Oregon Trail Ruts Landscape Study and Environmental Assessment

Scotts Bluff National Monument
Oregon Trail Ruts Landscape

Oregon Trail around Ravine (c 1941) Source: SCBL Archives

100% Submittal
December 2010

MUNDUS BISHOP

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PREPARED FOR:
NATIONAL PARK SERVICE
MIDWEST REGIONAL OFFICE
AND
SCOTTS BLUFF NATIONAL MONUMENT

PREPARED BY:
MUNDUS BISHOP DESIGN, INC.
333 WEST COLFAX AVENUE, SUITE 350
DENVER, COLORADO 80204

AND

ERO RESOURCE CORPORATION
1842 Clarkson Street
Denver, CO 80218

TASK ORDER: T6068099041

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PROJECT CREDITS

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT
Ken Mabery, Superintendent
Robert Manasek, Resource Management Specialist

NATIONAL PARK SERVICE
MIDWEST REGIONAL OFFICE
Marla McEnaney, Historical Landscape Architect, COTR/Project Manager
Bill Harlow, Chief Historic Architecture and Landscapes

MUNDUS BISHOP DESIGN, INC.
Robyn Bartling, ASLA, Historical Landscape Architect
Patrick Mundus, ASLA, Principal

ERO RESOURCES CORPORATION
Mary Powell, Biologist

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Chapter 1. Introduction

a. Introduction / Executive Summary

Scotts Bluff National Monument (SCBL) was established in 1919. The monument encompasses over 3,000 acres of prairie and bluff habitat located in the panhandle of western Nebraska. SCBL is dedicated to preserving the natural and cultural resources within the monument including Scotts Bluff and the Oregon-California Trail. The primary reasons for visiting include experiencing the emigrant trail remnants, trail hiking, the extensive museum collection, and travelling the Summit Road to take in views from the top of Scotts Bluff. Throughout this document the Oregon-California Trail is referred to as the Oregon Trail or emigrant trail when referencing the existing emigrant trail resources within the monument.

As part of the planning process, the National Park Service (NPS) has prepared this combined Landscape Study/Environmental Assessment (LS/EA) with the intent to support management decisions for the Oregon Trail historic resources within the monument and to supplement the existing 1998 General Management Plan (GMP). The purpose of this report is to provide the NPS with an assessment of the character-defining features of the Oregon Trail, document historic and existing conditions, and develop specific treatment recommendations to ensure the future protection of the Oregon Trail and its natural and cultural resources. The EA portion of the report is an assessment of how implementing the alternative treatment recommendations would affect various environmental factors such as natural and cultural resources. The LS has been combined with the EA into a single report to minimize duplicated information and to provide the reader with a clear understanding of how treatment recommendations were developed and what effects those treatments would have if implemented.

As part of preparing the LS/EA, a field investigation and evaluation of the historic landscape of the Oregon Trail has been conducted using the NPS and National Register of Historic Places Guidelines and the Oregon-California Trails Association's Mapping Emigrant Trails Manual (MET). The findings of the field investigation and evaluation are included with a detailed documentation of historical development, an evaluation of existing conditions of landscape features according to condition (good, fair and poor), and an analysis and evaluation of Scotts Bluff National Monument's emigrant trail resources. The

evaluation of the trail ruts was completed using a modified version of the classification system developed for the MET manual (see Table on page 3-10).

The Treatment Alternatives, including the preferred alternative, contain recommendations on how to preserve the emigrant trail resources and significant contributing features of the emigrant trail cultural landscape. These recommendations are based on historical documentation, analysis of existing conditions and site history, and the Secretary of the Interior's standards and guidelines as they apply to the treatment of historic landscapes.[1] This section includes treatment options, and will set priorities and inform Section 106 compliance.

The EA portions of this report evaluate potential effects on environmental, socioeconomic, and cultural resources from proposed treatment alternatives and were prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations, 40 CFR Parts 1500-1508 and NPS Director's Order – 12 and Handbook, Conservation Planning, Environmental Impact Analysis, and Decision-making. The NEPA process (40 CFR 1500-1508) is being used to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implementing regulations, 36 CFR Part 800. This LS/EA will determine whether significant impacts would occur as a result of the preferred alternative and if an environmental impact statement (EIS) or finding of no significant impact (FONSI) would be required.

b. Management Summary

The general management philosophy is to preserve and protect the extant remnants of the Oregon Trail. The section of the emigrant trail immediately to the west of the Visitor Center; that extends to the W.H. Jackson campsite is the area (Character Area A) that receives the most visitor use, has the most erosion problems, and requires the most frequent maintenance. Routine maintenance for this section of the emigrant trail includes: removal of sediment from storm events; regrading of washed off trail sections; and cleaning of drainage channels and culverts.

