BLM
Vale District

SOLDIER CREEK ROAD MAINTENANCE MATERIAL SITES

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Bureau of Land Management
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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

ENVIRONMENTAL ASSESSMENT
Soldier Creek Road Material Sites

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1 Introduction

1.A Background Information

The Soldier Creek Road (SCR) is approximately 28 miles long beginning 15 miles west of Jordan Valley along U.S. Highway 95. The SCR was constructed by the Bureau of Land Management (BLM) in 1964 (Soldier Creek Access Road BLM Project 6307-A) as a cooperative project with the Federal Highways Administration. The road is a graded, drained, largely natural surface, three-season road identified in the BLM road inventory as #6366-0-00.

The SCR provides access to approximately 315,000 acres of federally managed rangelands and connects with the County-maintained Fenwick Ranch Road. Livestock operators in the area depend on SCR for livestock transportation and herd management. Soldier Creek Road is designated as a Watchable Wildlife loop and invites visitors to explore the area. Much of the recreation use by the public is to gain access to the Three Forks Area or the middle section of the Owyhee Wild and Scenic River. According to BLM traffic count data from a recorder near a cattle guard at the canyon rim, an annual average of 1,612 vehicles used the road in 2010 and 2011 (United States Department of the Interior, Bureau of Land Management [USDI/BLM] 2012). The data showed a maximum total of 1,936 in 2010 and was collected between May 6, 2010 and August 24, 2011.

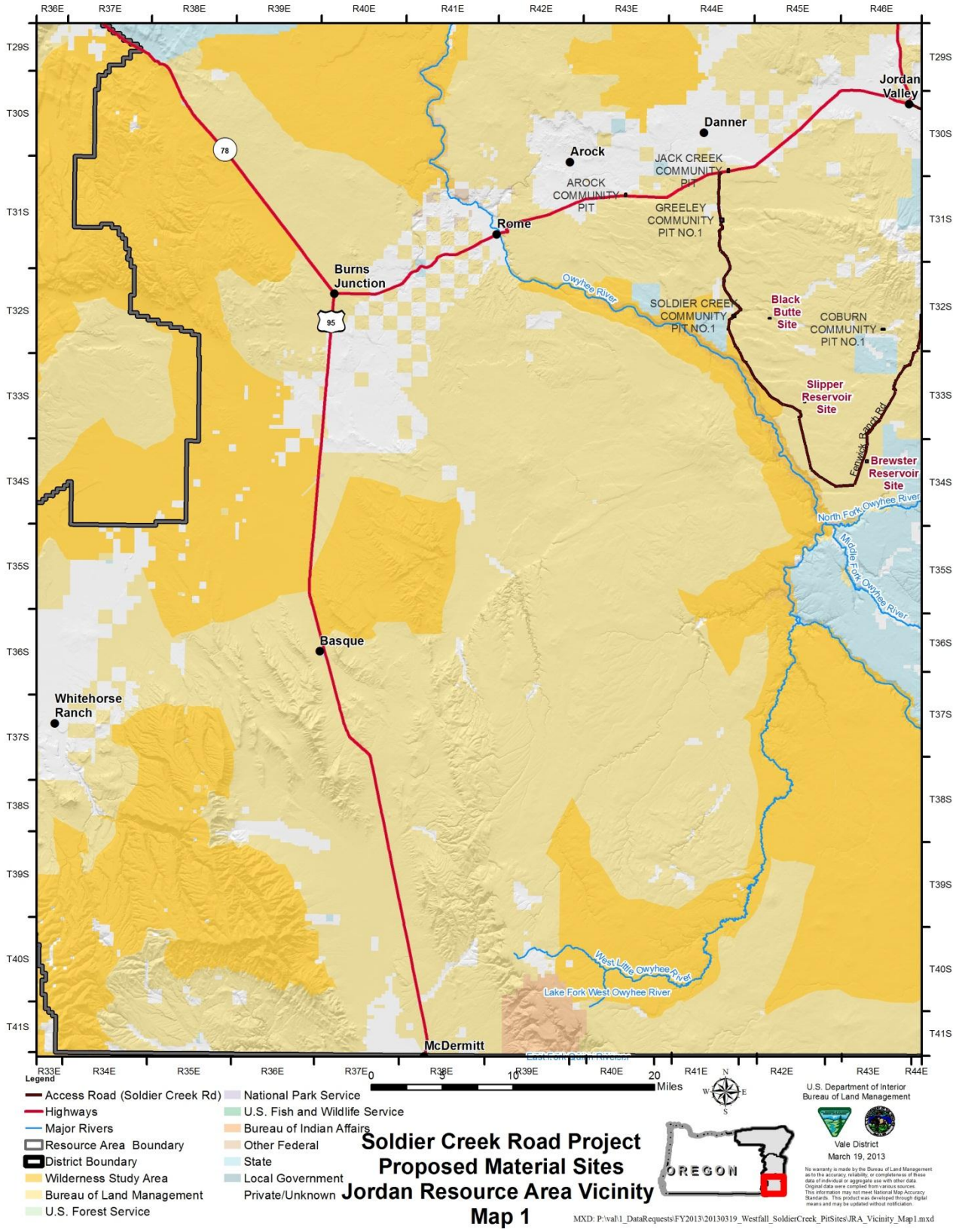
Since construction, regular road maintenance has consisted of seasonal surface grading. Several portions of the existing road surface have been maintained in past years by grading, placing gravel in areas prone to deterioration during wet weather, and culvert repair. The last major upgrade to the road occurred in 1982, when a joint maintenance investment with Malheur County replaced surface rock over Soldier Creek Road. Public use of the road for the past 30 years has created areas of deterioration and a complete resurfacing of the road is required to prevent further degradation.

1.B Location of Proposed Action

SCR traverses 28 miles from U.S. Highway 95 approximately 15 miles west of Jordan Valley and continues in a southerly direction to the Fenwick Ranch Road. The Fenwick Ranch Road continues northeast about 16 miles to the Idaho border and about 5 miles southwest to the Three Forks Recreation Area on the Owyhee River (See Map 1). The SCR is the primary transportation route providing access to the central portion of the Jordan Resource Area for outdoor enthusiasts, upland bird and big game hunters, livestock operators, access to private land, and BLM administrative access.

The proposed material sites are located as follows:
Black Butte: T. 32 S., R. 45 E., Section 19 S½NW¼
Slipper: T. 33 S., R. 45 E., Section 21 SW¼NE¼

Brewster: T. 34 S., R. 45 E., Section 07 NE¼SE¼



2 Purpose of and Need for the Action

The purpose of the proposed BLM action is to develop three sites with favorable geologic characteristics to provide rock aggregate for maintenance of the SCR. The Vale District BLM is tasked with maintaining the SCR to provide safe public and administrative access to public lands in the southern portion of the District. The need to develop new sources of rock aggregate along the SCR from Highway 95 to the Idaho border has been known for several years. The need for local sources of rock aggregate has become increasingly more important as fuel and equipment operating costs continue to rise.

The nearest BLM Community pits are the Greeley Community Pit at Rock Creek in T. 31 S., R 44 E., Section 22 NE¼ near the northern end of the SCR and the Soldier Creek Community Pit near Soldier Creek in T. 32 S., R 44 E., Section 22 NE¼. These are both sources of sand and gravel unsuitable as a road base. Currently, the nearest existing community pit containing road base rock material is the Coburn Community Pit (rock aggregate) in T. 32 S., R. 46 E., Sections 28 and 29 which is 14 miles from the southern end of the SCR and the Arock Rip-Rap Community Pit in T. 31 S., R. 43 E., Section 9 which is 7.6 miles from the northern end and 35.6 miles from the southern end of the SCR.

The maintenance of the SCR requires that rock material is available within a reasonable distance to the work area. Existing aggregate rock sources suitable for use as road base are between 11 and 40 miles from the primary road maintenance area. The Vale District BLM needs to develop three material sites along the SCR to allow cost effective and efficient maintenance of BLM transportation plan roads. Increased fuel and equipment maintenance cost would be buffered by reducing the haulage distance of rock materials to a maximum of 10 miles for the road maintenance project. The three proposed material sites would be developed to provide aggregate material for the resurfacing and subsequent maintenance of the SCR and any adjacent roads. The SCR continues southwest to a point near the Idaho border and the potential exists that a portion of this material would be used by Malheur County, Jordan Valley Road District, for maintenance of the SCR into the area between Three Forks and the western Idaho Border area along the Fenwick Ranch Road.

3 Conformance with the Land Use Plan

All actions approved or authorized by the BLM must conform to the existing land use plan where one exists (43 CFR 1610.5-3, 516 DM 11.9). Although it is not a NEPA requirement, the BLM includes within all its NEPA documents a statement about the conformance of the proposed action and alternatives with the existing land use plan (LUP). The BLM's planning regulations state that the term "conformity" or "conformance" means that "… a resource management action shall be specifically provided for in the plan, or if not specifically mentioned, shall be clearly consistent with the terms, conditions, and decisions of the approved plan or amendment" (43 CFR 1601.0-5(b)).

The proposed action is also in conformance with the management objectives of the Southeastern Oregon Resource Management Plan (SEORMP, Sept. 2002), General Planning Criteria, cited on page 9 of the RMP. The proposed action conforms to the program-specific objectives of the SEORMP cited on page 31, "Objective 3: Provide for public demand for saleable minerals from public land while protecting sensitive resources. The Material Act of 1947, as amended, and the Mining and Mineral Policy Act of 1970 declare that it is the continuing policy of the Federal government to foster and encourage private enterprise in the development of domestic mineral resources. The FLPMA, section 102, directs that public land will be managed in a manner which recognizes the Nation's need for domestic sources of minerals and other resources. BLM mineral policy (1984) states that public land shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is clearly justified in the national interest."

The proposed action is also in accordance with the Vale District Five-Year Noxious Weed Control Plan (ROD, 2006).

The proposed action is consistent with the following laws, regulations and plans:

The Materials Act of 1947, as amended (30 U.S.C. 601, *et seq.')*

This law authorizes the Secretary of the Interior to dispose of mineral materials (e.g., sand & gravel, stone, and common clay) from public lands, either through sale or, in the case of governmental entities or non-profit organizations, through the issuance of free-use permits.

The Mining and Mineral Policy Act of 1970

This law establishes the national policy of encouraging mineral development without undue hindrance.

The Federal Land Policy and Management Act of 1976

This law establishes the environmental protection requirements for the use, occupancy, and development of the public lands. Section 302 of the act directs the Secretary of the Interior to: (1) Manage the public lands under the principles of multiple use and sustained yield in accordance with approved land use plans, (2) To regulate the use, occupancy and development of the public lands, and (3) To prevent unnecessary and undue degradation of the public lands.

