colonies to establish habitat sooner.

### **Greater Sage-grouse**

- Identification of active leks in the Project route to avoid impacts;
- Avoidance of construction activities when leks are active or nesting and early brood rearing is occurring (approximately mid-March to mid-June);
- Rehabilitation of the access roads/routes using native grasses, forbs, and big sagebrush seed collected from the local vicinity to the greatest extent possible. Reclamation would achieve composition, diversity, and cover similar to that of the surrounding vegetation community;
- Avoidance of human activity between dawn and 10:00 a.m. from March 1 to May 15 within agency designated buffer or occupied leks; and
- Prohibition of construction in known greater sage-grouse habitat during the following months for:
  - Leks - February 15 to May 31 (2.0-mile buffer);
  - Winter Range/Concentration Area - November 1 to March 30;
  - Summer - June 1 to August 15.

### **Big Game**

- Within big game winter ranges disturbed by the Project, Ruby would seed disturbed areas with preferred big game forage species, as recommended by the Sheldon NWR;
- Ruby would control noxious weeds along access roads/routes, including both summer and winter rangelands, to help maintain native forage species; and
- To reduce potential impacts to big game species, Ruby has agreed to avoid construction activities in designated crucial winter big game ranges. Should Ruby find it necessary to construct within this time period, it would seek written authorization. Crucial winter range restrictions would include:

#### Mule Deer

- Winter - October 15 to March 15

#### Pronghorn

- Winter - November 1 to April 15
- Migration Corridor restriction - April 1 to June 30.

**Raptors**

- Ruby has defined BMPs to be employed for raptor protection in its Voluntary Conservation Measures in Furtherance of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act and Executive Order No. 13186 (an agreement with USFWS). Those measures will be applied within the Sheldon NWR.

**MBTA**

- Ruby has defined best management practices to be employed for MBTA protection in its Voluntary Conservation Measures in Furtherance of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act and Executive Order No. 13186 (an agreement with the USFWS). These measures will be applied within the Sheldon NWR.

**Dust**

The following specific control measures are to be used as needed to control fugitive dust emissions for the Project:

- Construction equipment and vehicles will be properly maintained;
- Apply water one or more times per day to all affected unpaved roads/routes;
- Reduce vehicle speeds on all unpaved access roads/routes;
- Clean up track-out and/or carry-out areas at paved road access points at a minimum of once every 48 hours;
- Gravel pads may be installed adjacent to paved roadways to limit track-out, and clearly established and enforced traffic patterns may be used to route traffic over track-out control devices;
- Cover all haul truck loads, or maintain at least six inches of freeboard space in each cargo compartment. Ensure that all haul truck cargo compartments are constructed and maintained to minimize spillage and loss of materials, and clean or wash each cargo compartment at the delivery site after removal of the bulk materials; and
- For temporary surfaces during periods of inactivity, restrict vehicular access by means of either fencing or signage and apply water to comply with the stabilized surface requirements.

Water trucks, using an off-refuge source, will be the primary means of dust abatement during all phases of construction. Water spray will be controlled so that over-spraying and pooling will be avoided, to the greatest extent possible. Where roads are paved, no dust mitigation should be necessary.

**Waste and Spill Prevention**

- All Project-related waste would be removed or disposed of from the Sheldon NWR
- Ruby shall provide immediate notice to the USFWS in the event of a spill or other emergency.
- All spills occurring on land or in watercourses (including intermittent and ephemeral streams), regardless of quantity, shall be cleaned up immediately.

**Contingency for Unforeseen Conditions**

In the event of unforeseen problems or issues arising during the Project that are not addressed in the mitigation, resolution will be achieved through consultation among Ruby, its contractors, and the USFWS.

**Contingencies for Refuge Management Needs**

There may be occasional periods during which some access roads/routes will need to be closed for refuge management purposes. Such periods may include but are not limited to aerial refuge/species surveys, horse gather activities, and fire management actions. The refuge will make every effort to communicate these time periods to Ruby with reasonable advance notice so that temporary adjustments to travel plans can be made.

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# Appendix A Tables

**Table A-1 Mammals Found in Sheldon NWR**

<b>Common Name</b>	<b>Scientific Name</b>
Preble's Shrew*	<i>Sorex preblei</i>
Merriam's Shrew	<i>Sorex merriami</i>
Trowbridge's Shrew*	<i>Sorex trowbridgii</i>
Vagrant Shrew	<i>Sorex vagrans</i>
Little Brown Myotis	<i>Myotis lucifugus</i>
Yuma Myotis	<i>Myotis yumanensis</i>
Long-eared Myotis	<i>Myotis evotis</i>
Fringed Myotis*	<i>Myotis thysanodes</i>
Long-legged Myotis*	<i>Myotis volans</i>
California Myotis*	<i>Myotis californicus</i>
Small-footed Myotis	<i>Myotis ciliolabrum</i>
Silver-haired Bat	<i>Lasionycteris noctivagans</i>
Western Pipistrelle	<i>Pipistrellus hesperus</i>
Big Brown Bat*	<i>Eptesicus fuscus</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Western Big-eared Bat*	<i>Plecotus townsendii</i>
Pallid Bat	<i>Antrozous pallidus</i>
Big Freetail Bat	<i>Nyctinomops macrotis</i>
Raccoon	<i>Procyon lotor</i>
Short-tailed Weasel	<i>Mustela erminea</i>
Long-tailed Weasel	<i>Mustela frenata</i>
Spotted Skunk	<i>Spilogale putorius</i>
Striped Skunk	<i>Mephitis mephitis</i>
Badger	<i>Taxidea taxus</i>
Kit Fox	<i>Vulpes macrotis</i>
Coyote	<i>Canis latrans</i>
Mountain Lion	<i>Puma concolor</i>
Bobcat	<i>Lynx rufus</i>
Yellow-bellied Marmot	<i>Marmota flaviventris</i>
Townsend's Ground Squirrel	<i>Spermophilus townsendii</i>
Belding's Ground Squirrel	<i>Spermophilus beldingi</i>
Golden-mantled Squirrel	<i>Spermophilus lateralis</i>
Whitetail Antelope Squirrel	<i>Ammospermophilus leucurus</i>
Least Chipmunk	<i>Tamias minimus</i>
Townsend's Pocket Gopher*	<i>Thomomys townsendii</i>
Northern Pocket Gopher*	<i>Thomomys talpoides</i>
Little Pocket Mouse*	<i>Perognathus longimembris</i>
Great Basin Pocket Mouse	<i>Perognathus parvus</i>
Dark Kangaroo Rat	??
Ord's Kangaroo Rat	<i>Dipodomys ordii</i>
Great Basin Kangaroo Rat	<i>Dipodomys microps</i>
Merriam's Kangaroo Rat*	<i>Dipodomys merriami</i>
Beaver	<i>Castor canadensis</i>

**Table A-1 Mammals Found in Sheldon NWR**

<b>Common Name</b>	<b>Scientific Name</b>
Western Harvest Mouse*	<i>Reithrodontomys megalotis</i>
Canyon Mouse*	<i>Peromyscus crinitus</i>
Deer Mouse	<i>Peromyscus maniculatus</i>
Pinon Mouse	<i>Peromyscus truei</i>
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>
Desert Woodrat	<i>Neotoma lepida</i>
Bushy-tailed Woodrat	<i>Neotoma cinerea</i>
Mountain Vole	??
Long-tailed Vole*	<i>Microtus longicaudus</i>
Sagebrush Vole	<i>Lemmyscus curatus</i>
House Mouse	<i>Mus musculus</i>
Western Jumping Mouse*	<i>Zapus princeps</i>
Porcupine	<i>Hystrix cristata</i>
Pika	<i>Ochotona princeps</i>
White-tailed Jackrabbit	<i>Lepus townsendii</i>
Black-tailed Jackrabbit	<i>Lepus californicus</i>
Mountain Cottontail	<i>Sylvilagus nuttallii</i>
Pygmy Rabbit	<i>Brachylagus idahoensis</i>
Mule Deer	<i>Odocoileus hemionus</i>
Pronghorn Antelope	<i>Antilocapra americana</i>
California Bighorn Sheep	<i>Ovis canadensis californicus</i>

Source: USGS 2006. Scientific names included by Ecology and Environment, Inc.

Notes:

\* - Mammals thought to occur on the refuge

**Table A-2 Birds Found in Sheldon NWR**

Common Name	Scientific Name
Common Loon	<i>Gavia immer</i>
Horned Grebe	<i>Podiceps auritus</i>
Eared Grebe*	<i>Podiceps nigricollis</i>
Western Grebe*	<i>Aechmophorus occidentalis</i>
Clark's Grebe*	<i>Aechmophorus clarkii</i>
Pied-billed Grebe*	<i>Podilymbus podiceps</i>
American White Pelican	<i>Pelecanus erythrorhynchos</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>
Snowy Egret	<i>Egretta thula</i>
Black-crowned Night-Heron*	<i>Nycticorax nycticorax</i>
American Bittern*	<i>Botaurus lentiginosus</i>
White-faced Ibis	<i>Plegadis chihi</i>
Tundra Swan	<i>Cygnus columbianus</i>
Canada Goose*	<i>Branta canadensis</i>
Greater White-Fronted Goose	<i>Anser albifrons</i>
Snow Goose	<i>Chen c. atlantica</i>
Mallard*	<i>Anas platyrhynchos</i>
Gadwall*	<i>Anas strepera</i>
Northern Pintail*	<i>Anas acuta</i>
Green-winged Teal*	<i>Anas c. carolinensis</i>
Blue-winged Teal*	<i>Anas discors</i>
Cinnamon Teal*	<i>Anas cyanoptera</i>
American Wigeon*?	<i>Anas americana</i>
Northern Shoveler*	<i>Anas clypeata</i>
Wood Duck	<i>Aix sponsa</i>
Redhead*	<i>Aythya americana</i>
Ring-necked Duck	<i>Aythya collaris</i>
Canvasback*	<i>Aythya valisineria</i>
Lesser Scaup*	<i>Aythya affinis</i>
Common Goldeneye	<i>Bucephala clangula</i>
Bufflehead	<i>Bucephala albeola</i>
Ruddy Duck*	<i>Ocyura jamaicensis</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Common Merganser	<i>Mergus merganser</i>
Turkey Vulture*	<i>Cathartes aura</i>
Northern Goshawk*	<i>Accipiter gentilis</i>
Sharp-shinned Hawk*	<i>Accipiter striatus</i>
Cooper's Hawk*	<i>Accipiter cooperii</i>
Red-tailed Hawk*	<i>Buteo jamaicensis</i>
Swainson's Hawk*	<i>Buteo swainsoni</i>
Rough-legged Hawk	<i>Buteo lagopus</i>
Ferruginous Hawk*	<i>Buteo regalis</i>
Golden Eagle*	<i>Aquila chrysaetos</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Northern Harrier*	<i>Circus cyaneus</i>
Osprey	<i>Pandion haliaetus</i>