Management practices and requirements for other areas of the emigrant trail are minimal. In general, erosion is not an issue in these areas and visitor use is intermittent. Trail markers

[1] US Department of the Interior, National Park Service 1997

have been installed and are maintained along the visible portions of the emigrant trail within the monument.

c. Purpose and Need

The NPS faces many challenges associated with the long-term management of the monument, including maintaining the Oregon Trail resources and the associated historic landscape. Without an informed, comprehensive plan for landscape treatment the existing emigrant trail will continue to be altered and may eventually lose integrity. This could result in a misrepresentation of the historic qualities of the trail and lead to reduced visitor understanding. Natural resources could also be negatively impacted.

To inform decisions regarding management, the NPS has prepared the LS/EA for the Oregon Trail ruts landscape. The LS is intended to provide an assessment of the character-defining features of the Oregon Trail, document historic and existing conditions, and develop specific treatment recommendations to ensure the future protection of the Oregon Trail ruts and the associated landscape.

The LS/EA will also be used to support the monument's GMP, Long-Range Interpretive Plan, Cultural Landscape Inventory (CLI), and associated compliance as required by the National Environmental Policy Act of 1969, as amended. It will also guide any additional landscape treatments beyond those discussed in the report.

The purpose of the Oregon Trail Ruts Landscape Study is to record the history and current conditions of the emigrant trail resources, and to provide guidance for the future treatment and use of the historic landscape.

The monument's GMP and CLI identify the Oregon Trail as a component landscape and an important landscape feature that contributes to the significance of the monument's larger cultural landscape. The study is needed to guide treatment and use of the emigrant trail resources and associated features. The LS/EA builds on work done in the GMP and CLI to provide a comprehensive understanding of the historic development of the landscape and its condition, and to provide treatment recommendations that respond appropriately to their historic character while accommodating park and visitor needs.

The purpose of implementing a preferred treatment recommendation is to 1) reduce degradation of portions of the trail ruts, 2) improve visitor experience and safety, and 3)

facilitate maintenance. Implementing a preferred treatment recommendation is necessary because the character of the emigrant trail is currently being degraded by erosion, there are a number of noncontributing elements that reduce the authenticity of the visitor experience, and some portions of the visitor trail are difficult for some visitors to use safely.

d. Project Objectives

The objectives of the LS/EA are to:

1. Document the history and existing condition of the emigrant trail resources within Scotts Bluff National Monument.
2. Identify appropriate treatments to preserve and protect the emigrant trail resources.
3. Identify appropriate strategies to further locate and identify emigrant trail ruts.
4. Provide an assessment of the pertinent impacts from treatment alternatives and fulfill federal consultation requirements.

The objectives of the preferred treatment recommendation are to:

1. Reduce degradation of the emigrant trail resources from erosion.
2. Locate and document the known trail rut resources for future reference.
3. Minimize impacts of exotic invasive species.
4. Enhance visitor experience by preserving historic resources and enhancing interpretation opportunities.
5. Efficiently implement recommendations while minimizing visitor impacts.
6. Minimize operational effort to maintain the historic landscape and related resources.

e. Monument Purpose/Significance

In the mid-1800s, thousands of emigrant pioneers traveled the Oregon Trail for over 2,000 miles from Missouri to Oregon in what has been said to be one of the largest voluntary mass migrations in human history. In 1850, travelers excavated the most treacherous segments of the trail allowing for passage over Mitchell Pass and significantly shortening the distance traveled by the overland emigrants. From this time until the completion of the transcontinental railroad in 1869 thousands of emigrants followed this route over Mitchell Pass.

In 1919 President Woodrow Wilson signed a Presidential Proclamation, which officially established Scotts Bluff National Monument to maintain and protect the Oregon Trail (and other trails) within the monument's boundaries.