The 43 CFR 3600 Regulations

These regulations establish the procedures for mineral material exploration, development and disposal as well as the protection of the public lands under free use permit or sale contract.

Oregon State-wide Planning Goals (2010)

This document outlines the planning goals of the Oregon Department of Land Conservation and Development. The proposed action generally conforms with those goals, and more specifically to Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces, Goal 8: Recreational Needs, and Goal 9: Economic Development.

Malheur County Comprehensive Land Use Plan (1982)

This plan contains the official goals and policies of Malheur County concerning land use planning, including a policy of encouraging mineral development where it will improve the economy of the county, consistent with state, federal and environmental laws.

SEORMP 2002

This road maintenance project and subsequent projects would be conducted in accordance with Appendix O, Best Management Practices, Road Design and Maintenance, pages O-1 through O-4.

Vale District priorities for preventive road maintenance have been established as: 1) for the safety of all users, 2) BLM transportation plan roads, 3) roads covered by a reciprocal agreement with the county or road district, 4) resource protection, 5) high use roads, 6) roads requiring preventive maintenance that are grouped together or that are more accessible and, therefore, less costly to maintain, and 7) all other roads.

4 Alternatives Including the Proposed Action

The objective of alternative actions is to protect natural resources while providing the most cost effective and operationally efficient way to meet future mineral material requirements for road maintenance in the SCR area. Each alternative focuses on protecting public land resource values consistent with public land management objectives identified in the SEORMP. Information pertaining to the SCR maintenance project and the development of the material sites was attained from data collected during 2009 through 2013. Additionally, the field data, existing file data and conversations with Engineering and Resource Staff were used to formulate alternatives that provide reasonable economic alternatives that focus on resource protection. Seven alternate locations were selected for evaluation during the early stages of the project. These sites were eliminated from rigorous evaluation as additional field work yielded data incompatible with the goals of the project.

4.A No Action

The no action alternative would eliminate the development of additional rock material sites. The SCR maintenance and upgrade project would proceed as planned by obtaining rock from the existing Arock Rip-Rap Community Pit which is adjacent to US Highway 95 and the Coburn Community Pit No. 1 which is near the Idaho border. Drilling, blasting, loading, crushing, and stockpile operations would provide sufficient material for the project. Rock material haulage by dump truck and belly-dump trucks would require traversing the SCR to the Fenwick Ranch Road intersection. SCR and approximately 15 miles of the Fenwick Ranch Road would experience extremely heavy vehicle traffic. Haul trucks would traverse a maximum of 80 miles round trip to deliver rock aggregate to the distal portions of the SCR maintenance project. It is estimated that eight additional trucks, for a total of 15 trucks, would be required to completed the haulage needs to complete the SCR maintenance. One existing culvert is in need of replacement and up to five additional drainage culverts will be installed as part of the maintenance project.

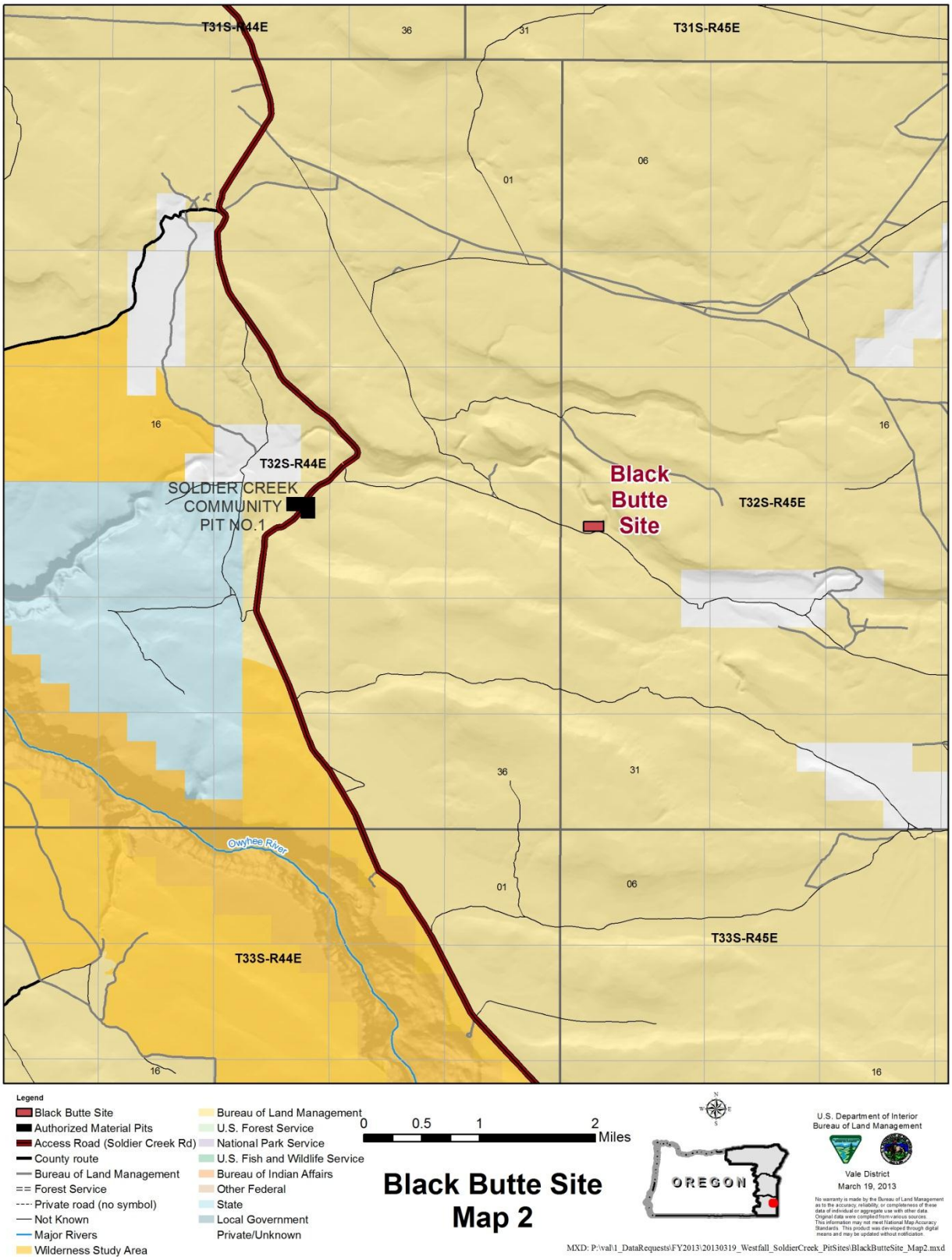
4.B Black Butte, Slipper and Brewster Material Sites (Proposed Action)

The Vale District BLM is proposing to develop three material site locations along the SCR. This action would create three material sites not to exceed 60 acres of total surface disturbance for both the excavation and stockpile operations. The Black Butte site would not exceed 20 acres (See Map 2). The Slipper material site would not exceed ten acres (See Map 3). The Brewster Reservoir material site would not exceed twenty acres allowing for construction of the pit to shift east as needed to protect resource values (See Map 4).

The portion of each site designed for rock extraction would be cleared of vegetation and available growth medium would be stockpiled adjacent to the site. An air-track drill rig would be used to construct holes to depths of 20 to 40 feet which would be subsequently loaded with blasting agent. The blasting agent would be ANFO (ammonium nitrate and fuel oil) which would fragment the rock to a size fraction amenable to loading operations (typically 15-18 inches in diameter). The fragmented rock would be pushed by a dozer into a pile and then loaded into a portable crushing unit to reduce the rock material to a size required for the road surfacing and maintenance. All blasting operations would be supervised by an Oregon State-licensed blasting professional. The crushed rock would be stockpiled in two size fractions, 3-inch minus and 1-inch minus, within the material site until needed for road maintenance.

The project operations schedule is proposed such that site clearing equates to two days; drilling and blasting will last about four days; and loading and crushing operations will last 30 days. The three material sites would be completed within 3.5 months as some of the work would be concurrent with other portions of the operations. SCR road maintenance would begin as aggregate became available for use and is proposed to last three months. Total project duration would be a maximum of six months. Once the SCR is properly maintained to BLM standards, the material sites would only be used intermittently to acquire material for isolated repair work.

The location of these proposed material sites are in close proximity to the SCR to minimize the material haul distance (See Vicinity Maps No.1-No.4). The existing roads into the proposed material sites would be improved by improving the road base and adding a turnout to provide access for heavy equipment. In the future, each site would be designated as a BLM Material Site, as per 43 CFR 3601, allowing access to rock sources for yearly road maintenance. This action would provide rock aggregate for upgrading the surface of portions of the SCR from a natural surface to a crushed rock surface.