**Table A-2 Birds Found in Sheldon NWR**

<b>Common Name</b>	<b>Scientific Name</b>
Prairie Falcon*	<i>Falco mexicanus</i>
Peregrine Falcon	<i>Falco peregrinus</i>
American Kestrel*	<i>Falco sparverius</i>
Greater Sage-Grouse*	<i>Centrocercus urophasianus</i>
California Quail*	<i>Callipepla californica</i>
Chukar*	<i>Alectoris chukar</i>
Sandhill Crane*	<i>Grus canadensis</i>
Virginia Rail*	<i>Rallus limicola</i>
Sora*	<i>Porzana carolina</i>
American Coot*	<i>Fulica americana</i>
Killdeer*	<i>Charadrius vociferus</i>
Wilson's Snipe*	<i>Gallinago gallinago</i>
Long-billed Curlew*	<i>Numenius americanus</i>
Spotted Sandpiper*	<i>Actitis macularius</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Willet*	<i>Tringa semipalmata</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Western Sandpiper	<i>Calidris mauri</i>
Least Sandpiper	<i>Calidris minutilla</i>
American Avocet*	<i>Recurvirostra americana</i>
Black-necked Stilt*	<i>Himantopus mexicanus</i>
Wilson's Phalarope*	<i>Phalaropus tricolor</i>
Red Phalarope	<i>Phalaropus fulicaria</i>
Red-necked Phalarope	<i>Phalaropus lobatus</i>
California Gull	<i>Larus californicus</i>
Ring-billed Gull	<i>Larus delawarensis</i>
Forster's Tern	<i>Sterna forsteri</i>
Caspian Tern	<i>Hydroprogne caspa</i>
Black Tern*?	<i>Chlidonia niger</i>
Mourning Dove*	<i>Zenaida macroura</i>
Western Screech-Owl*	<i>Otus kennicottii</i>
Great Horned Owl*	<i>Bubo virginianus</i>
Burrowing Owl*	<i>Athene cunicularia</i>
Long-eared Owl*	<i>Asio otus</i>
Short-eared Owl*	<i>Asio flammeus</i>
Northern Saw-whet Owl	<i>Aegolius acadicus</i>
Common Poorwill*	<i>Phalaenoptilus nuttallii</i>
Common Nighthawk*	<i>Chordeiles minor</i>
Black Swift	<i>Cypseloides niger</i>
White-throated Swift*	<i>Aeronautes saxatalis</i>
Broad-tailed Hummingbird*?	<i>Selasphorus platycercus</i>
Rufous Hummingbird*?	<i>Selasphorus rufus</i>
Calliope Hummingbird*?	<i>Stella calliope</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Northern Flicker*	<i>Colaptes auratus</i>
Lewis' Woodpecker	<i>Melanerpes lewis</i>
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>

**Table A-2 Birds Found in Sheldon NWR**

<b>Common Name</b>	<b>Scientific Name</b>
Hairy Woodpecker	<i>Picoides villosus</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Western Kingbird*	<i>Tyrannus verticalis</i>
Ash-throated Flycatcher*	<i>Myiarchus cinerascens</i>
Say's Phoebe*	<i>Sayornis saya</i>
Willow Flycatcher	<i>Empidonax t. extimus</i>
Hammond's Flycatcher	<i>Empidonax hammondii</i>
Dusky Flycatcher*	<i>Empidonax hammondii/oberho.</i>
Gray Flycatcher*	<i>Empidonax wrightii</i>
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>
Western Wood-Pewee	<i>Cantopus sordidulus</i>
Olive-sided Flycatcher	<i>Cantopus cooperi</i>
Horned Lark*	<i>Eremophila alpestris</i>
Violet-green Swallow*	<i>Tachycineta thalassina</i>
Tree Swallow*	<i>Tachycineta bicolor</i>
Rough-winged Swallow*	<i>Stelgidopteryx serripennis</i>
Bank Swallow*?	<i>Riparia riparia</i>
Barn Swallow*	<i>Hirundo rustica</i>
Cliff Swallow*	<i>Petrochelidon pyrrhonota</i>
Western Scrub-Jay*	<i>Aphelocoma californica</i>
Black-billed Magpie*	<i>Pica hudsonia</i>
Common Raven*	<i>Corvus corax</i>
American Crow	<i>Corvus brachyrhynchos</i>
Black-capped Chickadee	<i>Poecile atricapillus</i>
Mountain Chickadee*	<i>Poecile gambeli</i>
Juniper Titmouse*	<i>Baeolophus ridgwayi</i>
Bushtit*	<i>Psaltriparus minimus</i>
Red-breasted Nuthatch	<i>Sitta canadensis</i>
House Wren*	<i>Troglodytes aedon</i>
Winter Wren	<i>Troglodytes troglodytes</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Marsh Wren*	<i>Cistothorus palustris</i>
Canyon Wren*	<i>Catherpes mexicanus</i>
Rock Wren*	<i>Salpinctes obsoletus</i>
Sage Thrasher*	<i>Oreoscoptes montanus</i>
American Robin*	<i>Turdus migratorius</i>
Varied Thrush	<i>Ixoreus naevius</i>
Hermit Thrush	<i>Catharus guttatus</i>
Swainson's Thrush*?	<i>Catharus ustulatus</i>
Western Bluebird	<i>Sialia mexicana</i>
Mountain Bluebird*	<i>Sialia currucoides</i>
Townsend's Solitaire*	<i>Myadestes townsendi</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Blue-gray Gnatcatcher*	<i>Poliophtila caerulea</i>
Ruby-crowned Kinglet*?	<i>Regulus calendula</i>
Golden-crowned Kinglet	<i>Regulus satrapa</i>
American Pipit	<i>Anthus rubescens</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>

**Table A-2 Birds Found in Sheldon NWR**

<b>Common Name</b>	<b>Scientific Name</b>
Northern Shrike	<i>Lanius excubitor</i>
Loggerhead Shrike*	<i>Lanius ludovicianus</i>
European Starling*	<i>Sturnus vulgaris</i>
Warbling Vireo*	<i>Vireo gilvus</i>
Solitary Vireo	<i>Vireo (sp)</i>
Orange-crowned Warbler*	<i>Vermivora celata</i>
Yellow Warbler*	<i>Dendroica petechia</i>
Yellow-rumped Warbler*	<i>Dendroica coronata</i>
Black-throated Gray Warbler*	<i>Dendroica nigrescens</i>
Townsend's Warbler	<i>Dendroica townsendi</i>
MacGillivray's Warbler*?	<i>Oporornis tolmiei</i>
Common Yellowthroat*	<i>Geothlypis trichas</i>
Wilson's Warbler	<i>Wilsonia pusilla</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Yellow-breasted Chat*	<i>Icteria virens</i>
House Sparrow*	<i>Passer domesticus</i>
Western Meadowlark*	<i>Sturnella neglecta</i>
Yellow-headed Blackbird*	<i>Xanthocephalus xanthocephalus</i>
Red-winged Blackbird*	<i>Agelaius phoeniceus</i>
Brewer's Blackbird*	<i>Euphagus cyanocephalus</i>
Brown-headed Cowbird*	<i>Molothrus ater</i>
Bullock's Oriole*	<i>Icterus galbula</i>
Western Tanager*	<i>Piranga ludoviciana</i>
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>
Lazuli Bunting*	<i>Passerina amoena</i>
Cassin's Finch*	<i>Carpodacus cassinii</i>
House Finch*	<i>Carpodacus mexicanus</i>
Pine Siskin	<i>Carduelis pinus</i>
Lesser Goldfinch	<i>Carduelis psaltria</i>
American Goldfinch	<i>Carduelis tristis</i>
Green-tailed Towhee*	<i>Pipilo chlorurus</i>
Spotted Towhee	<i>Pipilo maculatus</i>
Savannah Sparrow*	<i>Passerculus sandwichensis</i>
Vesper Sparrow*	<i>Poocetes gramineus</i>
Lark Sparrow*	<i>Chondestes grammacus</i>
Black-throated Sparrow*	<i>Amphispiza bilineata</i>
Sage Sparrow*	<i>Amphispiza belli</i>
Dark-eyed Junco*?	<i>Junco hyemalis</i>
Chipping Sparrow	<i>Spizella passerina</i>
Brewer's Sparrow*	<i>Spizella breweri</i>
White-crowned Sparrow*	<i>Zonotrichia l. leucophrys</i>
Golden-crowned Sparrow	<i>Zonotrichia atricapilla</i>
Fox Sparrow*?	<i>Passerella iliaca</i>
Lincoln's Sparrow	<i>Melospiza lincolni</i>
Song Sparrow*	<i>Melospiza melodia</i>
Snow Bunting	<i>Plectrophenax nivalis</i>

**Table A-2 Birds Found in Sheldon NWR**

Common Name	Scientific Name
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NOTES:

Source: USGS 2006

Common names updated by current naming standards and scientific names included by Ecology and Environment, Inc.

Notes:

\* - Birds known to nest in the area

\*? – Birds thought to nest in the area <http://www.npwr.usgs.gov/resource/birds/chekbird/r1/sheldon.htm>

**Table A-3 Amphibians and Reptiles Found in Sheldon NWR**

<b>Common Name</b>	<b>Scientific Name</b>
<b>Amphibians</b>	
Great Basin Spadefoot	<i>Spea intermontana</i>
Pacific Treefrog	<i>Pseudacris regilla</i>
Bullfrog (introduced)	<i>Rana catesbeiana</i>
<b>Lizards</b>	
Collared Lizard	<i>Crotaphytus collaris</i>
Leopard Lizard	<i>Gambelia wislizenii</i>
Western Fence Lizard	<i>Sceloporus occidentalis</i>
Sagebrush Lizard	<i>Sceloporus graciosus</i>
Side-blotched Lizard	<i>Uta stansburiana</i>
Short-horned Lizard	<i>Phrynosoma hernandesi</i>
Desert Horned Lizard	<i>Phrynosoma platyrhinos</i>
Western Whiptail	<i>Cnemidophorus tigris</i>
Southern(?) Alligator Lizard	<i>Elgaria multicarinatus</i>
<b>Snakes</b>	
Rubber Boa	<i>Charina bottae</i>
Racer	<i>Coluber constrictor</i>
Striped Whipsnake	<i>Masticophis taeniatus</i>
Gopher Snake	<i>Pituophis melanoleucus</i>
Western Terrestrial Garter Snake	<i>Thamnophis elegans vagrans</i>
Night Snake	<i>Hypsiglena torquata</i>
Western Rattlesnake	<i>Crotalus viridis</i>

Source: USGS 2006. Scientific names included by Ecology and Environment, Inc.