As stated in the 1998 GMP, Scotts Bluff National Monument is significant for several reasons including:

- The natural features, specifically the bluffs and geologic formations.
- The historic use as transportation corridor for many different people from Native Americans to emigrants to ranch operators.
- The many trails that traverse the monument.
- The museum collections of William Henry Jackson.
- The Civilian Conservation Corps construction and development.
- The geological resources.

Scotts Bluff, Mitchell Pass, and the Oregon Trail ruts possess national historic significance due to their major role during the period of mass migration to and settlement of America's western frontier. The importance of these features has been formally recognized by listing on the National Register of Historic Places (1976).

The purpose of the area's designation as a national monument is to:

- Preserve and interpret the history of the Platte River transportation corridor and the influence of Scotts Bluff on these routes.
- Provide access, to preserve, and interpret the view from the top of Scotts Bluff.
- Preserve and interpret the geological processes and features of Scotts Bluff and adjacent landforms.
- Preserve the prairie ecosystem around the bluffs as it was used by American Indians, emigrants and frontier people.
- Preserve and interpret the monument's cultural resources: archeological sites, Oregon Trail remnants, historic buildings, museum collections and the cultural landscape.[2]

[2] NPS 1998

f. Study Area Description and Boundaries

The Oregon Trail Ruts are located within Scotts Bluff National Monument, which is located approximately two miles west of Gering, Nebraska. The study area consists of the emigrant trail corridor (the corridor includes the trail ruts that may include a single rut, a 'trough' or multiple ruts within an area) and adjacent landscape crossing the monument from the southeast to northwest.