T31S-R44E
T31S-R45E
36
31
06
01
16
16
T32S-R44E
SOLDIER CREEK
COMMUNITY
PIT NO.1
Black
Butte
Site
T32S-R45E
36
31
Owyhee River
01
06
T33S-R45E
T33S-R44E
16
16
Legend
Black Butte Site
Authorized Material Pits
Access Road (Soldier Creek Rd)
County route
Bureau of Land Management
Forest Service
Private road (no symbol)
Not Known
Major Rivers
Wilderness Study Area
Bureau of Land Management
U.S. Forest Service
National Park Service
U.S. Fish and Wildlife Service
Bureau of Indian Affairs
Other Federal
State
Local Government
Private/Unknown
0 0.5 1 2 Miles
Black Butte Site
Map 2
OREGON
U.S. Department of Interior
Bureau of Land Management
Vale District
March 19, 2013
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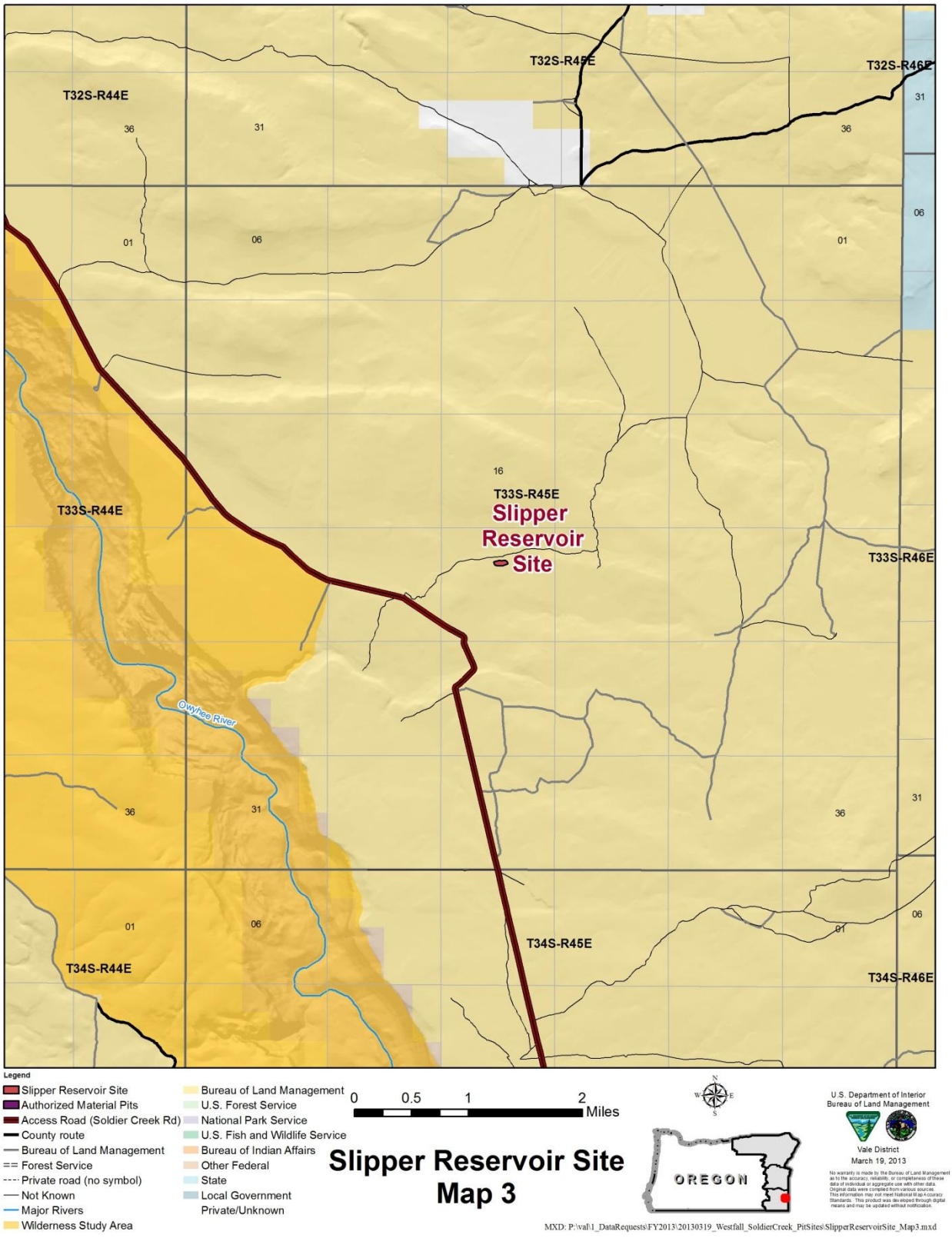
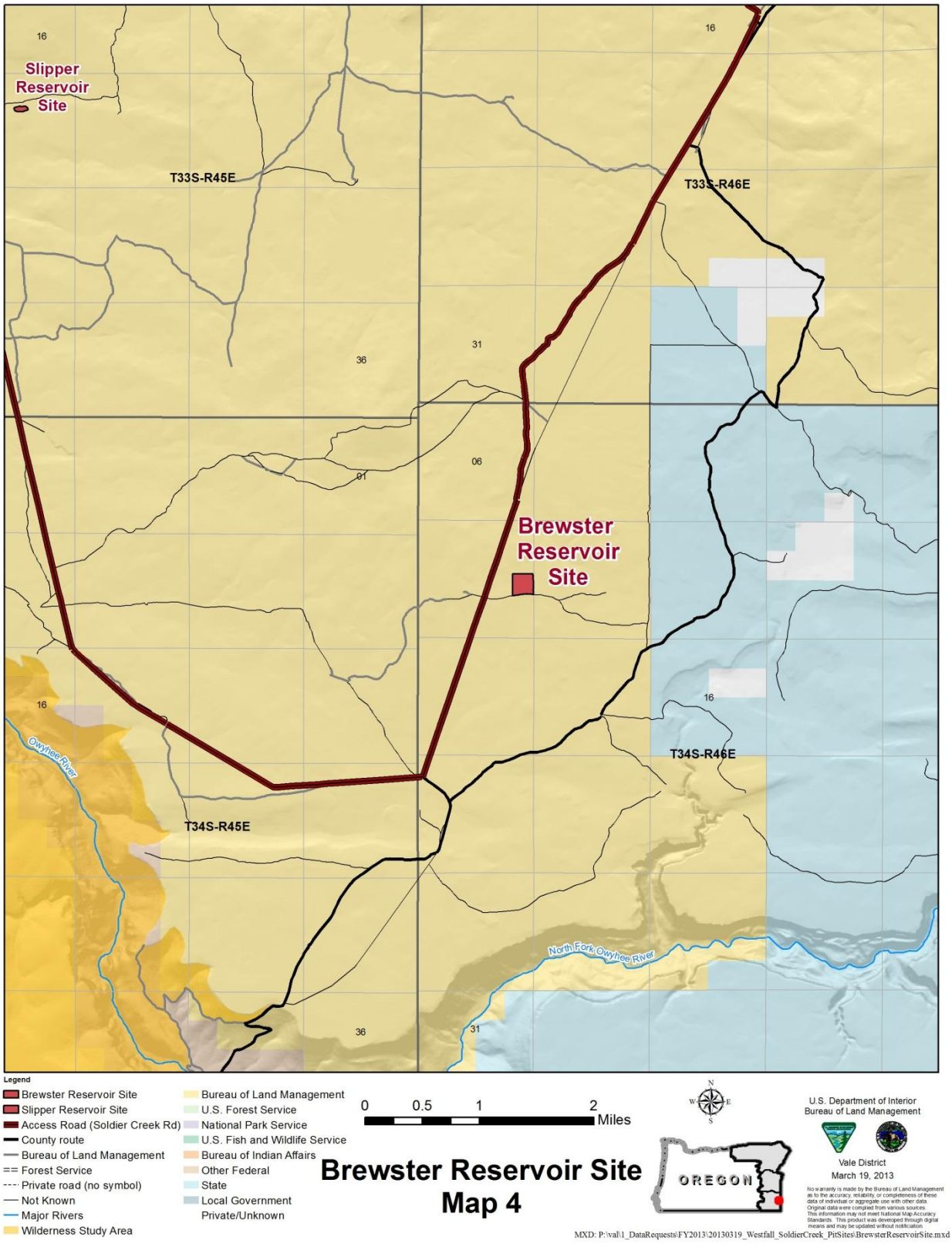

T32S-R44E
T32S-R45E
T32S-R46E
T33S-R44E
T33S-R45E
Slipper
Reservoir
Site
T33S-R46E
T34S-R44E
T34S-R45E
T34S-R46E
Owyhee River
36
31
01
06
16
Legend
Slipper Reservoir Site
Authorized Material Pits
Access Road (Soldier Creek Rd)
County route
Bureau of Land Management
Forest Service
Private road (no symbol)
Not Known
Major Rivers
Wilderness Study Area
Bureau of Land Management
U.S. Forest Service
National Park Service
U.S. Fish and Wildlife Service
Bureau of Indian Affairs
Other Federal
State
Local Government
Private/Unknown
0 0.5 1 2 Miles
Slipper Reservoir Site
Map 3
OREGON
U.S. Department of Interior
Bureau of Land Management
Vale District
March 19, 2013
MXD: P:\val\1_DataRequests\FY2013\20130319_Westfall_SoldierCreek_PitSites\SlipperReservoirSite_Map3.mxd


Slipper Reservoir Site
Brewster Reservoir Site
T33S-R45E
T33S-R46E
T34S-R45E
T34S-R46E
16
31
36
06
01
Owyhee River
North Fork Owyhee River
Legend
Brewster Reservoir Site
Slipper Reservoir Site
Access Road (Soldier Creek Rd)
County route
Bureau of Land Management
Forest Service
Private road (no symbol)
Not Known
Major Rivers
Wilderness Study Area
Bureau of Land Management
U.S. Forest Service
National Park Service
U.S. Fish and Wildlife Service
Bureau of Indian Affairs
Other Federal
State
Local Government
Private/Unknown
0 0.5 1 2 Miles
N
W E
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OREGON
Brewster Reservoir Site
Map 4
U.S. Department of Interior
Bureau of Land Management
Vale District
March 19, 2013
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data of individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.
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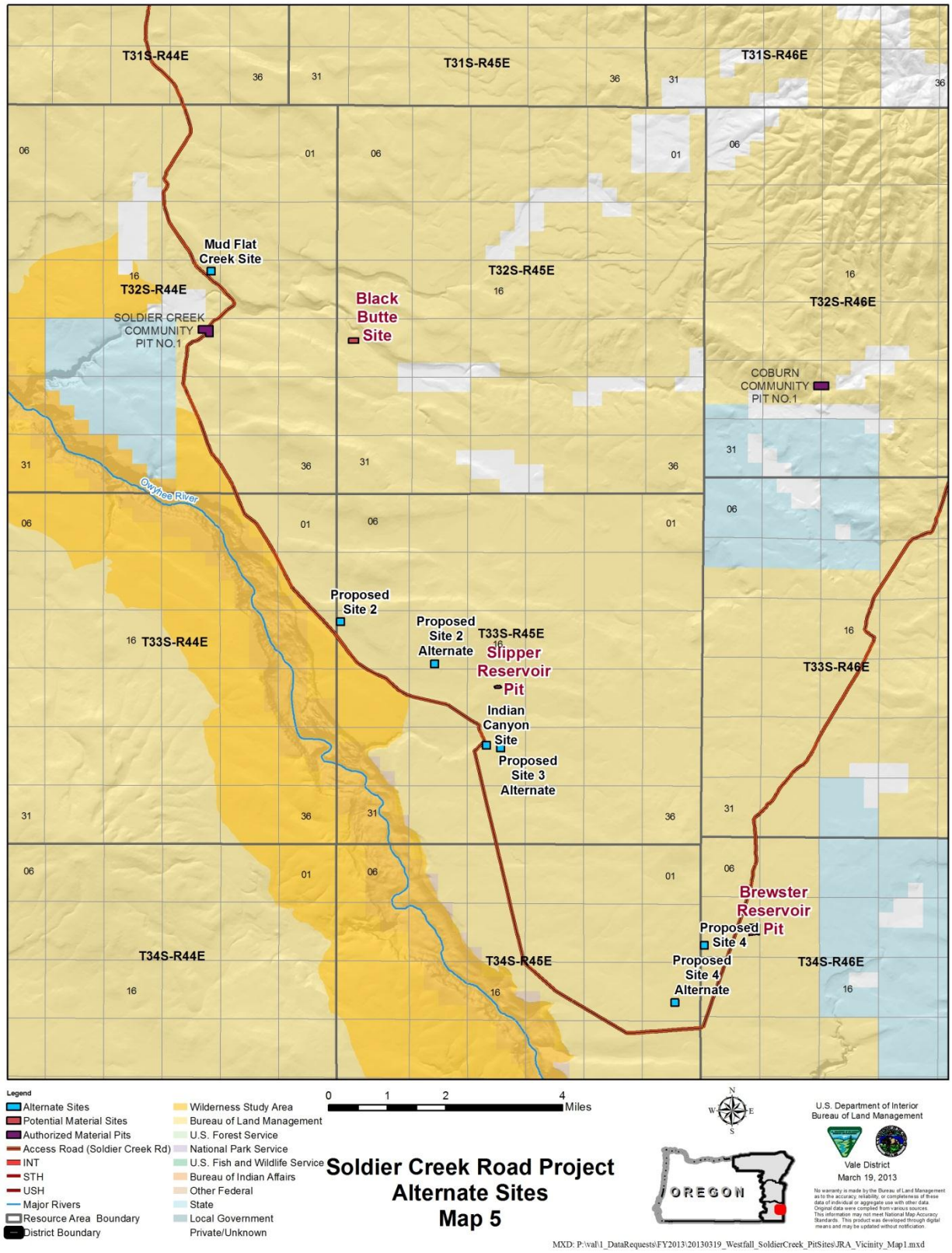
4.C Alternatives Considered but Eliminated from Detailed Analysis