**Table A-4 Fish Found in Sheldon NWR**

<b>Common Name</b>	<b>Scientific Name</b>
Lahontan Cutthroat Trout*	<i>Oncorhynchus clarki henshawi</i>
Rainbow Trout	<i>Oncorhynchus mykiss</i>
Alvord Cutthroat/Rainbow Hybrid	<i>Oncorhynchus mykiss spp.</i>
Alvord Chub*	<i>Gila alvordensis</i>
Sheldon Tui Chub*	<i>Gila bicolor eurysoma</i>
Guppy	<i>Poecilia reticulata</i>
Largemouth Bass	<i>Micropterus salmoides</i>
White Crappie	<i>Pomoxis annularis</i>
Bluegill	<i>Lepomis macrochirus</i>
Yellow Perch	<i>Perca flavescens</i>

Source: USGS 2006. Scientific names included by Ecology and Environment, Inc.

Notes:

\* - Native species

**Table A-5 Species of Conservation Priority in Nevada**

Common Name	Scientific Name
<b>BIRDS</b>	
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>
Bank Swallow	<i>Riparia riparia</i>
Black-bellied Plover	<i>Pluvialis squatarola</i>
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>
Black-tailed Gnatcatcher	<i>Polioptila melanura</i>
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>
Black-throated Sparrow	<i>Amphispiza bilineata</i>
Blue Grosbeak	<i>Guiraca caerulea</i>
Bonaparte's Gull	<i>Larus philadelphia</i>
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>
Brown-crested Flycatcher	<i>Myiarchus tyrannulus</i>
Cactus Wren	<i>Campylorhynchus brunneicapillus</i>
California Gull	<i>Larus californicus</i>
Calliope Hummingbird	<i>Stellula calliope</i>
Clark's Nutcracker	<i>Nucifraga columbiana</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Dunlin	<i>Calidris alpina</i>
Dusky Flycatcher	<i>Empidonax oberholseri</i>
Flammulated Owl	<i>Otus flammeolus</i>
Fox Sparrow	<i>Passerella iliaca</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Gray Flycatcher	<i>Empidonax wrightii</i>
Great Blue Heron	<i>Ardea herodias</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Green-tailed Towhee	<i>Pipilo chlorurus</i>
Juniper Titmouse	<i>Baeolophus ridgwayi</i>
Lesser Nighthawk	<i>Chordeiles acutipennis</i>
Macgillivray's Warbler	<i>Oporornis tolmiei</i>
Marbled Godwit	<i>Limosa fedoa</i>
Mountain Bluebird	<i>Sialia currucoides</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Northern Pygmy-owl	<i>Glaucidium californicum</i>
Orange-crowned Warbler	<i>Vermivora celata</i>
Prairie Falcon	<i>Falco mexicanus</i>
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>
Sage Thrasher	<i>Oreoscoptes montanus</i>
Spotted Sandpiper	<i>Tringa macularia</i>
Steller's Jay	<i>Cyanocitta stelleri</i>
Hooded Oriole	<i>Icterus cucullatus</i>

**Table A-5 Species of Conservation Priority in Nevada**

Common Name	Scientific Name
Summer Tanager	<i>Piranga rubra</i>
Swainson's Thrush	<i>Catharus ustulatus</i>
Three-toed Woodpecker	<i>Picoides tridactylus</i>
Vesper Sparrow	<i>Poocetes gramineus</i>
Western Bluebird	<i>Sialia mexicana</i>
Western Sandpiper	<i>Calidris mauri</i>
Western Scrub Jay	<i>Aphelocoma californica</i>
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>
Wilson's Warbler	<i>Wilsonia pusilla</i>
Yellow-breasted Chat	<i>Icteria virens</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
<b>MAMMALS</b>	
Allen's big-eared bat	<i>Idionycteris phyllotis</i>
Allen's chipmunk	<i>Tamias senex</i>
American pika	<i>Ochotona princeps</i>
American marten	<i>Martes americana</i>
Aplodontia	<i>Aplodontia rufa</i>
Mule deer	<i>Odocoileus hemionus</i>
Ash Meadows montane vole	<i>Microtus montanus nevadensis</i>
Big free-tailed bat	<i>Nyctinomops macrotis</i>
Ringtail	<i>Bassariscus astutus</i>
Broad-footed mole	<i>Scapanus latimanus</i>
Brush mouse	<i>Peromyscus boylei</i>
California kangaroo rat	<i>Dipodomys californicus</i>
California leaf-nosed bat	<i>Macrotus californicus</i>
Cave myotis	<i>Myotis velifer</i>
Desert kangaroo rat	<i>Dipodomys deserti</i>
Desert pocket mouse	<i>Chaetodipus pencillatus</i>
Desert Valley kangaroo mouse	<i>Microdipidops megacephalus nasutus</i>
Fish Spring pocket gopher	<i>Thomomys bottae abstrusus</i>
Fletcher dark kangaroo mouse	<i>Microdipidops megacephalus albiventer</i>
Fringed myotis	<i>Myotis thysanodes</i>
Hidden Forest Uinta chipmunk	<i>Tamias umbrinus nevadensis</i>
Hoary bat	<i>Lasiurus cinereus</i>
Humboldt yellow-pine chipmunk	<i>Tamias amoenus celeris</i>
Inyo shrew	<i>Sorex tenellus</i>
Little brown myotis	<i>Myotis lucifrugus</i>
Long-eared myotis	<i>Myotis evotis</i>
Merriam's shrew	<i>Sorex merriami</i>
Montane shrew	<i>Sorex monticolus</i>
Mountain pocket gopher	<i>Thomomys monticola</i>
Nelson bighorn sheep	<i>Ovis canadensis nelsoni</i>

**Table A-5 Species of Conservation Priority in Nevada**

Common Name	Scientific Name
Northern flying squirrel	<i>Glaucomys sabrinus</i>
Pahranagat Valley montane vole	<i>Microtus montanus fucosus</i>
Pale kangaroo mouse	<i>Microdipidops pallidus</i>
Palmer's chipmunk	<i>Tamias palmeri</i>
Preble's shrew	<i>Sorex preblei</i>
Pygmy rabbit	<i>Brachylagus idahoensis</i>
Northwestern river otter	<i>Lontra canadensis</i>
Sagebrush vole	<i>Lemmiscus curtatus</i>
San Antonio pocket gopher	<i>Thomomys bottae curtatus</i>
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>
Spotted bat	<i>Euderma maculatum</i>
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
Kit fox	<i>Vulpes macrotis</i>
Trowbridge's shrew	<i>Sorex trowbridgii</i>
Vagrant shrew	<i>Sorex vagrans</i>
Water shrew	<i>Sorex palustris</i>
Western jumping mouse	<i>Zapus princeps</i>
Western red bat	<i>Lasiurus blossevillii</i>
Western small-footed myotis	<i>Myotis ciliolabrum</i>
Western yellow bat	<i>Lasiurus xanthinus</i>
Wyoming ground squirrel	<i>Spermophilus elegans nevadensis</i>
<b>REPTILES</b>	
Banded Gila monster	<i>Heloderma suspectum cinctum</i>
Common chuckwalla	<i>Sauromalus obesus</i>
Desert horned lizard	<i>Phrynosoma platyrhinos</i>
Desert iguana	<i>Dipsosaurus dorsalis</i>
Desert night lizard	<i>Xantusia vigilis</i>
Desert tortoise	<i>Gopherus agassizii</i>
Gilbert's skink	<i>Eumeces gilberti</i>
Great Basin collared lizard	<i>Crotaphytus bicynotores</i>
Greater short-horned lizard	<i>Phrynosoma hernandesi</i>
Long-nosed leopard lizard	<i>Gambelia wislezenii</i>
Long-tailed brush lizard	<i>Urosaurus graciosus</i>
Northwestern pond turtle	<i>Clemmys marmorata</i>
Panamint alligator lizard	<i>Elgaria panamintina</i>
Pygmy short-horned lizard	<i>Phrynosoma douglasii</i>
Shasta alligator lizard	<i>Elgaria coerulea palmeri</i>
Sierra alligator lizard	<i>Elgaria coerulea shastensis</i>
Sonoran lyre snake	<i>Trimorphodon biscutatus</i>
Sonoran mountain kingsnake	<i>Lampropeltis pyromelana</i>
Western banded gecko	<i>Coleonyx variegatus</i>
Western diamondback rattlesnake	<i>Crotalis atrox</i>

**Table A-5 Species of Conservation Priority in Nevada**

Common Name	Scientific Name
<b>FISH</b>	
Ash Meadows Amargosa pupfish	<i>Cyprinodon nevadensis mionectes</i>
Ash Meadows speckled dace	<i>Rhinichthys osculus nevadensis</i>
Big Smokey Valley speckled dace	<i>Rhinichthys osculus lariversi</i>
Big Smokey Valley tui chub	<i>Gila bicolor ssp.</i>
Big Spring spinedace	<i>Lepidomeda mollispinis pratensis</i>
Bonytail	<i>Gila elegans</i>
Bull trout	<i>Salvelinus confluentus</i>
Clover Valley speckled dace	<i>Rhinichthys osculus oligoporus</i>
Cui-ui	<i>Chasmistes cujus</i>
Desert dace	<i>Eremichthys acros</i>
Devil's Hole pupfish	<i>Cyprinodon diabolis</i>
Diamond Valley speckled dace	<i>Rhinichthys osculus ssp.</i>
Fish Lake Valley tui chub	<i>Gila bicolor ssp.</i>
Flannelmouth sucker	<i>Catostomus latipinnis</i>
Hiko White River springfish	<i>Crenichthys baileyi grandis</i>
Independence Valley speckled dace	<i>Rhinichthys osculus lethoporus</i>
Independence Valley tui chub	<i>Gila bicolor isolata</i>
Lahontan Cutthroat Trout - Quinn/BlackRock and Upper Humboldt Distinct Population Segment	<i>Oncorhynchus clarkii henshawi</i>
Lahontan Cutthroat Trout - Western Distinct Population Segment	<i>Oncorhynchus clarkii henshawi</i>
Moapa dace	<i>Moapa coriacea</i>
Moapa speckled dace	<i>Rhinichthys osculus moapae</i>
Moapa White River springfish	<i>Crenichthys baileyi moapae</i>
Monitor Valley speckled dace	<i>Rhinichthys osculus ssp.</i>
Moorman White River springfish	<i>Crenichthys baileyi thermophilus</i>
Oasis Valley speckled dace	<i>Rhinichthys osculus ssp.</i>
Pahrnagat roundtail chub	<i>Gila robusta jordani</i>
Pahrnagat speckled dace	<i>Rhinichthys osculus velifer</i>
Pahrump poolfish	<i>Empetrichthys latos latos</i>
Preston White River springfish	<i>Crenichthys baileyi albivallis</i>
Railroad Valley springfish	<i>Crenichthys nevadae</i>
Railroad Valley tui chub	<i>Gila bicolor ssp.</i>
(unnamed) Razorback sucker	<i>Xyrauchen texanus</i>
Virgin River chub	<i>Gila seminuda</i>
Virgin spinedace	<i>Lepidomeda mollispinis mollispinis</i>
Wall Canyon sucker	<i>Catostomus sp.</i>
Warm Springs pupfish	<i>Cyprinodon nevadensis pectoralis</i>
White River desert sucker	<i>Catostomus clarkii intermedius</i>
White River speckled dace	<i>Rhinichthys osculus ssp.</i>
(unnamed) White River spinedace	<i>Lepidomeda albivallis</i>

**Table A-5 Species of Conservation Priority in Nevada**

<b>Common Name</b>	<b>Scientific Name</b>
White River springfish	<i>Crenichthys baileyi baileyi</i>
Woundfin	<i>Plagiopterus argentissimus</i>
<b>AMPHIBIANS</b>	
Amargosa Toad	<i>Bufo nelsoni</i>
Great Basin Columbia spotted frog - NE sub-population	<i>Rana luteiventris</i> pop. 3
Great Basin Columbia spotted frog - Toiyabe sub-population	<i>Rana luteiventris</i> pop. 3
Great Plains toad	<i>Bufo cognatus</i>
Mountain yellow-legged frog	<i>Rana muscosa</i>
Northern leopard frog	<i>Rana pipiens</i>
Relict leopard frog	<i>Rana onca</i>
Southwestern toad (aka Arizona toad)	<i>Bufo microscaphus</i>

Source: Wildlife Action Plan Team 2006.