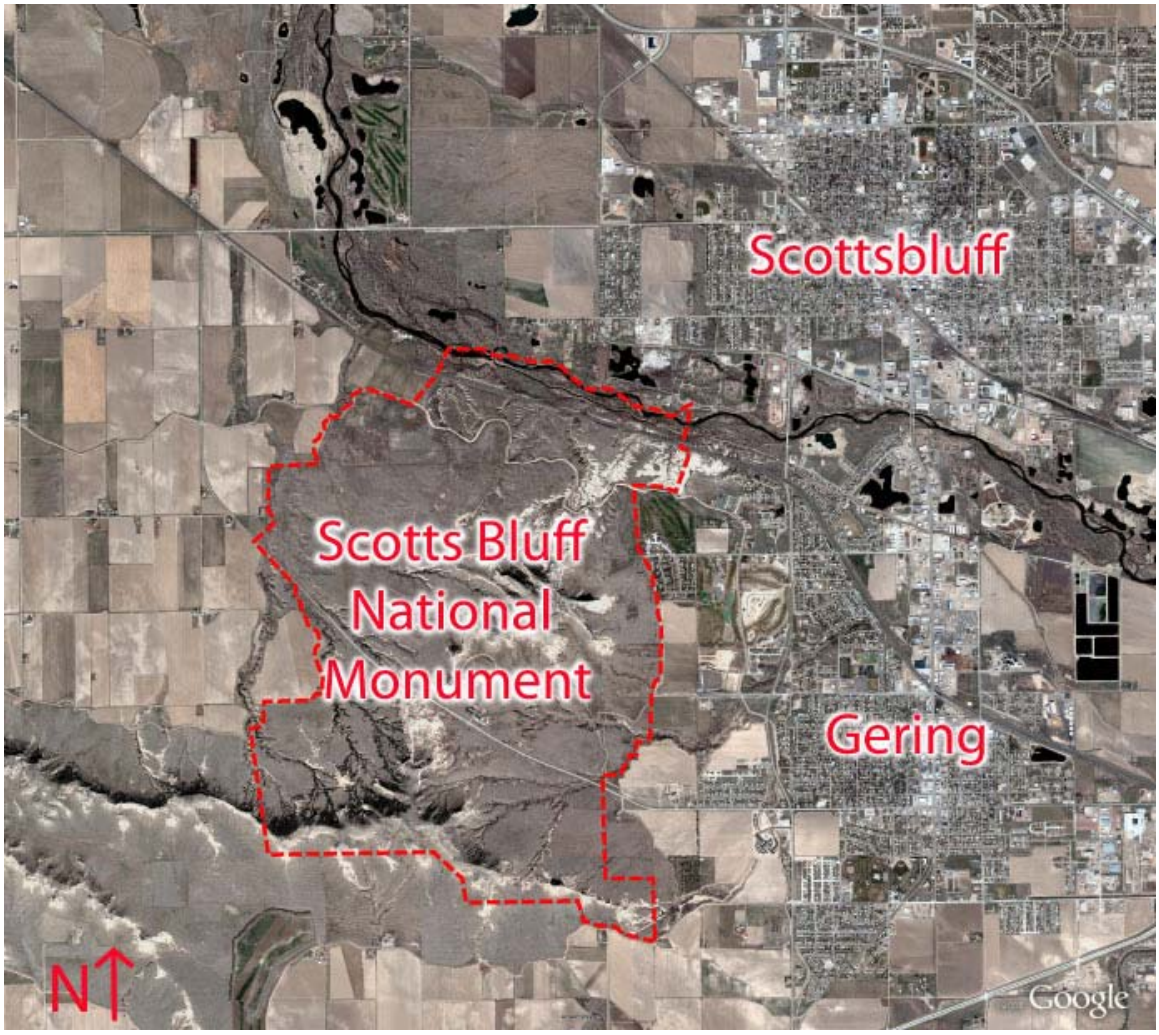
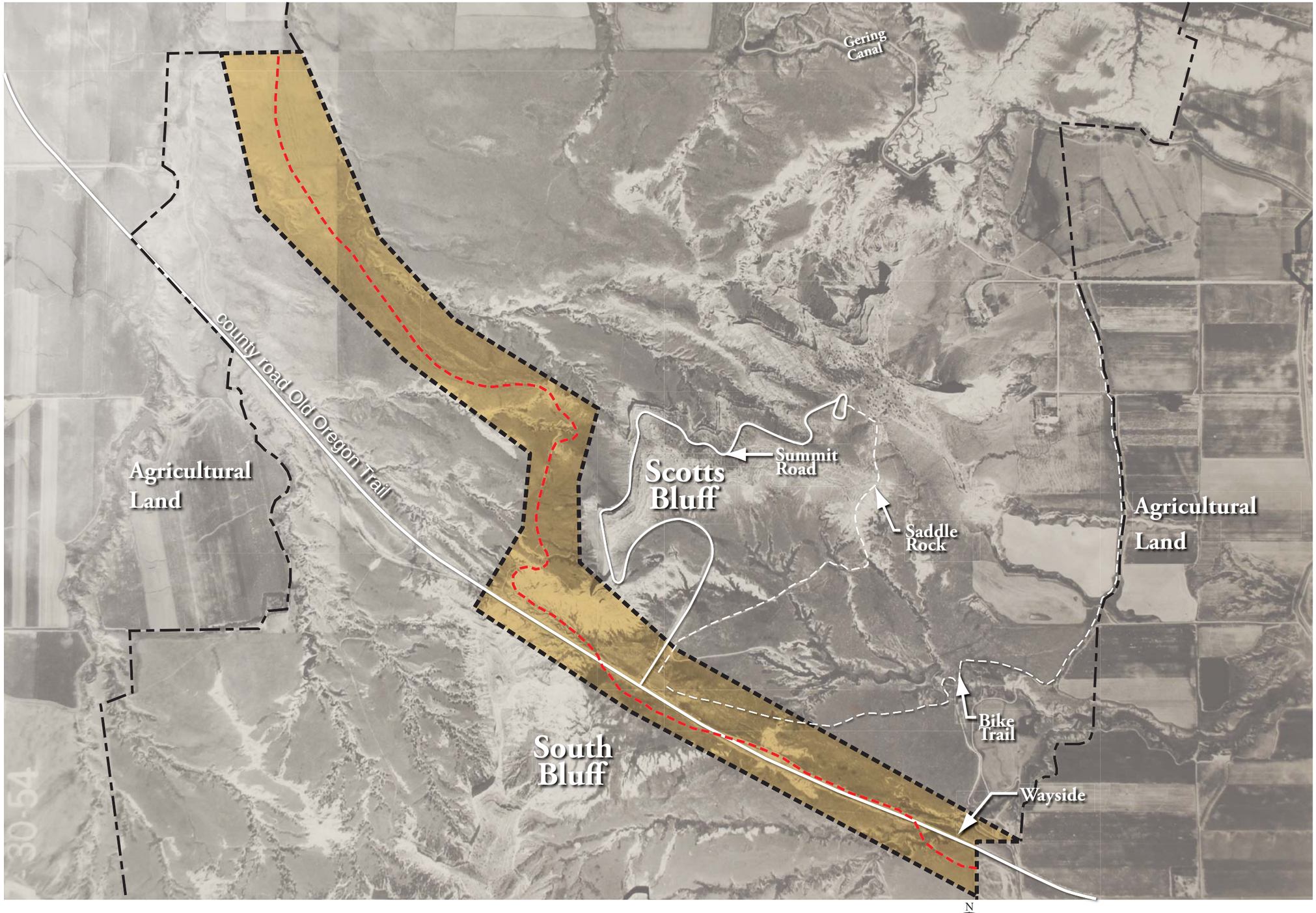