Seven alternate material sites were selected and considered as potential rock sources, but were eliminated from consideration after site inspections and resource evaluations were completed (See Map 5). One site near the Black Butte Site (Mud Flat Creek) was considered as an aggregate source because the site was geologically and logistically favorable with a location adjacent to the SCR. The site had experienced previous disturbance as a historic borrow pit adjacent to the road. This site was in strong consideration, but was eliminated due to resource conflicts within Sage-grouse priority habitat and estimated impacts due to disturbance beyond reasonable mitigation. Four sites in the vicinity of the Slipper Reservoir site were eliminated from the process because of Visual Resource Management (VRM) concerns from the south where material sites could be visible from the edge of the Owyhee River Canyon Wilderness Study Area (WSA). Also, two of the Slipper alternative sites were within or immediately adjacent to seasonal streams. Two sites west and southwest of the Brewster Reservoir site had good potential as aggregate sites; however, were considered unsuitable due to the close proximity of sage-grouse leks and proximity to seasonal streams and riparian values.

The alternate sites are located as follows:

Black Butte Alternative:	T. 32 S., R. 44 E., Section 15 NW¼NE¼
Slipper Reservoir Alternate:	T. 43 S., R. 44 E., Section 17 SE¼SW¼
	T. 43 S., R. 44 E., Section 18 NW¼NW¼
	T. 43 S., R. 44 E., Section 28 SE¼NW¼
	T. 43 S., R. 44 E., Section 28 SW¼NE¼
Brewster Reservoir Alternate:	T. 34 S., R. 45 E., Section 13 NW¼SE¼
	T. 34 S., R. 46 E., Section 07 SW¼SW¼


T31S-R44E
T31S-R45E
T31S-R46E
T32S-R44E
T32S-R45E
T32S-R46E
T33S-R44E
T33S-R45E
T33S-R46E
T34S-R44E
T34S-R45E
T34S-R46E
Mud Flat Creek Site
SOLDIER CREEK COMMUNITY PIT NO.1
Black Butte Site
COBURN COMMUNITY PIT NO.1
Owyhee River
Proposed Site 2
Proposed Site 2 Alternate
Slipper Reservoir Pit
Indian Canyon Site
Proposed Site 3 Alternate
Brewster Reservoir Proposed Pit Site 4
Proposed Site 4 Alternate
Legend
Alternate Sites
Potential Material Sites
Authorized Material Pits
Access Road (Soldier Creek Rd)
INT
STH
USH
Major Rivers
Resource Area Boundary
District Boundary
Wilderness Study Area
Bureau of Land Management
U.S. Forest Service
National Park Service
U.S. Fish and Wildlife Service
Bureau of Indian Affairs
Other Federal
State
Local Government
Private/Unknown
0 1 2 4 Miles
Soldier Creek Road Project
Alternate Sites
Map 5
OREGON
U.S. Department of Interior
Bureau of Land Management
Vale District
March 19, 2013
MXD: P:\val\1_DataRequests\FY2013\20130319_Westfall_SoldierCreek_PitSites\JRA_Vicinity_Map1.mxd

5 Affected Environment

This section presents relevant resource components of the existing environment which constitute baseline information.

5.A Vegetation

Vegetation in the project area is typical of a shrub steppe plant community dominated by sagebrush species and perennial bunchgrasses. The vegetation type which covers the majority of the project area is dominated by Wyoming big sagebrush (*Artemisia tridentata ssp wyomingensis*) on deeper soil sites with low sagebrush *(Artemisia arbuscula ssp. arbuscula)* dominating shallower soil sites with an understory of perennial grass species, primarily bluebunch wheatgrass (*Pseudorogneria spicata*), Idaho fescue (*Festuca idahoensis*) and Sandberg bluegrass (*Poa secunda*). Some of the forbs observed near the site are (*Allium* spp., *Balsamorhize hookeri, Lupinus uncialis, Delphinium nuttallianum).* Some of the project area has a degree of invasion by annual grass species including cheatgrass (*Bromus tectorum*).

5.B Noxious Weeds

The proposed material sites are all near roads and roads are natural conduits for weed movement. The disturbances common to these vehicle travel routes support a variety of annual and or biennial noxious weeds or weedy species. Cheatgrass (*Bromus tectorum*) and other common annual or biennial weeds are associated with the roads, as well as water sources and salt licks used by livestock which are often close to travel routes. A variety of mustards, such as clasping pepperweed (*Lepidium perfoliatum*), tumble mustard (*Sysymbrium altissimum*), blue mustard (*Chorispora tenella*) and flixweed (*Descurainia sophia*) can be found near each site. Also present at the sites are redstem filaree (*Erodium cicutarium*), lambsquarter (*Chenopodium sp*.), kochia (*Kochia scoparia*), Russian thistle (*Salsola iberica*) and prickly lettuce (*Lactuca serriola*).

Canada thistle (*Circium arvense*) and bull thistle (*Circium vulgare*) are occasionally found in moister sites and meadows associated with riparian or ephemeral areas, springs and seeps.

Whitetop species (*Lepidium ssp*) and Scotch thistle (*Onopordum acanthium*) have been treated along the Soldier Creek and Fenwick Ranch roads near each of the proposed material sites. Scotch thistle along the portion of Soldier Creek near Black Butte site is especially prevalent as there is a very large population approximately ½ mile upstream of site on private property. There is also a heavy infestation of medusahead rye (*Taeniatherum caput medusa*) at the Black Butte site. Most recently, a small site of yellow starthistle was discovered on Soldier Creek road at Spring Creek crossing, approximately 6 road miles NW of the Black Butte site.

There is a possibility that Ventenata dubia, a very invasive annual grass, is present at Brewster proposed material site. At the time of the survey, a positive identification of that grass was not possible.

5.C Special Status Plants

No special status plant species are known to occur at or directly adjacent to Black Butte, Brewster and Slipper proposed material sites. The project is not in the range of any federally listed threatened or endangered species. There is one location of the Bureau sensitive plant *Symphoricarpos longiflorus*, located 2.7 miles southwest of the Brewster material site and one location of the Bureau sensitive *Artemisia papposa* located 6.4 miles south of the Black Butte proposed material site. Although the area has not been extensively surveyed for rare species known to occur in the Jordan Resource Area, where surveys which have been conducted sensitive species are generally not observed and this part of the Vale District is not known to support an abundance of special status species. The Brewster and Slipper proposed material sites were surveyed by the Vale District Botanist on May 14, 2012, no special status plant species are were observed at the Slipper or Brewster proposed material sites. The Black Butte material site was proposed for the project outside the phonological window for sensitive plant surveys in 2012 and will need to be surveyed in the spring of 2013. A survey of Black Butte proposed material site would occur prior to development of the site. If during the spring survey a sensitive plant species is observed, design features would be developed to ensure the project would not trend the species toward listing, consistent with the 6840 Special Status Species Manual.

5.D Wildlife and Fish

The BLM's wildlife management focuses on the habitat needs and conditions required to sustain healthy populations of native fish and wildlife. Priority is given to special status species, species of concern and locally important species.

The project area includes habitat for approximately 300 wildlife species. Many of these species use the area for part of the year and/or as connective habitat while traveling to more productive ground.

Big Game: Pronghorn antelope are widely distributed across the project area and represent the primary big game species. Mule deer use the Soldier Creek area throughout the year, but during October through May this area is particularly important as Mule deer winter range habitat. Elk also use this area in the winter, but are less frequent than pronghorn antelope and mule deer. California Bighorn sheep use the area infrequently but are year round residents within the Owyhee River corridor.

Raptors: A variety of Raptor species use the project area at various times during the year. Most Raptor species migrate through and are only in the area for a short time. These include: Bald and Golden Eagle; Swainson's, Ferruginous, Red- tailed and Sharp-shinned hawk; Prairie and Peregrine Falcon; Northern Harrier; American Kestrel; and Western Burrowing Owl.

Important game species known to occur in the Soldier Creek area include Chukar and Hungarian Partridge, Mourning Dove, and Greater Sage-Grouse.

No threatened and/or endangered species are known or suspected to occur within SCR area. Special status wildlife species likely to occur within the project vicinity include Greater Sage-Grouse, kit fox, spotted bat, pygmy rabbit, and peregrine falcon.

Greater Sage-Grouse: The Greater Sage-Grouse is currently a species "warranted for listing under the Endangered Species Act of 1973, but precluded from listing due to higher priorities". A small number of sage-grouse use this area for short periods of time, but disturbance by wildfire has altered the habitat and drastically reduced the amount of sage brush. The north and eastern portion of Soldier Creek is within "Priority" sage-grouse habitat. The proposed pit locations are located within "General" sage-grouse habitat. Management goals for "general" sage-grouse habitat are: avoid development within these areas, or if impacts are unavoidable, maintain the current habitat quantity or quality and provide a net benefit to sage-grouse habitat.

5.E Livestock Grazing

The project areas are located within the Bighorn (#11005), Willow Creek (#11004) and Whitehorse (#11008) Allotments of the Soldier Creek Geographic Management Area. The BLM allocated forage for livestock use most recently in the 2002 Record of Decision for the Southeastern Oregon Resource Management Plan (SEORMP). The allotment specific allocations are referenced below. The Black Butte material site is located within the East Pasture of the Bighorn Allotment. The Slipper material site is located within the Dry Lake Pasture of the Willow Creek Allotment. The Brewster material site is located within the East Pasture of the Whitehorse Allotment.