**Table A-6 Special Status Plant Species that may occur in the Project Area in Nevada**

Common Name	Scientific Name	Status			
		USFWS	Winnemucca District (BLM)	Surprise Field Office (BLM)	Nevada State NDOW
Adobe parsley	<i>Lomatium roseanum</i>			S	
Barneby stemflower	<i>Caulanthus barnebyi</i>		S		
Black Rock potentilla	<i>Potentilla basaltica</i>			S	
Candelaria blazingstar	<i>Mentzelia candelariae</i>		S		
Casick hyssop	<i>Agastache cusickii</i>		S		
Cordelia beardtongue	<i>Penstemon floribundus</i>		S		
Crosby buckwheat	<i>Eriogonum crosbyae</i>		S	S	
Geyer's milk-vetch	<i>Astragalus geyeri</i> var. <i>geyeri</i>			S	
Goodrich biscuitroot	<i>Cynopterus goodrichii</i>		S		
Goose Creek milkvetch	<i>Astragalus anserinus</i>	Pet			
Green buckwheat	<i>Eriogonum umbellatum</i> var. <i>gladerrimum</i>			S	
Grimy ivesia	<i>Ivesia rhypara</i> var. <i>rhypara</i>		S	S	
Holmgren snelowskia	<i>Smelowskia holmgrenii</i>		S		
Howell's thelypodium	<i>Thelypodium howellii</i> var. <i>howellii</i>			S	
Little ricegrass	<i>Oryzopsis exigua</i>			S	
Lahontan Basin buckwheat	<i>Eriogonum rubricaula</i>		S		
Lahontan beardtongue	<i>Penstemon palmeri</i> var. <i>macranthus</i>		S		
Lahontan indigo bush	<i>Psoralea kingii</i>		S		
Lahontan milkvetch	<i>Astragalus porrectus</i>		S		
Lemmon buckwheat	<i>Eriogonum lemmonii</i>		S		
Lonesome milkvetch	<i>Astragalus solitarius</i>		S		
Modoc Bedstraw	<i>Galium glabrescens</i> ssp. <i>modocense</i>				
Nevada dune beardtongue	<i>Penstemon arenarius</i>		S		
Obscure scorpionflower	<i>Phacelia inconspicua</i>		S		SP
Oryctes	<i>Oryctes nevadensis</i>		S		
Osgood Mountain milkvetch	<i>Astragalus yoder-williamsii</i>		S		SP
Owyhee prickly phlox	<i>Leptodactylon glabrum</i>		S		
Playa phacelia	<i>Phacelia inundata</i>			S	
Prostrate buckwheat	<i>Eriogonum prociduum</i>			S	
Pueblo Valley peppergrass	<i>Lepidium montanum</i> var. <i>nevadense</i>		S		
Rattlesnake stickseed	<i>Hackelia ophiobia</i>		S		
Ravendale skullcap	<i>Scutellaria holmgreniorum</i>		S		

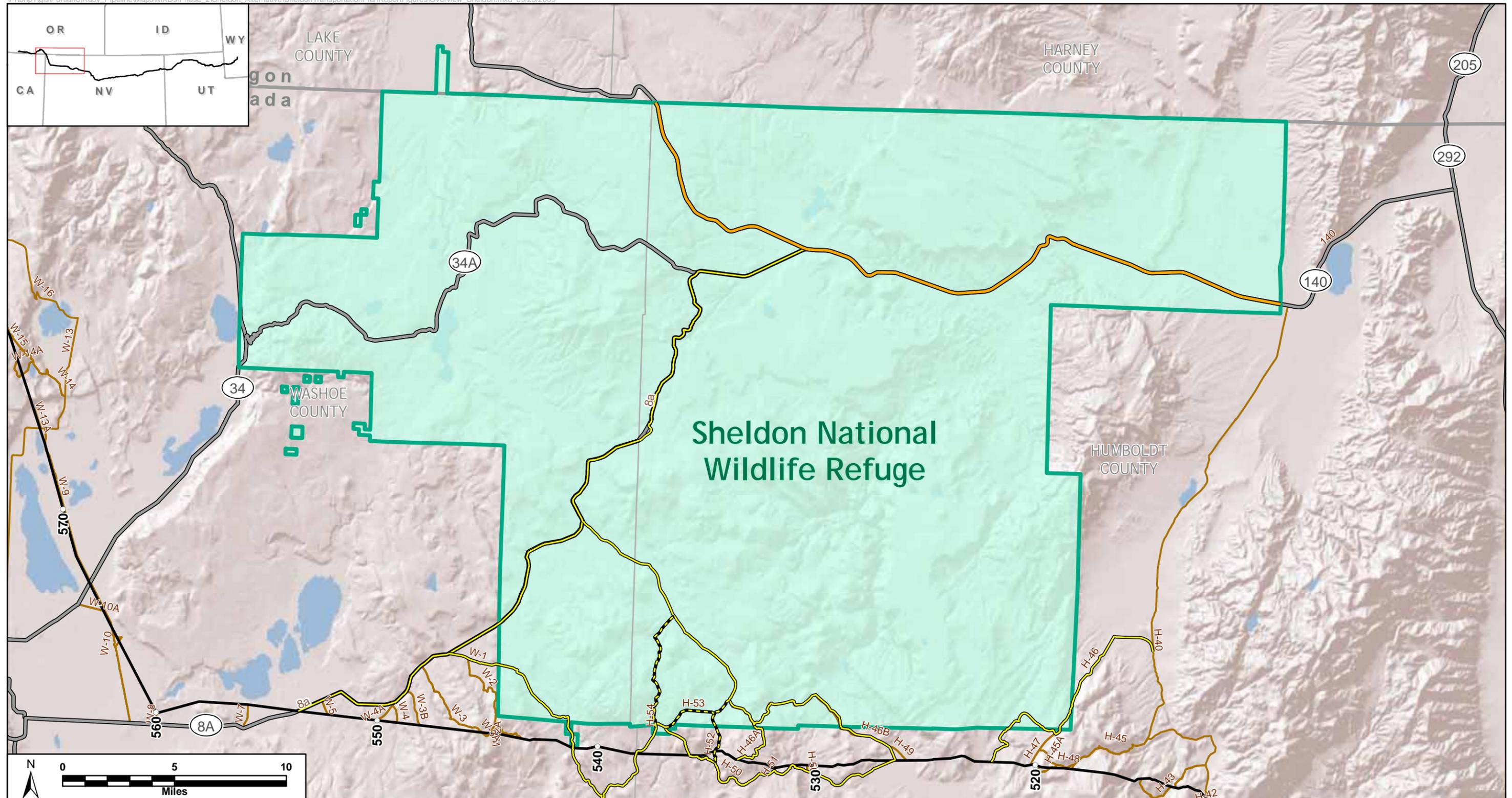
**Table A-6 Special Status Plant Species that may occur in the Project Area in Nevada**

Common Name	Scientific Name	Status			
		USFWS	Winnemucca District (BLM)	Surprise Field Office (BLM)	Nevada State NDOW
Sagebrush loeflingia	<i>Loeflingia squarrosa</i> var. <i>artemisiarum</i>			S	
Sand cholla	<i>Opuntia pulchella</i>		S		SP
Schoolcraft buckwheat	<i>Eriogonum microthecum</i> ssp. <i>Schoolcraftii</i>			S	
Schoolcraft catseye	<i>Cryptantha schoolcraftii</i>		S	S	
Smooth stickleaf	<i>Mentzelia mollis</i>		S		
Soldier meadows cinquefoil/Black rock potentilla	<i>Potentilla basaltica</i>	FC			
Steamboat buckwheat	<i>Erigeron ovalifolium</i> var. <i>williamsiae</i>	FE			
Succor Creek parsley	<i>Lomatium packardiae</i>		S		
Sucksdorf milkvetch	<i>Astragalus pulsiferae</i> var. <i>sucksdorfii</i>		S		
Tahoe yellow cress	<i>Rorippa subumbellata</i>	FC			
Tiehm milkvetch	<i>Astragalus tiehmii</i>		S	S	
Warner Mountain bedstraw	<i>Galium serpticum</i> ssp. <i>Warnerense</i>			S	
Webber's ivesia	<i>Ivesia webberi</i>	FC			
Windloving buckwheat	<i>Eriogonum anemophilum</i>		S		
Winged milkvetch	<i>Astragalus pterocarpus</i>		S		

**KEY**

- E = State Endangered
- FC = Federal Candidate for protection under the ESA
- FE = Federal Endangered
- Pet = Petitioned for listing under the ESA
- S = BLM Special Status species (includes BLM Sensitive Species, Nevada state-protected species, Nevada Natural Heritage sensitive species)
- SP = State protected (under NAC 527.010)
- T = State Threatened