Figure 1 - 1. Context Map



Legend

- Study Area Boundary
- National Park Service Boundary
- Oregon/ California Trail/ Pony Express (approximate historic alignment)

N
W E
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0 1150’ 2300’

FIGURE 1 - 2

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT

DRAWING TITLE
STUDY AREA

NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

g. Project Methodology

A substantial amount of investigation and documentation had been completed for the Scotts Bluff National Monument prior to work performed for the Oregon Trail Ruts Landscape Study and Environmental Assessment; therefore, this study was conducted at a limited level of investigation and documentation.[3] This work included historical research, existing condition assessment and analysis.

In November of 2009, investigations were conducted by Mundus Bishop Design and ERO Resources to document the existing condition of the emigrant trail resources and related landscape features. Archival research was conducted utilizing primary and secondary sources to produce the landscape history and evaluate the cultural resources. The majority of the research was conducted at the monument archives. The monument has an extensive and well organized collection of historic photographs, drawings and administrative archives.

Aerial photography was completed for the known trail corridor within the monument and topographic mapping was developed from the photography to better locate and document emigrant trail resources.

Environmental Assessment/Assessment of Effect Methods

This EA was prepared to evaluate potential environmental, socioeconomic, and cultural resource effects from three proposed alternative – the No Action Alternative (Alternative 1); Treatment Alternative 2 – Visitor Trail (Existing Alignment), which is the preferred alternative; and Treatment Alternative 3 - Visitor Trail (Visitor Boardwalk). Under the no action alternative, the monument would continue maintaining the existing condition of the Oregon Trail without modification. The EA was prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 and implementing regulations, 40 CFR Parts 1500-1508 and NPS Director's Order – 12 and Handbook, Conservation Planning, Environmental Impact Analysis, and Decision-making. The NEPA process (40 CFR 1500-1508) is being used to comply with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), and implementing regulations, 36 CFR Part 800. The EA will determine whether significant impacts would occur as a result of the proposed project and if

[3] This document builds upon the Cultural Landscape Inventory (CLI), General Management Plan (GMP), Long-Range Interpretive Plan, and Administrative History.

an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI) would be required.

h. Relationship to other Planning Projects

This LS/EA builds upon the numerous studies, investigations and documentation that have occurred since the establishment of Scotts Bluff National Monument. These include the 1998 General Management Plan for Scotts Bluff National Monument (GMP), 2008 Scotts Bluff National Monument Long-Range Interpretive Plan, and 1996 Scotts Bluff National Monument Cultural Landscape Inventory (CLI). The LS/EA also relies on NPS Management Policies 2006, which provides guidance for all management decisions, including those related to cultural resources.

During the development of the LS/EA several additional project possibilities were discussed that have the potential to impact historic resources. These potential projects are not funded at the time of this report and will require additional study and planning to determine their suitability.

Visitor Center Expansion

Any expansion of the Visitor Center shall be done to minimize impacts to emigrant trail resources and the historic landscape.

Interpretation from Vehicles

Opportunities may exist for interpreting the Oregon Trail ruts while travelling on county road Old Oregon Trail. The opportunities may include waysides or marking the portions of the road that pass over historic locations of the trail.

Wagon Reenactments

The potential of driving horse-pulled wagons along the emigrant trail route on a limited basis has discussed during the development of the LS. Additional study of this action should be undertaken prior to evaluating the impacts.

i. Scoping

Scoping is an early and open process to determine the breadth of issues and alternatives to be addressed in an EA. The staff of SCBL and resource professionals of the NPS Midwest Region conducted internal scoping. This interdisciplinary process defined the

purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the relationship of the proposed action to other planning efforts at SCBL.