The Bighorn East Pasture is approximately 2,100 acres and is grazed in a deferred rotation grazing system with the West and Mud Flat Pastures. One livestock operator utilizes these 3 pastures of the Bighorn Allotment. Authorized livestock grazing occurs annually in the Willow Creek Allotment between April 8 and December 31. There are six authorized livestock operators within the allotment. The current livestock forage allocation is 10,521 active AUMs and 1,639 suspended AUMs for a total preference of 12,160 AUMs. This information can be referenced in Appendix E of the SEORMP (Bighorn Allotment at E-191).

The Dry Lake Pasture is approximately 9,200 acres and is grazed in a deferred rotation grazing system with the Ground Hog, Horse Ridge, Jaca Seeding East and Jaca Seeding West Pastures. One livestock operator utilizes these 5 pastures of the Willow Creek Allotment. Authorized livestock grazing occurs annually in the Willow Creek Allotment between April 1 and August 31. There are six authorized livestock operators within the allotment. The current livestock forage allocation is 10,521 active AUMs and 1,639 suspended AUMs for a total preference of 12,160 AUMs. This information can be referenced in Appendix E of the SEORMP (Willow Creek Allotment at E-189).

The Whitehorse East Pasture is approximately 14,500 acres and is grazed in a deferred rotation grazing system with the West Pasture. Authorized livestock grazing occurs annually in the Whitehorse Allotment between April 8 and June 15. There are six authorized livestock operators within the allotment.

The current livestock forage allocation is 4,391 active AUMs and 0 suspended AUMs for a total preference of 4,391 AUMs. This information can be referenced in Appendix E of the SEORMP (Whitehorse Allotment at E-194).

5.F Recreation and Visual Resources

The Soldier Creek Road area is used by outdoor enthusiasts, upland bird and big game hunters, rafters and campers to access remote recreational opportunities. The Soldier Creek Road is also a Watchable Wildlife Loop which has an overlook into the Owyhee River Canyon. Dispersed outdoor recreation in the Soldier Creek Road area primarily consists of upland bird and big game hunting and as an access for camping at the Three Forks Recreation Site on the main stem of the Owyhee River. The Three Forks Recreation Site is a designated camp site with facilities which include a boat launch for rafters. The proposed project areas are all located within visual resource management (VRM) Class III. The management objectives of class III are as follows:

- Partially retain the existing character of the landscape. Moderate levels of change are acceptable. Management activities may attract attention but should not dominate the view of a casual observer. Changes should conform to the basic elements of the predominant natural features of the characteristic landscape.

5.G Lands Identified to contain Wilderness Character and Wilderness Study Areas

Lands within Vale District were inventoried for wilderness values between 1978 and 1981, in accordance with the Federal Land Policy and Management Act (FLPMA) of 1976 section 201. The inventory resulted in the designation of some lands as Wilderness Study Areas (WSA). Only subsequent legislation can designate these or other public lands as Wilderness Areas.

The proposed action is not within the boundary of a WSA or Wilderness Area. The Owyhee River Canyon WSA is approximately 1.5 miles to the west of the Slipper material site and between 3.5 and 5 miles southwest of the Brewster material site. The proposed Slipper Reservoir site is within a 2006 citizen-proposed wilderness characteristic unit. As both the "proposed action" and the "no action" alternatives are both external to any WSA or Wilderness Area, no analysis will occur and, therefore, will not be discussed further.

Wilderness characteristics inventory maintenance was completed in 2011 in accordance with FLPMA section 202. The Black Butte site is within the Black Butte (OR-036-063) inventory unit. The Slipper material site is within the Jaca Reservoir (OR-036-054) inventory unit. The Brewster material site is within an evaluated area that did not meet the size criteria for an inventory unit. The project areas were found not to possess wilderness character. No lands with wilderness character are within the project area and therefore will not be discussed further (documents can be viewed at the Vale District office or online at: http://www.blm.gov/or/districts/vale/plans/wce/malheur-index.php.

5.H Prehistoric and Historic Cultural Resources

Cultural resources associated with the historic use of this area are tied to landforms as transportation corridors (wagon roads), historic homesteads, early irrigation project features, early mining activity areas and remains of stage and telegraph stations. A Class III pedestrian survey was conducted at the Slipper and Brewster sites on May 4, 2011 and at the Black Butte site on March 18, 2013. Survey reports VM-11-03 and VD-13-05 were submitted to the State Historic Preservation Office (SHPO).

If during the field survey, cultural and/or fossil flora and fauna resources had been located, the project would have been redesigned to avoid the resources or another project location would have been selected. This survey showed no cultural resources that would be affected by the proposed action. As a result, no further analysis of potential impacts to Prehistoric and Historic Cultural Resources will be needed. If cultural resources are unearthed during construction the activity will stop until an additional survey is completed by the BLM archeologist.

Miocene, Pliocene, and Pleistocene fossil flora and fauna have been located in volcanic tuffs, sandstone and siltstone beds and Pleistocene gravels in areas of southeastern Oregon. Fossil fauna include fish and Miocene mammals. A wide variety of plant species have been identified by leaf fossils of trees, shrubs, herbs and vines. Additionally, no paleontological resources were found at any of the potential rock source locations during the cultural survey.

5.I Air and Atmospheric Quality

The Project area is located within the U.S. Environmental Protection Agency, Region 10, Eastern Oregon Air Quality Control Region. The air quality in the area is generally good and typical of large rural areas within the Great Basin and Owyhee Uplands. Wind measurements for the three sites have not been recorded. However, data from the Western regional Climate Center (WRCC) of the National Climate Data Center (NCDC) of the National Oceanic and Atmospheric Administration (NOAA) indicates that at the Remote Automatic Weather Station (RAWS) at Grassy Mountain, Oregon, about 5 miles southwest of the Project area, the wind is generally from the south or southeast approximately 10 months of the year and the average speed is 7.7 MPH, with a low average speed of 6.8 MPH and a high average speed of 47.4 MPH (WRCC, 2013). During the winter months, the winds trend from the north. The mean monthly precipitation is approximately 0.77 inches while the average monthly maximum air temperature is 49.4 degrees F (WRCC, 2013). The principal source of air contaminants in the project area is from wind- blown dust, both off dry rangeland in the region and from occasional traffic along dirt roads. During the summer months dust storms and rangeland wildfires may negatively affect air quality.

Climate Change

The temperature of the planet's atmosphere is regulated by a balance of radiation received from the sun and the amount of that radiation absorbed by the earth and atmosphere. Greenhouse gases (e.g., carbon dioxide and methane), as well as water vapor and particulate matter in the atmosphere keep the planet's temperature warmer than it would be otherwise; allowing the planet to sustain life. While these gasses and particles have occurred naturally

for millennia, there has been a marked increase in their atmospheric concentration since the start of the industrial age, contributing to observed climatic variability beyond the historic norm. While global and national inventories are established, regional and state-specific inventories are in varying levels of development. Quantification techniques are in development – for example, there is a good understanding of climate change emissions related to fuel usage; however measuring and understanding the effects of albedo is less comprehensive. Analytical tools necessary to quantify climatic impacts are presently unavailable. As a consequence, impact assessment of specific effects of anthropogenic activities cannot be determined.

Ongoing scientific research has identified the potential impacts of anthropogenic (man-made) greenhouse gas (GHG) emissions and changes in biological carbon sequestration due to land management activities on global climate. Through complex interactions on a regional and global scale, these GHG emissions and net losses of biological carbon sinks cause a net warming effect of the atmosphere, primarily by decreasing the amount of heat energy radiated by the earth back into space. Although GHG levels have varied for millennia, recent industrialization and burning of fossil carbon sources have caused CO2(e) concentrations to increase dramatically, and are likely to contribute to overall global climatic changes. The Intergovernmental Panel on Climate Change recently concluded that "warming of the climate system is unequivocal" and "most of the observed increase in globally average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.[6]

Global mean surface temperatures have increased nearly 1.8°F from 1890 to 2006. Models indicate that average temperature changes are likely to be greater in the Northern Hemisphere. Northern latitudes (above 24° N) have exhibited temperature increases of nearly 2.1°F since 1900, with nearly a 1.8°F increase since 1970 alone. Without additional meteorological monitoring systems, it is difficult to determine the spatial and temporal variability and change of climatic conditions, but increasing concentrations of GHGs are likely to accelerate the rate of climate change.

In 2001, the IPCC indicated that by the year 2100, global average surface temperatures would increase 2.5 to 10.4°F above 1990 levels. The National Academy of Sciences has confirmed these findings, but also has indicated there are uncertainties regarding how climate change may affect different regions. Computer model predictions indicate that increases in temperature will not be equally distributed, but are likely to be accentuated at higher latitudes. Warming during the winter months is expected to be greater than during the summer, and increases in daily minimum temperatures is more likely than increases in daily maximum temperatures. Increases in temperatures would increase water vapor in the atmosphere, and reduce soil moisture, increasing generalized drought conditions, while at the same time enhancing heavy storm events. Although large-scale spatial shifts in precipitation distribution may occur, these changes are more uncertain and difficult to predict.

As with any field of scientific study, there are uncertainties associated with the science of climate change. This does not imply that scientists do not have confidence in many aspects

of climate change science. Some aspects of the science are known with virtual certainty, because they are based on well-known physical laws and documented trends (EPA 2008).[7]

Several activities contribute to the phenomena of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires and activities using combustion engines; changes to the natural carbon cycle; and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales. For example, recent emissions of carbon dioxide can influence climate for 100 years.

It may be difficult to discern whether global climate change is already affecting resources, let alone at the Planning or Decision Areas for an Environmental Assessment. In most cases there is more information about potential or projected effects of global climate change on resources. It is important to note that projected changes are likely to occur over several decades to a century. Therefore many of the projected changes associated with climate change described below may not be measurably discernible within the reasonably foreseeable future.

Existing climate prediction models are global in nature; therefore they are not at the appropriate scale to estimate potential impacts of climate change on the project area.

[6] Intergovernmental Panel on Climate Change (IPCC). 2007a. Climate Change 2007: Synthesis Report (Summary for Policymakers). Cambridge University Press. Cambridge, England and New York, New York. Available online at: http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf .

[7] U.S. Environmental Protection Agency. 2008. "Climate Change – Science – State of Knowledge" webpage. Available online at: http://www.epa.gov/climatechange/science/stateofknowledge.html .

5.J Geology

The SCR is geologically situated in the southeastern edge of the Owyhee Uplands physiographic province. This area is within the transition area of the northern Basin and Range Province, the southern Owyhee Uplands, and the Snake River Plain (Orr and Orr, 1999). The region is characterized by Miocene basaltic (Tb) and rhyolitic (Trh) lava flow rocks generated from faults associated with the Northern Nevada Rift Zone (NNR) and volcanism associated with the McDermitt caldera. The NNR is a northwest trending fault zone extending from southern Nevada and terminating in southeastern Oregon. It has been suggested that the NNR is the southern extension of the north-west trending faults in southeastern Washington that acted as conduits for much of the Miocene Columbia River basalts (John et al, 2000).