# Appendix B Figures

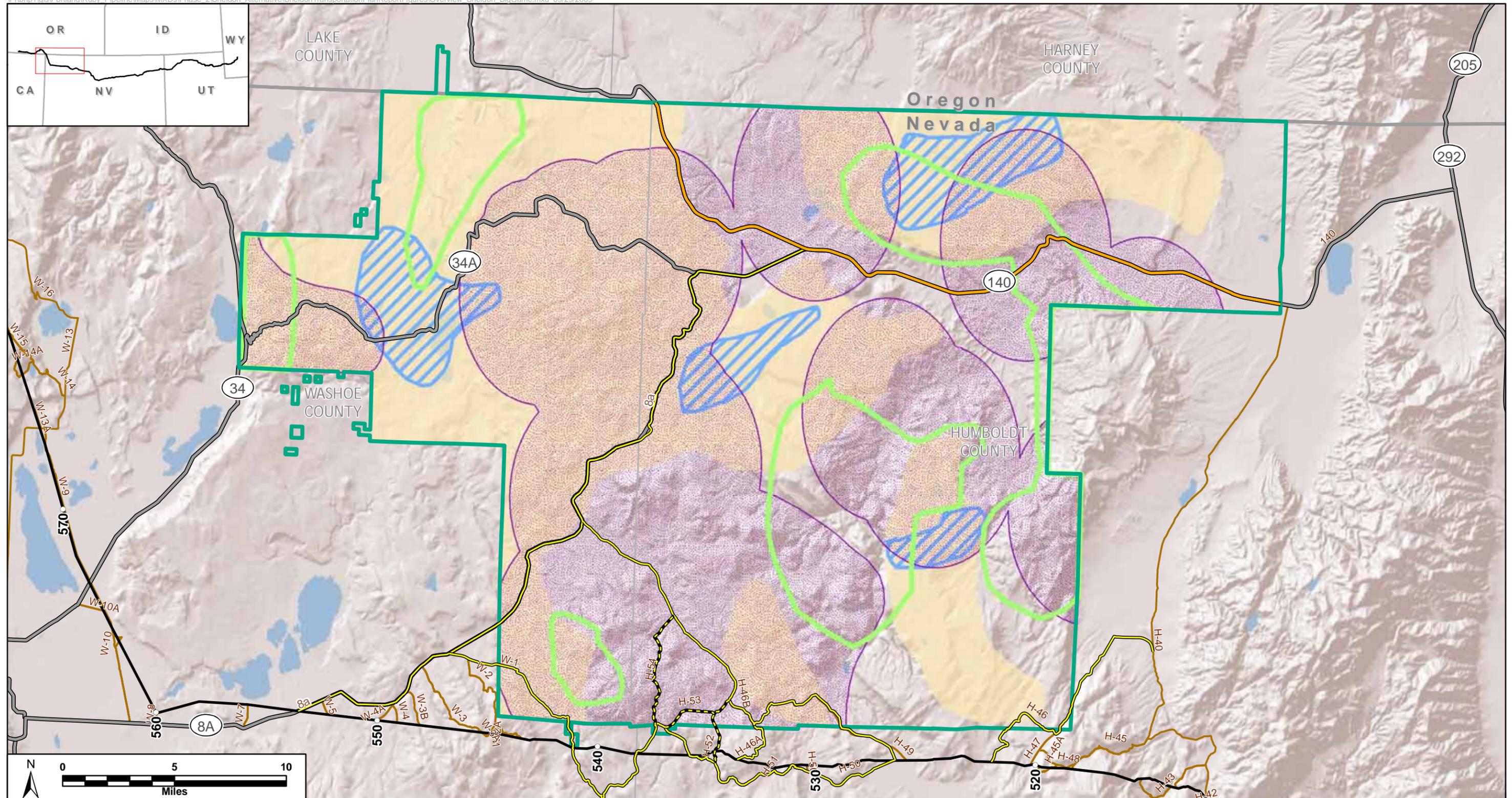


- Milepost
- All Possible Access Roads
- Sheldon NWR Access Roads
- Highway 140 (will be used by Ruby, NOT included in Sheldon SUP)
- Proposed Route
- Major Road
- Sheldon NWR Access Roads (Will not be used)

**Figure B1  
 Sheldon NWR  
 Access Roads Overview**

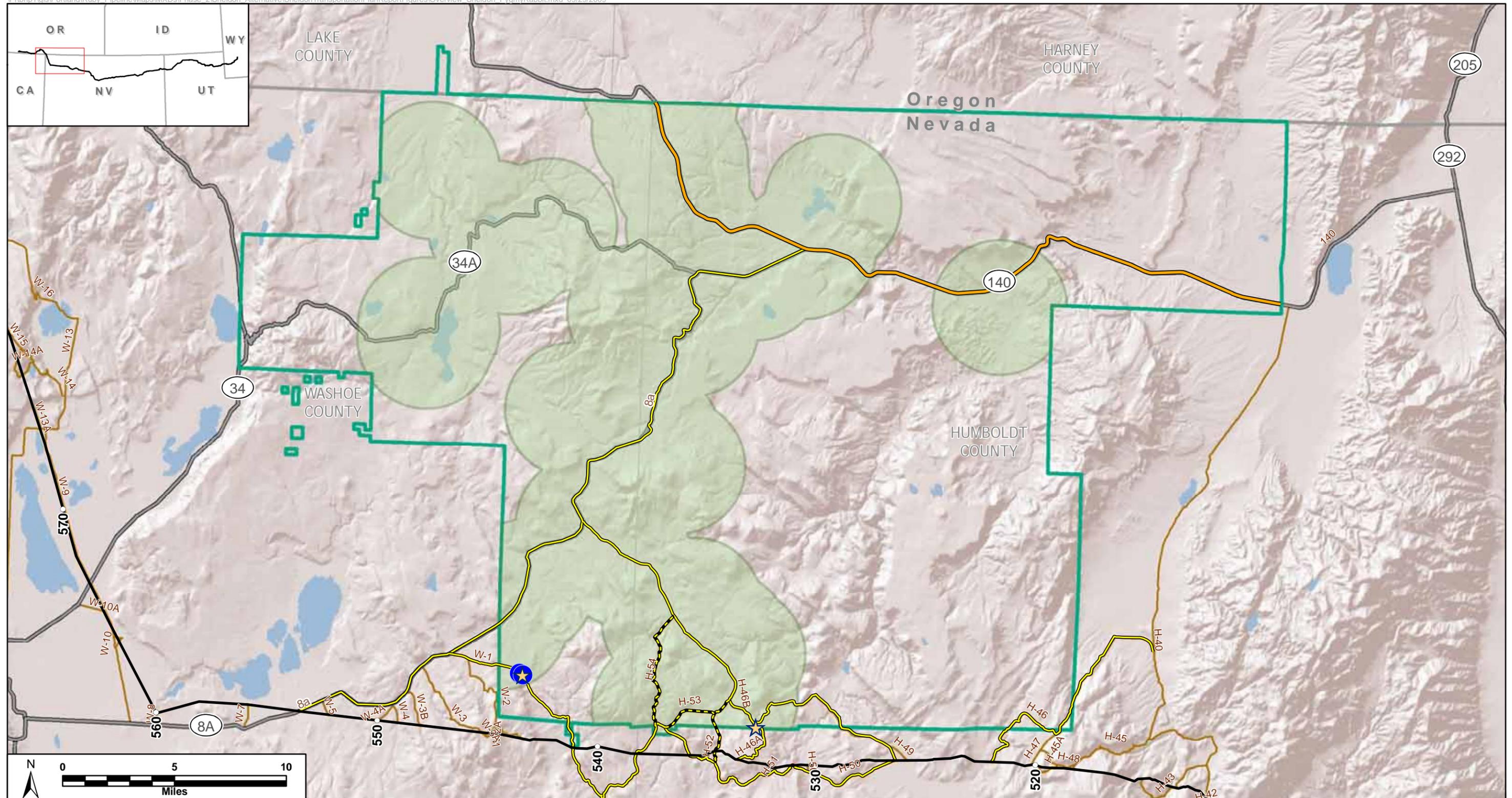
**Ruby Pipeline Project  
 September 2009**

\*NOTE: The actual fence line on the ground does not follow the Sheldon NWR boundary on this map. There is mixed ownership outside of actual fence line.



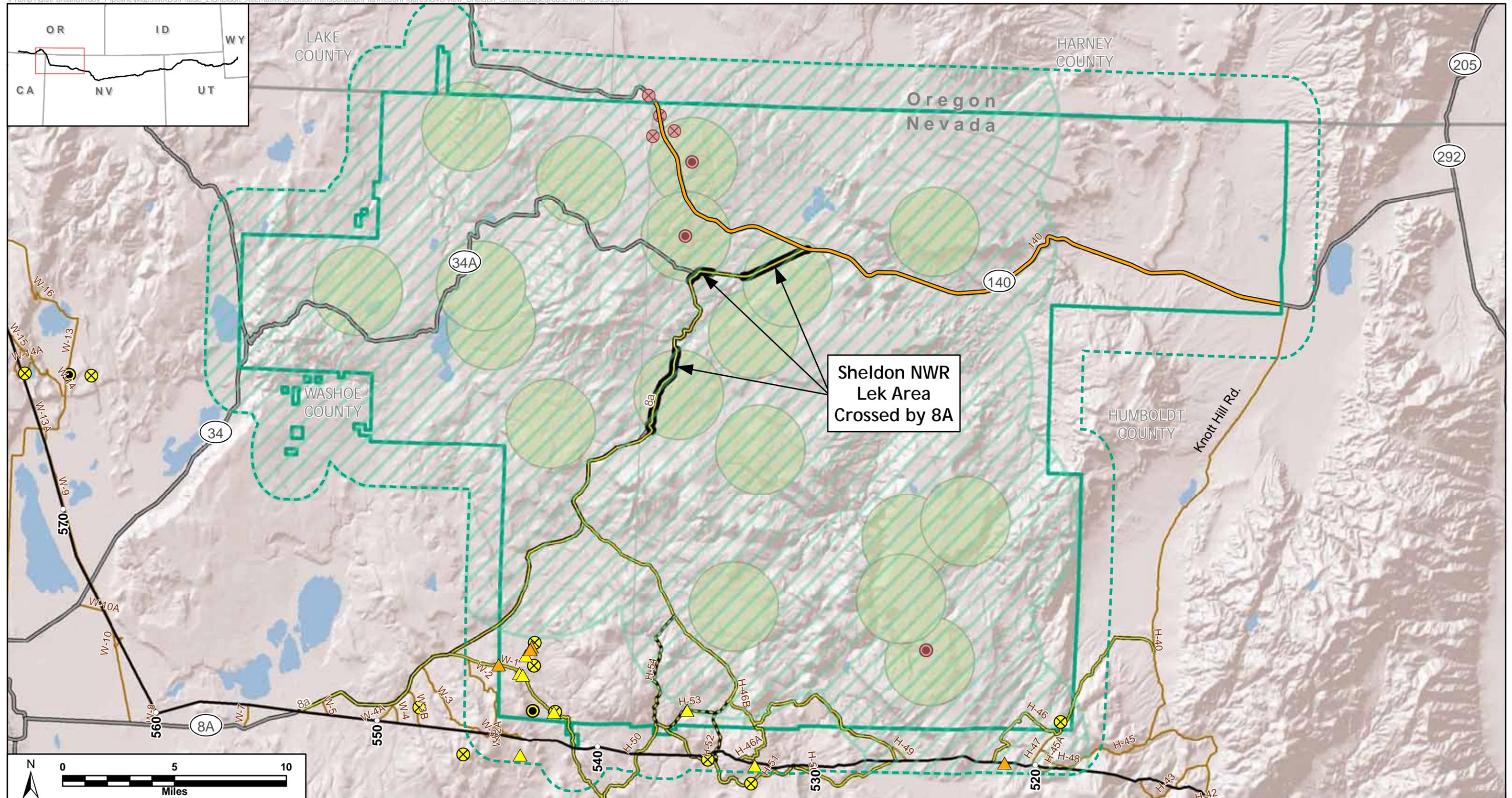
- |                             |   |   |  |
|-----------------------------|---|---|--|
| ○ Milepost                  | — Major Road  | — Sheldon NWR Access Roads                    | <b>Sheldon NWR Big Game Habitat Data</b> |
| — Proposed Route            | — Highway 140 (will be used by Ruby, NOT included in Sheldon SUP) | — Sheldon NWR Access Roads (Will not be used) | ▭ California Bighorn Sheep Range         |
| — All Possible Access Roads | ▭ Sheldon National Wildlife Refuge                                |   | ▭ Mule Deer Range                        |
|                             |   |   | ▭ Pronghorn Winter Range                 |
|                             |   |   | ▭ Pronghorn Non Winter Range             |