The monument initiated public review and comment in November 2010 by presenting the treatment alternatives to interested individuals and neighbors of the monument in open house-format meeting. Comments on the proposed action will be solicited from public and private parties and will be documented in the LS/EA. The general public, federal and state agencies, and American Indian groups traditionally associated with the lands of SCBL also will have an opportunity to review and comment on the draft EA.

Several laws and directives, including the National Historic Preservation Act (16 United States Code [USC] 470 et seq.); National Environmental Policy Act; NPS Organic Act; NPS Management Policies 2006; DO-12: Conservation Planning, Environmental Impact Analysis, and Decision-making (2001); and DO–28: Cultural Resources Management Guideline require the consideration of impacts on cultural resources, either listed in or eligible to be listed in, the national register. The Nebraska State Historical Society — State Historic Preservation Office will be notified of the project to initiate consultation and request input on the proposed project.

j. Environmental Assessment Impact Topics

EA Impact Topics

An important part of the decision-making process is seeking to understand the consequences of making one decision rather than another. The EA identifies the anticipated impacts of possible actions on certain resources and on monument visitors and neighbors. Impacts are organized by topic, such as "vegetation" or "visitor safety." Impact topics serve to focus the environmental analysis and to ensure the relevance of impact evaluation. Table 1 discusses retained impact topics; the reasons for retaining the topic; and relevant laws, regulations, and policies.

255 **Table 1. Impact Topics Retained for Further Evaluation and Relevant Laws,**

256 **Regulations, and Policies**

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Soil	The EA alternatives may result in disturbance to soils.	NPS Management Policies 2006
Vegetation	Vegetation resources could be lost or disturbed by the treatment alternatives. The introduction or spread of invasive non-native species from ground disturbing activities during construction is possible.	NPS Organic Act; NPS Management Policies 2006; Resource Management Guidelines (NPS-77); Federal Noxious Weed Control Act; Executive Order 13112; Invasive Species (1999); Executive Order 11988; Executive Order 11990; Clean Water Act
Visitor Experience and Recreation Resources	The treatment alternatives could provide long-term benefits to the visitor experience.	NPS Management Policies 2006
Public Health, Safety, and Monument Operations	Visitor safety could benefit from the treatment alternatives. The alternatives could have varying effects on monument operations during construction of the treatment alternatives and due to on-going maintenance.	NPS Management Policies 2006: OMB Circular A-123; Federal 'Managers' Financial Integrity Act of 1982 (31 U.S.C. 3512(d)); Government Performance and Results Act of 1993 (GPRA)
Cultural Resources	The EA alternatives could affect the Oregon Trail, which is listed on the National Register of Historic Places. The entire monument is considered a cultural landscape, with the features associated with the Oregon Trail forming a separate component landscape. The monument includes archeological resources, some dating to about 9,000 years ago. In addition to prehistoric sites and artifacts, artifacts associated with users of the emigrant trail are also present. Changes to the cultural resources that could result from the EA alternatives could be of concern to visitors, the public, the state historic preservation officer, and NPS managers.	Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470); Advisory Council on Historic Preservation's implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800); DO/NPS-28: "Cultural Resources Management Guideline"; Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes (1996); NPS Management Policies 2006; Secretary of the Interior's Standards for the Treatment of Historic Properties; the National Environmental Policy Act.

Impact Topics Dismissed from Further Consideration

The following impact topics or issues were eliminated from the list of potential impacts because the effects would be negligible to minor.

Geologic and Paleontologic Resources

Scotts Bluff rises 4,659 ft above sea level and 800 ft above the North Platte River and is the prominent geologic feature at the monument.[4] Scotts Bluff served as an important landmark along the historic Oregon Trail. Scotts Bluff also is significant because geologic strata spanning the time period from 33 to 22 million years before present are exposed on its north face.[5] The steep elevation, ridges, and broad alluvial fans at the base of Scotts Bluff are composed of layers of sandstone, siltstone, volcanic ash, and limestone that record a history of wind and stream depositions as well as groundwater supersaturated with calcium carbonate (lime).