The fault zones trending from Nevada through southeastern Oregon are associated with numerous mineral deposits in the Basin and Range Province. Many of these mineral deposits (gold, silver, mercury) were deposited largely by surficial or subsurface geothermal fluids. The mineral deposits formed in a geologically shallow environment by geothermal fluids within the lower ranges of temperature and pressure and are considered epithermal deposits.

Several of the larger mineral deposits in northern Nevada and some in southeastern Oregon are epithermal mineral deposits. Remnants of the geologic systems that created these epithermal deposits are characterized by the numerous hot springs or hot spring geologic features in the area. The typical suite of trace elements associated with these mineral depositional environments are antimony, mercury, arsenic, barium, thallium, and, sometimes, tungsten. USGS Water-Resources Investigations Report 03-4327 (2004) presents an overview of the chemical and biological qualities associated with the Owyhee River in Oregon. The Owyhee River stream-bottom material was sampled during base flow conditions and analyzed for arsenic, selenium, barium, cerium, copper, mercury, and several other elements. The report states that more than 75% of the element concentrations in the stream-bottom material exceed the median concentrations reported in a previous study associated with the effects of irrigation. The authors explain the elevated concentrations "may be because samples for this reconnaissance were collected in areas of the watershed that were closer to geologic formations naturally enriched with trace elements…" (Hardy, 2004, pg. 20).

Miocene basaltic (Tb) and rhyolitic (Trh) lava flow rocks are the predominate lithologies in the vicinity of the material sites. The presence of a basal basalt assemblage of rocks capped by more silicic, flow-banded rhyolites and interbedded ash-flow tuffs and breccias indicates that the material sites are located in a favorable geologic environment for road aggregate. A relatively consistent blending of the more indurated basalt and rhyolite with the more friable tuffs would provide optimum compaction for a road surface.

There are no active mining claims at or in the vicinity of the proposed material sites.

Table 1: Geologic Rock Units within the Project Area

Province	Rock Unit	Rock Type	Age	Description
Eastern Oregon	Trh, correlative with Tvu in northern Nevada.	Rhyolite and dacite	Pliocene? and Miocene	Ash-flow tuff, lava flows, pumice-lapilli tuff, coarse pumicite, flow breccia, and domal complexes of rhyolitic, rhyodacitic, and dacitic composition; in places includes peralkaline rhyolite and some andesite and andesite breccia. Locally porphyritic with phenocyysts of alkali feldspar, plagioclase, and minor augite, ferro-hedenbergite, hornblende, hypersthene, or biotite. Commonly flow banded; locally glassy. Many of the ash-flow tuffs exhibit flow features and only obscure vitro-clastic textures. In places includes interlayers of silicic volcaniclastic rocks and tuffaceous sedimentary rocks. Includes rhyolite at Owyhee Dam, Jump Creek Rhyolite, and Littlefield Rhyolite, all of Kittleman and others (1965); Dooley Rhyolite Breccia of Gilluly (1937), radiometrically dated at 14.7Â± 0.4 Ma by potassium-argon methods (Fiebelkorn and others, 1983); resurgent domal masses in McDermitt caldera area; and extensive unnamed flows and ash-flow tuffs in the central and southern part of the Owyhee Upland. Also includes isolated masses of dacitic and rhyodacitic flows, breccia, and ash-flow tuff along eastern slope of Cascade Range that are lapped by flows and sediments of the Madras (or Deschutes) Formation. Potassium-argon ages on rocks in unit from southeast Oregon range from about 13 to 16 Ma; lenses of interbedded tuffaceous sedimentary rocks locally contain a Miocene (Barstovian) vertebrate

Province	Rock Unit	Rock Type	Age	Description
				fauna.
Eastern Oregon	Tb, correlative with QTv and Tvu in northern Nevada.	Basalt	upper and middle Miocene	Basalt flows, flow breccia, and basaltic peperite; minor andesite flows; some interbeds of tuff and tuffaceous sedimentary rocks. Basalt is aphyric to moderately porphyritic with phenocrysts of plagioclase and olivine and exhibits both subophitic and diktytaxitic textures. Includes Picture Rock Basalt of Hampton (1964), radiometrically dated by potassium-argon methods as middle(?) and late Miocene in age (see Fiebelkorn and others, 1983), flows of Deer Butte Formation of Kittleman and others (1967), and extensive unnamed flow sequences in the Basin-Range and Owyhee Upland Provinces of southern Lake, Harney, and Malheur Counties that are younger than Steens Basalt, dated at about 15 Ma (Baksi and others, 1967) and the Owyhee Basalt, dated at about 14 Ma (Bottomley and York, 1976; see also Fiebelkorn and others, 1983), and older than 7 or 8 Ma. Partly coeval with the Saddle Mountains Basalt of the Columbia River Basalt Group (Swanson and others, 1979).
Eastern Oregon	Tob	Olivine basalt	Pliocene and Miocene	Thin, commonly open-textured (diktytaxitic), subophitic to intergranular olivine basalt flows, intercalated with and grades laterally through palagonite breccia and tuff into tuffaceous sedimentary rocks (unit Ts). In places includes flows of platy olivine andesite or basaltic andesite. Several potassium-argon ages ranging from about 4 to 7 Ma indicate unit is mostly of early Pliocene and late Miocene age. Includes Shumuray Ranch Basalt and Antelope Rat Basalt of Kittleman and others (1965), Grassy Mountain Basalt of Corcoran and others (1962), Drinkwater Basalt of Bowen and others (1963), basalt formerly assigned to Danforth Formation by Piper and others (1939) (see Walker, 1979), Hayes Butte Basalt of Hampton (1964); Pliocene and upper Miocene basalt flows capping and interstratified with the Madras (or Deschutes) Formation, and basalt flows interstratified in the Dalles Formation of Newcomb (1966; 1969).

5.K Soil, Watershed, and Riparian Resources

According to preliminary ESI and SOIL mapping data the proposed project sites occur in Mapping units 122 and 154. Soils found in mapunit 122 consist of Drice Series (60%), Babala Series (30%), Salheur Series (5%), and Rubble. Soils found in mapunit 154 consist of Pinchey Series (45%), Salheur Series (30%), Babala Series (20%), and Rubble. The four major series are discussed below

DRICE SERIES

The Drice series consists of moderately deep, moderately well drained soils that formed in volcanic ash and loess over residuum from volcanic rocks such as basalt, andesite, and tuff. Slopes range from 2 to 15 percent. These soils are moderately well drained, have a very high runoff potential, moderate permeability, and are saturated in the upper part for two weeks or more in the spring.

BABALA SERIES

The Babala series consists of moderately deep, well drained soils that formed in mixed volcanic ash and loess over residuum weathered from basalt. The Babala soils are on lava plateaus with slopes ranging from 2 to 15 percent. These soils are well drained, have a very high runoff potential, and slow to very slow permeability.

PINCHEY SERIES

The Pinchey series consists of moderately deep over duripan, moderately well drained soils that formed in loess, volcanic ash, and alluvium. Pinchey soils are on pediments and fan remnants. Slopes are 2 to 15 percent. These soils are moderately well drained, with very slow permeability.

SALHEUR SERIES

The Salheur series consists of shallow over duripan, moderately well drained soils that formed in alluvium. Salheur soils are on pediments and fan remnants. Slopes are 2 to 15 percent. These soils are moderately well drained, with very slow permeability.

The project area is located in the Middle Owyhee Hydrologic Subbasin, 4th-field HUC number 17050107. The watershed encompasses approximately 948,230 acres and 2,241 stream miles.[a]

The three proposed project sites occur on dry gently rolling terrain. The nearest perennial water source in the vicinity of the proposed pit locations is the Owyhee River which is confined to its canyon and lined with a strong riparian community. The Slipper Reservoir site is the closest at approximately 2.8 miles east of the Owyhee River. Intermittent streams in the area are Soldier Creek, Cherry Creek, and Mud Flat Creek typically flowing in the spring, early summer, and following precipitation events. Riparian plant communities are dispersed along these intermittent streams. Herbaceous riparian communities are typical on these creeks with intermixed willow usually associated with perennial pools. Of the three proposed sites Black Butte has the closest proximity to an intermittent stream lying 0.2 miles from Soldier Creek. Both the Slipper Reservoir, and Brewster Reservoir sites occur 1.5 miles or more from an intermittent stream. Ephemeral drainages near the proposed project sites flow only during or immediately after precipitation events and dry the rest of the year. Numerous man-made impoundments are found throughout the area in these ephemeral drainages. Water levels fluctuate in these water bodies with the changing season and frequency of precipitation events with very few holding water year round.

[a] SEORMPFEIS, 2001, Table 2-9, pg. 55 and Map HYDR-3M

5.L Mandatory Elements

The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order and must be considered in all EA's and EIS's:

Table 2: Mandatory Elements of the Human Environment

Element	Relevant Authority	BLM Manual	
Air Quality	The Clean Air Act as amended (42 USC 7401 et seq.)	MS 7300	Not affected
Areas of Critical Environmental Concern	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.)	MS 1617	Not present
Cultural Resources	National Historic Preservation Act as amended (16 USC 470)	MS 8100	Survey complete; Not present
Farm Lands (prime or unique)	Surface Mining Control and Reclamation Act of 1977 (30 USC 1201 et seq.)		Not present
Floodplains	E.O. 11988, as amended, Floodplain Management, 5/24/77	MS 7260	Not present
Native American Religious Concerns	American Indian Religious Freedom Act of 1978 (42 USC 1996)	MS 8100	None known
Threatened or Endangered Species	Endangered Species Act of 1973 as amended (16 USC 1531)	MS 6840	Not present
Wastes, Hazardous or Solid	Resource Conservation and Recovery Act of 1976 (42 USC 6901 et seq.) Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended (42 USC 9615)	MS 9180 MS 9183	Not present and blasting agent will be consumed by the operation. All emergency response procedures will be in accordance with the Burns-Vale Hazardous Materials Management Contingency Plan, 2008
Water Quality Drinking/Ground	Safe Drinking Water Act as amended (42 USC 300f et seq.) Clean Water Act of 1977	MS 7240 MS 9184	Not affected beyond that identified in the vegetation, soil and watershed narratives.

Element	Relevant Authority	BLM Manual	
	(33 USC 1251 et seq.)		
Wetlands/Riparian Zones	E.O. 11990, Protection of Wetlands, of May 24, 1977	MS 6740	Not affected beyond that identified in the water resources narratives.
Wild and Scenic Rivers	Wild and Scenic Rivers Act as amended (16 USC 1271)	MS 8014	Not present
Wilderness and Wilderness Study Areas	Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.) Wilderness Act of 1964 (16 USC 1131 et seq.)	MS 8500	Not present
Environmental Justice	E.O. 12898 of February 11, 1994		Minority populations and low income populations not affected
Actions to Expedite Energy Related Projects	E.O. 13212 of May 18, 2001		Proposed action is not energy related nor would it affect production, transmission, or conservation of energy.