**Figure B2**  
**Sheldon NWR**  
**Big Game Habitat**  
**Ruby Pipeline Project**  
**September 2009**

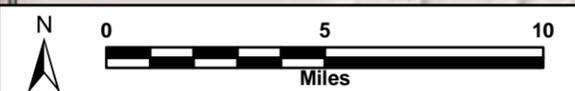


- |                             |   |  |                         |                         |
|-----------------------------|---|--|-------------------------|-------------------------|
| ○ Milepost                  | — Major Road  | — Sheldon NWR Access Roads                       | <b>Ruby Field Data</b>  | <b>Sheldon NWR Data</b> |
| — Proposed Route            | — Highway 140 (will be used by Ruby, NOT included in Sheldon SUP) | — Sheldon NWR Access Roads (Will not be used)    | ● Specimen Sighting (3) | ■ Pygmy Rabbit Areas    |
| — All Possible Access Roads | — Sheldon National Wildlife Refuge                                | ★ Pygmy Rabbit Burrow Complex (Currently Active) |                         |                         |

**Figure B3**  
**Sheldon NWR**  
**Pygmy Rabbit**  
**Ruby Pipeline Project**  
**September 2009**



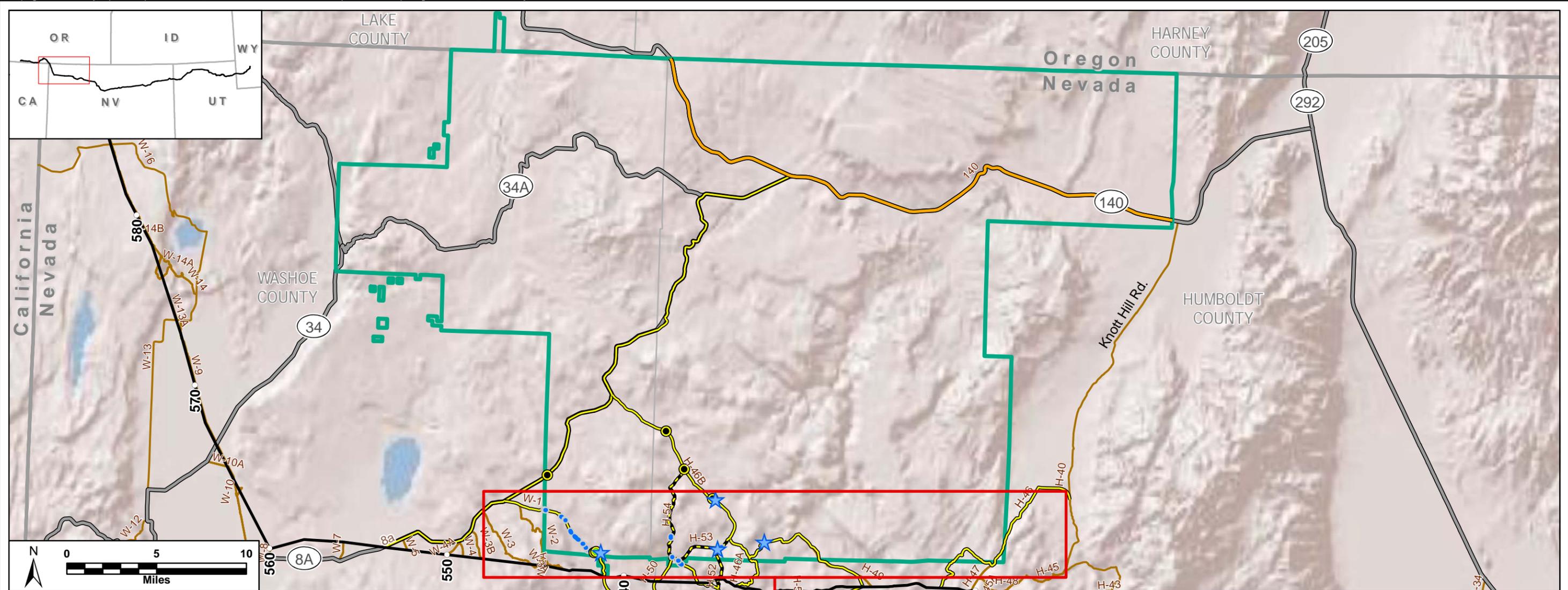
Sheldon NWR  
 Lek Area  
 Crossed by 8A



○ Milepost	— Major Road	— Sheldon NWR Access Roads	<b>Ruby Field Data</b>	<b>NDOW Data</b>	<b>Sheldon NWR Data</b>
— Proposed Route	— Highway 140 (will be used by Ruby, NOT included in Sheldon SUP)	— Sheldon NWR Access Roads (Will not be used)	Greater Sage-grouse Lek Status (Masked)	Greater Sage-grouse Lek Status (Masked)	— Sage-grouse Areas
	— All Possible Access Roads	— Sheldon National Wildlife Refuge	● Active	● Active	● Lekking Areas
		— 2 Mile Buffer of Sheldon NWR	⊗ Inactive	⊗ Inactive/Historic	
			▲ Specimen		
			▲ Scat/Pellets		

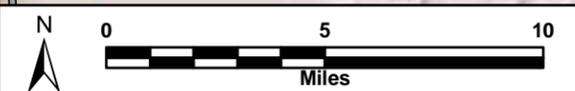
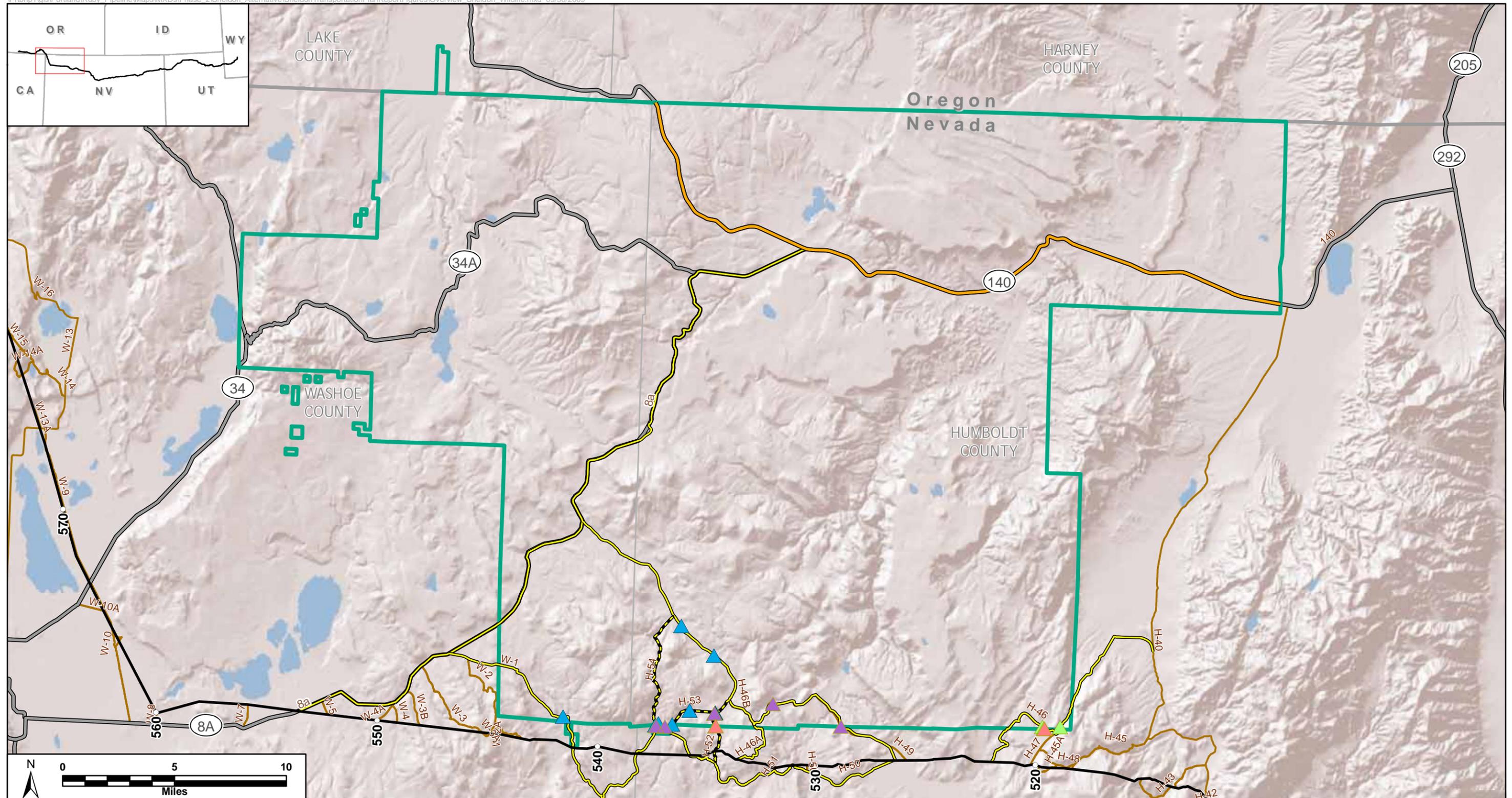
**Figure B4**  
**Sheldon NWR**  
**Greater Sage-Grouse**  
**Ruby Pipeline Project**  
**September 2009**