Elements not present or not affected will not be further analyzed within this environmental assessment.

6 Environmental Consequences

This chapter is organized by alternatives to illustrate the differences between the proposed action, alternatives, and the "no action" alternative.

6.A Alternative 1 (No Action Alternative)

6.A.1 Vegetation

Under the No Action alternative, vegetation associated with the three proposed material sites would persist in its current condition.

6.A.2 Noxious Weeds

The proposed material sites are all near roads and roads are natural conduits for weed movement. The disturbances common to these vehicle travel routes support a variety of annual and or biennial noxious weeds or weedy species. Cheatgrass (*Bromus tectorum*) and

other common annual or biennial weeds are associated with the roads, as well as water sources and salt licks used by livestock which are often close to travel routes. A variety of mustards, such as clasping pepperweed (*Lepidium perfoliatum*), tumble mustard (*Sysymbrium altissimum*), blue mustard (*Chorispora tenella*) and flixweed (*Descurainia sophia*) can be found near each site. Also present at the sites are redstem filaree (*Erodium cicutarium*), lambsquarter (*Chenopodium sp*.), kochia (*Kochia scoparia*), Russian thistle (*Salsola iberica*) and prickly lettuce (*Lactuca serriola*).

Canada thistle (*Circium arvense*) and bull thistle (*Circium vulgare*) are occasionally found in moister sites and meadows associated with riparian or ephemeral areas, springs and seeps.

Whitetop species (*Lepidium ssp*) and Scotch thistle (*Onopordum acanthium*) have been treated along the Soldier Creek and Fenwick Ranch roads near each of the proposed material sites. Scotch thistle along the portion of Soldier Creek near Black Butte site is especially prevalent as there is a very large population approximately ½ mile upstream of site on private property. There is also a heavy infestation of medusahead rye (*Taeniatherum caput medusa*) at the Black Butte site. Most recently, a small site of yellow starthistle was discovered on Soldier Creek road at Spring Creek crossing, approximately 6 road miles NW of the Black Butte site.

There is a possibility that Ventenata dubia, a very invasive annual grass, is present at Brewster proposed material site. At the time of the survey, a positive identification of that grass was not possible.

6.A.3 Special Status Plants

No special status plant species are known to occur at or near the Slipper Reservoir or Brewster Reservoir material sites. The no action alternative proposes no new ground disturbance. The no action alternative would have no affect to federally listed plants and would not impact special status plants because they are not present in the project area and no ground disturbance is proposed.

6.A.4 Wildlife and Fish

Under the No Action alternative existing habitat would remain undisturbed. Local populations of fish and wildlife would remain at existing levels.

6.A.5 Livestock Grazing

The No Action alternative would not alter current livestock grazing permitted use.

6.A.6 Recreation and Visual Resources

Under the No Action alternative opportunities for outdoor enthusiasts, upland bird and big game hunters, rafters and campers would be unchanged. The visual resources would be unchanged or maintained under the no action alternative.

6.A.7 Air and Atmospheric Quality

Under the No Action alternative aggregate for road base would be obtained from existing Community Pit areas. The Arock Rip Rap Community Pit in T. 31 S., R. 43 E., section 9, and the Coburn Community Pit No. 1 in T. 32 S., R. 46 E., sections 28 and 29, would be the nearest authorized material sites. The pits would require development by clearing, drilling, blasting, crushing and stockpiling aggregate material. The mid-point haul distance along the SCR from each rock source would be 25 miles.

The following example is based on diesel trucks hauling rock using non-paved roads:
A loaded haul from Arock Community Pit to the 25-mile position on SCR is about 25 miles away. The average width of SCR is 20 feet. One gallon of diesel produces 22.2 pounds of CO_2 when burned. A 10-yard, Class 8 dump truck uses about 3.2 gallons per hour when traveling at 10 miles per hour which is considered safe for a gravel road. This equates to 16 pounds of CO_2 produced for the furthest haul point of 25 miles using one dump truck. Each progressive haul would be somewhat shorter, but the project would require about 264 truckloads rock per mile. As one dump truck would only be able to make about three trips per day, the project duration would be extended by approximately three months or would require an additional five trucks to complete the job.

6.A.8 Soils and Watershed Resources

Soil and water resources would remain unchanged with the No Action alternative.

6.B Alternative 2: Black Butte, Slipper Reservoir, and Brewster Material Sites (Proposed Action)

6.B.1 *Vegetation*

Adopting this alternative would result in the modification and/or loss of not to exceed 30 acres of vegetation in the project areas.

6.B.2 *Noxious Weeds*

The proposed material sites are all near roads and roads are natural conduits for weed movement. The disturbances common to these vehicle travel routes support a variety of annual and or biennial noxious weeds or weedy species. Cheatgrass (*Bromus tectorum*) and other common annual or biennial weeds are associated with the roads, as well as water sources and salt licks used by livestock which are often close to travel routes. A variety of mustards, such as clasping pepperweed (*Lepidium perfoliatum*), tumble mustard (*Sysymbrium altissimum*), blue mustard (*Chorispora tenella*) and flixweed (*Descurainia sophia*) can be found near each site. Also present at the sites are redstem filaree (*Erodium cicutarium*), lambsquarter (*Chenopodium sp*.), kochia (*Kochia scoparia*), Russian thistle (*Salsola iberica*) and prickly lettuce (*Lactuca serriola*).

Canada thistle (*Circium arvense*) and bull thistle (*Circium vulgare*) are occasionally found in moister sites and meadows associated with riparian or ephemeral areas, springs and seeps. Whitetop species (*Lepidium ssp*) and Scotch thistle (*Onopordum acanthium*) have been treated along the Soldier Creek and Fenwick Ranch roads near each of the proposed material

sites. Scotch thistle along the portion of Soldier Creek near Black Butte site is especially prevalent as there is a very large population approximately ½ mile upstream of site on private property. There is also a heavy infestation of medusahead rye (*Taeniatherum caput medusa*) at the Black Butte site. Most recently, a small site of yellow starthistle was discovered on Soldier Creek road at Spring Creek crossing, approximately 6 road miles from the Black Butte site.

There is a possibility that Ventenata dubia, a very invasive annual grass, is present at Brewster proposed material site. At the time of the survey, a positive identification of that grass was not possible.

Objective 3 for noxious weeds in the SEORMP would be met (SEORMP, 2002, pg. 41).

Oregon Dept of Ag Noxious Weed Policy and Classification System can be found at: http://egov.oregon.gov/ODA/PLANT/weed_index.shtml

Malheur County's noxious policy and weed list can be found at http://www.malheurco.org/weeds

Table 3: Noxious Weeds Existing in the Vicinity of the Project Area

Weed Species: Scientific Name	Weed Species: Common Name	ODA Classification	County Classification	Not Classified
Bromus tectorum	Cheatgrass		C	
Lepidium perfoliatum	Clasping pepperweed			X
Sysymbrium altissimum	Tumble mustard			X
Chorispora tenella	Blue mustard			X
Descurainia sophia	Flixweed			X
Chenopodium sp.	Lambsquarter			X
Kochia scoparia	Kochia		C	
Salsola iberica	Russian thistle			X
Lactuca serriola	Prickly lettuce			X
Circium arvense	Canada thistle	B	B	
Onapordum acanthium	Scotch thistle	B	B	
Circium vulgare	Bull thistle	B	C	
Acroptilon repens	Russian knapweed	B	B	
Lepidium sp (Cardaria)	Whitetop species	B	B	
Ventenata dubia	Ventenata		B	
Taeniatherum caput medusa	Medusahead rye		C	
Erodium cicutarium	Redstem filaree			X

6.B.3 ***Special Status Plants***

No special status plant species are known to occur at or near the Slipper Reservoir or Brewster Reservoir material sites. The actions proposed in Alternative 2 would have no affect to federally listed plants and would not impact special status plants because they are not present in the project area.

6.B.4 *Wildlife and Fish*

Adopting this alternative would result in the modification and/or loss of approximately 60 acres wildlife habitat. The habitat within the proposed pit locations has shallow soils, exposed rock and vegetation that is relatively sparse, making this habitat marginal for use by most species of wildlife. This habitat type is not unique or uncommon within this area.

Sage-grouse use the surrounding area for nesting habitat, but no nesting areas (leks) are known to occur within 0.5 miles of the proposed pit locations. Best Management Practices (BMP's) would be required during project implementation to minimize effects to Sage-Grouse. This action would occur within "Preliminary General" sage-grouse habitat.

Pygmy rabbits have been surveyed in this area, but no burrows or sign has been documented. Pygmy rabbits are closely associated with deep soils, suitable for burrowing and sage brush. The soil at the proposed pit locations is shallow, rocky and unsuitable for pygmy rabbit burrows.

Beneficial or detrimental effects to other fish and wildlife species, including mule deer, pronghorn antelope, and bighorn sheep and raptors are not expected to alter life history requirements or result in the permanent displacement of local wildlife populations.

6.B.5 *Livestock Grazing*

Adopting this alternative would have no effect on livestock grazing permitted use in the pastures encompassing the project areas. The project areas are expected to impact approximately 0.001% of the pastures in which they're located. The project areas are in rocky uplifted areas, where the vegetation is sparse and grazing use is limited due to access. Due to the low percentage of disturbance livestock grazing permitted use will not need to be adjusted due to the proposed material sites.

6.B.6 *Recreation and Visual Resources*

Dispersed outdoor recreation activities would remain unchanged or be slightly enhanced by improving access to the area. Opportunities for outdoor enthusiasts, upland bird and big game hunters would be unchanged. Access to Three Forks, for camping on the main stem of the Owyhee River and access to the Soldier Creek Watchable Wildlife Loop would likely be improved through material placement during maintenance of the SCR. The visual resource management classes III of this area allows for moderate modification of the landscape. The scope of the proposed project is within the management objectives for VRM class III.

6.B.7 *Air and Atmospheric Quality*

As previously stated, the principal source of air contaminants in the project area is from wind- blown dust, both off dry rangeland in the region and from occasional traffic along dirt roads. During the summer months dust storms and rangeland wildfires may negatively affect air quality. Project completion under this alternative would reduce the fugitive dust from vehicle operations along SCR. The road surface would be modified from a natural soil material consisting of sand-, silt-, and clay-size particles to a nominal 1-inch rock aggregate. The existing road surface material is more effectively transported by wind and vehicle activities than the coarse-grained rock aggregate that would be present upon project completion. Therefore, some measure of air quality improvement should be realized under Alternative 2.