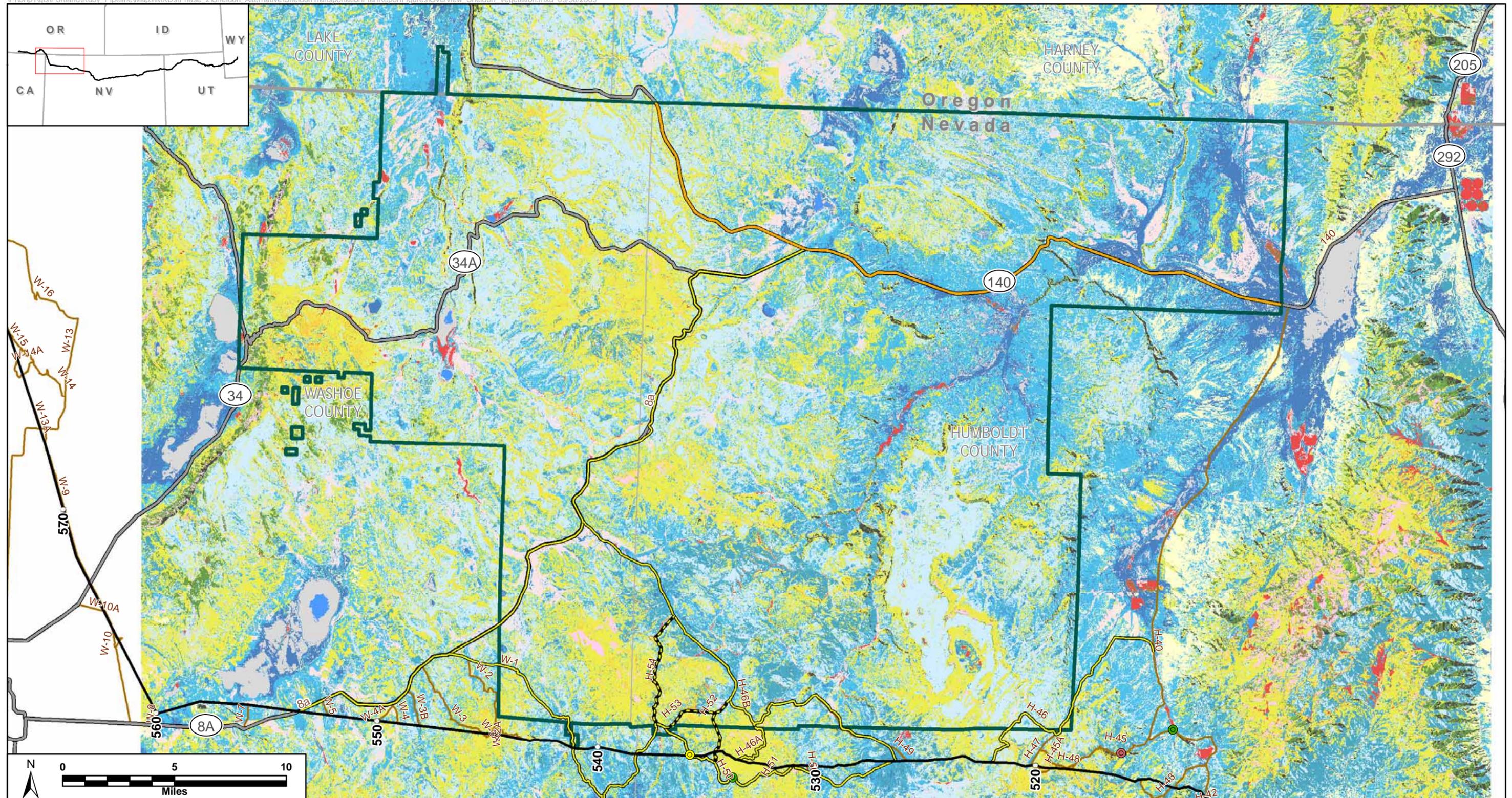
- |                  |   |   |                        |                        |
|------------------|---|---|------------------------|------------------------|
| ○ Milepost       | — Major Road  | — Sheldon NWR Access Roads                    | <b>Ruby Field Data</b> | <b>Ruby Field Data</b> |
| — Proposed Route | — Highway 140 (will be used by Ruby, NOT included in Sheldon SUP) | — Sheldon NWR Access Roads (Will not be used) | ● Wetland              | ● Culvert present      |
|                  | — All Possible Access Roads                                       | ▭ Sheldon National Wildlife Refuge            | ~ Stream               | ★ Seep/Spring          |

**Figure B7**  
**Sheldon NWR**  
**Hydrological Features**  
**Ruby Pipeline Project**  
**September 2009**



- |                             |   |   |  |
|-----------------------------|---|---|--|
| ○ Milepost                  | — Major Road  | — Sheldon NWR Access Roads                    | <b>Ruby Field Data</b>                                 |
| — Proposed Route            | — Highway 140 (will be used by Ruby, NOT included in Sheldon SUP) | — Sheldon NWR Access Roads (Will not be used) | ▲ Fence  |
| — All Possible Access Roads | — Sheldon National Wildlife Refuge                                |   | ▲ Man-made structure                                   |
|                             |   |   | ▲ Utility line   |
|                             |   |   | ▲ Other (Cattle guard, Cable, Gate, Utility box, etc.) |

**Figure B8**  
**Sheldon NWR**  
**Physical Features**  
  
**Ruby Pipeline Project**  
**September 2009**



- |   |   |                        |  |                          |                         |
|---|---|------------------------|--|--------------------------|-------------------------|
| ○ Milepost  | — Sheldon NWR Access Roads                    | <b>Ruby Field Data</b> | <b>Sheldon NWR Vegetation Classification</b> | ■ JUNIPER                | ■ SALT DESERT           |
| — Proposed Route  | — Sheldon NWR Access Roads (Will not be used) | ● Canada Thistle       | ■ ASPEN                                      | ■ LOW SAGEBRUSH          | ■ SPARSE VEGETATION     |
| — Major Road  | ■ Sheldon National Wildlife Refuge            | ● Malta Star thistle   | ■ BASIN BIG SAGEBRUSH                        | ■ MOUNTAIN BIG SAGEBRUSH | ■ WATER                 |
| — Highway 140 (will be used by Ruby, NOT included in Sheldon SUP) |   | ● Scotch Thistle       | ■ CANYON VEGETATION                          | ■ MOUNTAIN MAHOGANY      | ■ WET MEADOW            |
| — All Possible Access Roads                                       |   |                        | ■ EMERGENT VEGETATION                        | ■ MOUNTAIN SHRUB         | ■ WYOMING BIG SAGEBRUSH |
|   |   |                        | ■ GREASEWOOD                                 | ■ PERENNIAL GRASSLAND    | ■ UNCLASSIFIED          |

**Figure B9**  
**Sheldon NWR**  
**Vegetation and**  
**Noxious Weeds**  
**Ruby Pipeline Project**  
**September 2009**

Ruby noxious weeds field data not present within Sheldon NWR boundaries.



- Milepost
- Proposed Route
- Major Road
- Sheldon Access Road H-46B Reroute
- Sheldon NWR Access Roads
- Sheldon NWR Access Roads (Will not be used)
- ★ Tenmile Spring
- ▭ Sheldon National Wildlife Refuge