Climate Change

The temperature of the planet's atmosphere is regulated by a balance of radiation received from the sun and the amount of that radiation absorbed by the earth and atmosphere. Greenhouse gases (e.g., carbon dioxide and methane)(GHG), as well as water vapor and particulate matter in the atmosphere keep the planet's temperature warmer than it would be otherwise; allowing the planet to sustain life. While these gasses and particles have occurred naturally for millennia, there has been a marked increase in their atmospheric concentration since the start of the industrial age, contributing to observed climatic variability beyond the historic norm.

While global and national inventories for GHGs are established, regional and state-specific inventories are in varying levels of development. Quantification techniques are in development – for example, there is a good understanding of climate change emissions related to fuel usage; however measuring and understanding the effects of albedo is less comprehensive. Analytical tools necessary to quantify climatic impacts are presently unavailable. As a consequence, impact assessment of specific effects from anthropogenic activities cannot be determined within the scope of this EA.

The additional material sites would allow rock material to be hauled from 5 miles away off-road, the trucks would still be burning 3.2 gallons of fuel per hour. However, the time to dump a 10 cubic yard load after traveling 10 miles per hour is cut down to a half hour. The associated carbon cost of this load of material is only 3.2 lb/cubic yard. More loads can be dumped per day, the project timeline is shorter, and equipment is more efficiently used, resulting in an overall reduction in carbon emissions.

6.B.8 *Soil, Watershed, and Riparian Resources*

Vegetation would be removed and top soils stockpiled for the portions of each proposed site designed for rock extraction. Disturbed soils within each of these project sites would be subject to increased wind and water erosion, and would result in effects such as soil displacement, erosion, loss of moisture holding capacity, loss of microbiotic soil forming processes, and increased runoff potential. Soil productivity and soil forming processes on no more than 60 acres between the three sites would be altered.

Design features of the proposed action and associated construction activity are consistent with Appendix O – Best Management Practices of the SEORMPFEIS. Proposed project activities would result in some increased runoff, sediment transport, and potential water quality impacts over the short-term until the site has been stabilized or reclaimed. Keeping construction activities to dry soil conditions will also minimize soil disturbance and overall impacts to water quality in the surrounding drainages.

7 Best Management Practices (BMP's)

Best management practices (BMP's, Appendix O, SEORMP/ROD) are those land and resource management techniques designed to maximize beneficial results and minimize negative impacts of management actions. BMP's are selected and implemented as necessary, based on site-specific conditions, to meet water, soil, and resource management objectives. BMP's for this proposal are designed to assist in achieving the objectives for maintaining water quality, limiting disturbance to sensitive plants, fish, and wildlife, and reducing the likelihood of noxious weed spread.

Surface-Disturbing Activities

1) Special design and reclamation measures would be required to protect scenic and natural landscape features. This may include mulching and fertilizing disturbed areas and maintaining low-profile stockpiles and berms associated with the material pits to minimize visual contrasts. Surface-disturbing activities would avoid sensitive in-tact sensitive plant communities to reduce the visual effects of the proposal.

2) Blasting will not occur during sage grouse nesting season from March 1 to June 15.

3) Disturbed areas would be contoured to blend with the natural topography. Blending is defined as reducing form, line, and color contrast associated with the surface disturbance. Disturbance in visually sensitive areas would be contoured to match the original topography, matching is defined as reproducing the original topography and eliminating form, line and color caused by the disturbance as much as possible. Re-vegetation of the sites will be completed by using native seed mixtures.

4) Reclamation and site stabilization would be implemented concurrent with construction and site operations to the fullest extent possible to allow for continued operation.

5) Retain vegetation on cut slopes unless it poses a safety hazard or restricts maintenance.

6) Retain adequate vegetation between pits and streams to filter runoff caused by disturbed soils. Should this become an operational restriction, then man-made sediment barriers will be installed. Storm-water run-off from the pit will be contained within the pit.

7) Water consumed in the drilling operation and for dust control during the mining and crushing operation will be obtained from local ranches or under permits from local water sources. No modifications will be required for these areas.

8) Avoid soil surface disturbance within riparian areas.

9) Avoid placing overburden or soil in riparian areas or on floodplains.

10) Fill material should be pushed into cut areas and up over back slopes. Depressions should not be left that would trap water or form ponds.

11) Design and locate water crossings in natural drainage channels to accommodate adequate fish passage, provide for minimum impacts to water quality and RCA's, and capable of handling a 100-year event for runoff and floodwaters.

12) During surface-disturbing construction and maintenance activities, the operators shall ensure that all construction equipment and vehicles are cleaned of all vegetation (stems, leaves, seeds and all other vegetative parts) prior to entering public lands in order to minimize the transport and spread of noxious weeds. During surface-disturbing construction and maintenance activities, the operators shall ensure that all construction equipment and vehicles are cleaned of all vegetation (stems, leaves, seeds and all other vegetative parts) prior to leaving public lands in areas that are known to be infested with noxious weeds.

13) Control weeds annually in areas disturbed by proposed actions.

14) All seed, mulch, or other vegetation material transported and used on public land weed-free zones for site stability, rehabilitation or project facilitation should be certified by a qualified Federal, State, or county officer as free of noxious weeds and noxious weed seed.

15) It is recommended that all vehicles, including off-road and all-terrain, traveling in or out of weed infested areas should clean their equipment before and after use on public land. For additional controls on noxious weed management please refer to the "Vegetation Treatments Using Herbicides on BLM Lands in Oregon" (2010), Record of Decision, Attachment A – Standard Operating Procedures and Mitigation Measures, and the "Vale District Five-Year Noxious Weed Control Program Environment Assessment" (1987) with extensions.

8 Cumulative Effects

The Council on Environmental Quality (CEQ) defines cumulative effects as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). A June 2005 CEQ memorandum states:

The environmental analysis required under NEPA is forward-looking, in that it focuses on the potential impacts of the proposed action that an agency is considering. Thus, review of past actions is required to the extent that this review informs agency decision making regarding the proposed action. This can occur in two ways:

First, the effects of past actions may warrant consideration in the analysis of the cumulative effects of a proposal for agency action. CEQ interprets NEPA and CEQ's NEPA regulations on cumulative effects as requiring analysis and a concise description of the identifiable present effects of past actions to the extent that they are relevant and useful in analyzing whether the reasonably foreseeable effects of the agency proposal for action and its alternatives may have a continuing, additive and significant relationship to those effects. In determining what information is necessary for a cumulative effects analysis, agencies should use scoping to focus on the extent to which information is "relevant to reasonably foreseeable significant adverse impacts," is "essential to a reasoned choice among alternatives," and can be obtained without exorbitant cost (40 CFR 1502.22). Based on scoping, agencies have discretion to determine whether, and to what extent, information about the specific nature, design, or present effects of a past action is useful for the agency's analysis of the effects of a proposal for agency action and its reasonable alternatives. Agencies are not required to list or analyze the effects of individual past actions unless such information is necessary to describe the cumulative effect of all past actions combined. Agencies retain substantial discretion as to the extent of such inquiry and the appropriate level of explanation (*Marsh v. Oregon Natural Resources Council,* 490 U.S. 360, 376-77 [1989]). Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.

Second, experience with and information about past direct and indirect effects of individual past actions may also be useful in illuminating or predicting the direct and indirect effects of a proposed action. However, these effects of past actions may have no cumulative relationship to the effects of the proposed action. Therefore, agencies should clearly distinguish analysis of direct and indirect effects based on information about past actions from a cumulative effects analysis of past actions.

The geographic scope of this analysis considers that the proposed action is a site-specific action where potential impacts to resources are confined to the areas immediately around material sites. All ground disturbing activities would occur within a 10-20 acre area at each material site. BMPs are a requirement of all operations on BLM land to include drainage concerns and dust control.

There are no known past, present, or reasonably foreseeable future actions in the proposed project area that have been, are being, or will be taken by agencies or persons other than the BLM.

Past Actions
The identifiable present effects of past actions result from the use and maintenance of the SCR and light-duty connector roads. SCR provides access to approximately 12 ranches and 315,000 acres of federally managed public land in Oregon, and about 50,000 acres of land managed by the Oregon Department of State Lands. This rural transportation route provides access to the eastern portion of the Jordan Resource Area for outdoor enthusiasts, upland bird and game hunters, livestock operators, access to private land, and BLM and Oregon State administrative access. SCR will continue to be an important access route for the foreseeable future.

Present Actions
Within the geographic scope of this analysis, no known present actions, other than normal use,—by the BLM or other parties— were in progress at the time this EA was written. No known actions would be occurring during the period of this proposed action. For this reason, there are no effects from present actions that have a cumulative relationship with the effects of this proposed action.

Reasonably Foreseeable Future Actions
At the time this EA was written, the BLM had no planned or proposed projects within the geographic scope of this analysis. Maintenance of the SCR will continue intermittently for the foreseeable future as usage is stable. The material extraction sites will remain in use for many years although intermittently. The proposed action anticipates a maximum duration of 6 months for the initial development of the sites and SCR maintenance; however, future operations may not commence for another 10 to 15 years. Local maintenance requiring low-volume stockpile extraction may periodically occur during the summer months should the SCR develop washouts or holes.

The development of the rock pits will change the landscape at the location of the pits. Operations following the BMP's will minimize visual impacts and prevent any undue and unnecessary degradation of public land. Vegetation in the immediate vicinity consists of shrub steppe plant communities dominated by sagebrush species and perennial bunchgrasses. In the short-term these plant communities will be eliminated from each material site, but adherence to the BMP's and BLM reclamation standards will provide for reestablishment of the native plant communities.

Maximum depths of 20-40 feet are proposed and the perimeter of each pit will be managed to minimize safety concerns, reduce visual impact, and prevent storm-water run-off. When the material site has been exhausted, all surface disturbances will be contoured to resemble and blend with the surrounding topography and vegetated with the appropriate native seed mixture. The sites have been surveyed and no special-status plant species were located at the proposed project locations.

Sage-grouse and pygmy rabbits are unlikely to be affected under the proposed alternative. Any effects to fish or other wildlife species, including mule deer, pronghorn antelope, and bighorn sheep would be of short duration during operations. Surveys have been conducted

and no cultural or paleontological resources were located at the proposed project locations. During the development of the material sites, there would be relatively short term degradation of air quality until re-surfacing of the SCR is complete. Some measure of air quality improvement should be realized in the long term under the proposed alternative. A rock aggregate road surface will minimize the powdered dust areas that can degrade air quality. The analytical tools necessary to quantify global climatic impacts as related to the elements of this project are presently unavailable. As a consequence, impact assessment of specific effects of anthropogenic activities cannot be determined. Water quality would improve over the long-term by maintaining a gravel surface on the SCR as there would be less sediment runoff than is currently occurring from the dirt surface. Over the long-term, maintenance of a gravel surface on the SCR would contribute to improving local drainages by decreasing the sediment load from storm events.

9 List of Preparers

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