**Figure B10**  
**Sheldon NWR**  
**Sheldon Access Road H-46B**  
**Tenmile Spring Reroute**  
  
**Ruby Pipeline Project**  
**September 2009**

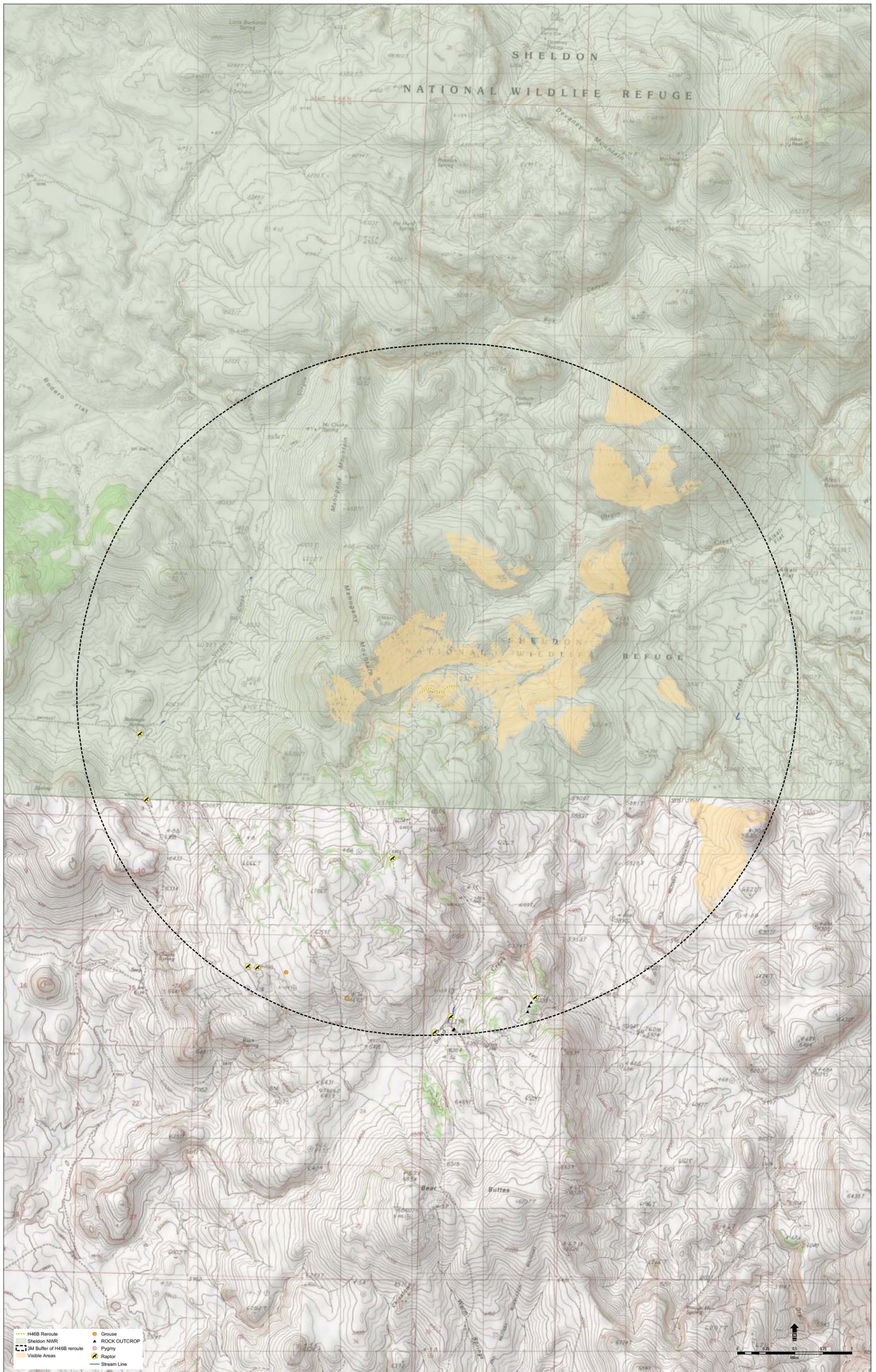


Figure B11  
Sensitive Features and Visible Areas  
H46B Reroute  
Ruby Pipeline

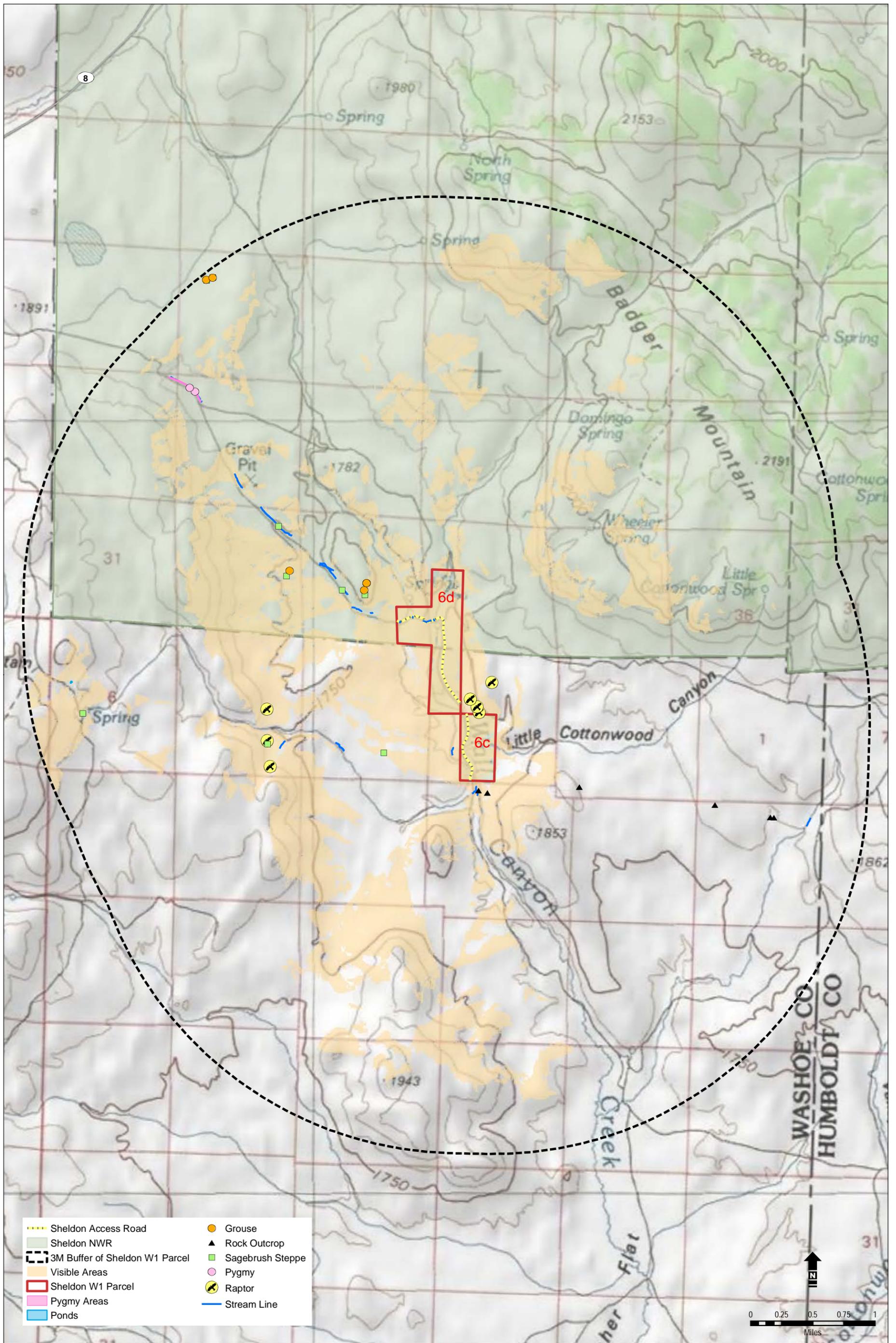


Figure B12  
Sensitive Features and Visible Areas  
Sheldon W1 Access Road  
Ruby Pipeline

# Appendix C Nevada Habitat Matrix

**Table C-1 Nevada Habitat Matrix – July 29, 2009 Version**

Habitat Categorization	Category 1	Category 2	Category 3	Category 4
Special Management Lands, including: National Wildlife Refuge, State Wildlife Management Areas, Areas of Critical Environmental Concern, Wilderness or Wilderness Study Areas, Conservation Areas	Project route located within special management lands.  NOTE: Visual resources impacts are not a concern per the Elko BLM recreation specialist. There are no issues if the pipeline ROW can be viewed from a special management area. The concern would be if the ROW was in a SMA.	Project route located within one mile of special management lands.	Project route located one to five miles from special management lands.	Project route located five to ten miles from special management lands.
Federal and State Threatened, Endangered, Proposed and Candidate species and Critical Habitats.	Project route located in designated or proposed Critical Habitat or recovery habitat per species management plan and/or located in habitat known to support listed, proposed, candidate species.	Project route located in identified recovery area or other habitat capable but not formally identified as supporting listed, proposed or candidate species.	Project route located in habitat marginally capable of supporting listed, proposed, or candidate species.	Project route located in habitat shown to not support or be potentially suitable in the near future for listed, proposed, or candidate species.
Migratory Birds  Habitat that support MBTA, Birds of Conservation Concern or other Sensitive Bird Habitat Areas (e.g., Audubon’s Important Bird Areas” and Partner’s In Flight “Conservation Areas”)	Project route located in habitat known to support species of concern or habitat of high value for birds of conservation concern.  Habitat would include: <ul style="list-style-type: none"> <li>• Intact native habitat</li> <li>• Habitat difficult to require recover or replace.</li> </ul>	Project route located adjacent to or within 1 mile of Cat 1 habitat known to support species of concern or habitat of high value for birds of conservation concern.	Project route located within 1 to 5 miles of Cat 1 habitat that supports populations of more common species of migratory birds.	Project route located within 5 to 10 miles of Cat 1 habitat shown to not support or to not be potentially suitable that either does not support or supports few populations of more common species of migratory birds.

**Table C-1 Nevada Habitat Matrix – July 29, 2009 Version**

Habitat Categorization	Category 1	Category 2	Category 3	Category 4
	<ul style="list-style-type: none"> <li>Nest density data from 2008 survey</li> <li>Aspen stands/riparian areas.</li> <li>Rocky cliff</li> </ul>			
Big Game Range	Project route located in crucial summer and winter ranges and crucial movement corridors. Crucial fawning and calving area.	Project route located in transition ranges and migration routes. Non crucial summer, winter, yearlong ranges.	Project route in dispersed or low density yearlong ranges (all seasons).	Project route in non-suitable ranges by vegetation type or converted to undesirable habitat.
Non-ESA species' Aquatic, Riparian, or Wetland Habitat	Project route in critical reproduction, foraging, rearing, overwintering habitat for fish or other aquatic/riparian species, contiguous, complex, unaltered riparian or wetland habitat, and known agency enclosures areas.	Project route in riparian and wetland habitat that is mostly intact and has not been altered from energy development, transportation, or recreation, or low percentage of invasive/noxious species.	Project route in riparian and wetland habitat that has been impacted by moderate human activity (e.g., energy development, recreation, roads) and moderate occurrence of invasive/noxious species.	Project route in riparian and wetland habitat that is extremely degraded due to extensive human development (e.g., energy activities, transportation, recreation housing development), and/or high percentage of invasive/noxious species.
Sagebrush Obligates Habitat – Sage-grouse	Project route overlays or is within two miles of one or more active leks, wet meadow, riparian/wetland complexes comprising high use late-summer brood-rearing habitat or known winter concentration areas.	Project route overlays nesting/early brood-rearing, fall habitat.	Project route overlays nesting/early brood-rearing, or dispersed fall and winter range habitats which may be compromised by anthropogenic features such as moderate-heavy use roads, power lines, agriculture or other habitat fragmenting activities.	Project route overlays fragmented sagebrush-steppe vegetation within any seasonal range of sage-grouse which has been impacted by invasive/noxious weed species, fire, anthropogenic features, or other factors which render it of marginal value to any life history requirements.  NONE: Outside identified

**Table C-1 Nevada Habitat Matrix – July 29, 2009 Version**

Habitat Categorization	Category 1	Category 2	Category 3	Category 4
				range of sage-grouse
Sagebrush Obligate Habitat – Pygmy Rabbit	Project route crosses a concentration of 2 or more active or recently active colonies.	Project route crosses one isolated active or recently active colony.	Project route crosses one or more inactive colonies with suitable soil and sagebrush habitat attributes.	Project route crosses non-suitable habitat.
<p>Habitat Integrity</p> <p>Vegetation types by acres with a habitat integrity and human development ratings.</p> <p>Fire regime condition class (FRCC) would be the metric to define habitat integrity (i.e., health). Human development would include such things as roads, structures, fencing.</p> <p>FRCC is a measure of vegetation (i.e., habitat) integrity (i.e., health) and data are obtained from an interagency database (<a href="http://www.frcc.gov">www.frcc.gov</a>).</p> <p>FRCC 1 = vegetation that has minimal departure from historical or potential natural vegetation composition (high integrity).</p> <p>FRCC 2 = vegetation that has moderate departure from historical or potential natural vegetation</p>	<p>Identify the following as high quality intact habitat: Fire regime condition class (FRCC) 1 lands and/or lands that are minimally impacted by human development within 5 miles of pipeline</p> <p>Minimally could mean less than 5 roads traversing through the area.</p> <p>Number of development would depend upon type of development. There is not much in the way of development along the Project route. Most development is associated with ranching activities such as fencing and two-track trails.</p> <p>2. Once the 5,000 acre + tracts are identified they could be broken down into small tracts and ranked (moderate to low value habitat) based upon local conditions such as number</p>	FRCC 2 lands and/or lands that are moderately impacted by human development within 5 miles of pipeline.	FRCC 3 lands and/or lands that are extensively impacted by human development within 5 miles of pipeline.	

**Table C-1 Nevada Habitat Matrix – July 29, 2009 Version**

Habitat Categorization	Category 1	Category 2	Category 3	Category 4
<p>composition (moderate integrity) FRCC 3 = vegetation that has extreme departure from historical or potential natural vegetation composition (low integrity).</p> <p>Low impact = &lt;3 road miles and/or 1 structure per section. Moderate impact = 3-5 road miles and/or 1-3 structures per section High impact = &gt;5 road miles and/or &gt;3 structures per section</p>	<p>of roads, fences, two-tracks, habitat degradation, importance to species of conservation need, and risk to habitat.</p>			