An area known as the "badlands" is located between the north base of Scotts Bluff and the North Platte River, where deeply incised arroyos support little or no vegetation (NPS 1998). The badlands area of the monument contains an important deposit of early mammal and reptile fossils in the Whitney and Orella Members of the Brule Formation from approximately 32 million years before present.[6]

Although Scotts Bluff National Monument contains important geologic and paleontologic resources, the project area itself does not contain outstanding geological formations, rock outcrops, or known paleontologic resources at shallow depths. Under the No Action Alternative, current management practices would continue and there would be no new ground-disturbing activities. The action alternatives, including the preferred alternative, would require shallow excavation that could encounter shallow rock strata. The area disturbed under the action alternatives would be negligible in when compared to the extent of similar areas in the monument. Any excavation of rock would have a negligible effect on geologic and paleontologic resources in the proposed project area; therefore, this topic was dismissed from consideration in this EA.

[4] NPS 1999
[5] Graham 2009
[6] Ibid.

Prime or Unique Farmland

In 1980, the Council of Environmental Quality (CEQ) directed federal agencies to assess the effects of their actions on farmland soils classified as prime or unique by the United States Department of Agriculture, Natural Resources Conservation Service. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; and specialty crops such as fruits, vegetables, and nuts. No prime or unique farmlands are associated with the project area; therefore, prime or unique farmland was dismissed as an impact topic in this EA.[7]

Air Quality and Climate Change

The 1963 Clean Air Act, as amended (42 U.S.C. 7401 et seq.), requires federal land managers to protect monument air quality, while the NPS Management Policies 2006 address the need to analyze air quality during monument planning. Scotts Bluff National Monument is classified as a Class II area under the Clean Air Act.[8] This air quality classification is designed to protect the majority of the country from air quality degradation.

Under the No Action Alternative, current management practices would continue and there would be no change in vehicle or equipment emissions or generation of dust during maintenance activities. Under the treatment alternatives, including the preferred alternative, earthwork and hauling material during construction would temporarily increase dust and vehicle emissions and would result in localized effects on air quality. Hydrocarbons, nitrogen oxide, and sulfur dioxide vehicle emissions would be rapidly dissipated; and visibility, deposition, and other air quality-related values are not expected to be appreciably impaired. These effects would be short-term, negligible, and adverse. Neither overall monument air quality nor regional air quality would be more than negligibly affected by the short-term increase in emissions. Under the treatment alternatives, some greenhouse gases, such as carbon dioxide, would be emitted from the use of construction equipment and trucks. These emissions would be negligible and would have a short term contribution to climate change. The treatment alternatives would not result in an increase in traffic or vehicle emissions. Because the alternatives would result in local short-term negligible adverse effects and the

[7] NRCS 2010
[8] NPS 2000

No Action Alternative would have no new effects, air quality and climate change were dismissed as impact topics in this EA.

Visual Resources

Under the two treatment alternatives, visual impacts would occur during construction of improvements to the trail from the presence of construction equipment, materials, and ground disturbances. The construction-related impacts under the improvement alternatives would be local, short-term, and negligible. Proposed improvements would primarily occur in the footprint of the existing trail and would not substantially change the visual character of the area. The No Action Alternative would have no new effect on visual resources. There would be short-term negligible adverse impact on the visual resources under the treatment alternatives; therefore, visual resources were dismissed as an impact topic in this EA.

Lightscape

In accordance with NPS Management Policies 2006, the NPS strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of human-caused light. SCBL strives to limit the use of artificial outdoor lighting to that which is necessary for building security and human safety. SCBL also strives to ensure that all outdoor lighting is shielded to the maximum extent possible to keep light on the intended subject and out of the night sky. No structures or outdoor lighting are proposed in the EA alternatives that would affect the lightscape; therefore, lightscape was dismissed as an impact topic in this EA.

Natural Soundscapes

NPS Management Policies 2006 and Director's Order 47: Soundscape Preservation and Noise Management recognize that natural soundscapes are a national monument resource and call for the NPS to preserve, to the greatest extent possible, the monument's natural soundscapes.[9] The policies and director's order further state that NPS staff will protect natural soundscapes from degradation due to noise (undesirable human-caused sound). Noise can adversely affect, directly and indirectly, the natural soundscape and other recreation area resources. It can also adversely affect the visitor experience. The treatment alternatives would result in a local short-term increase in noise during construction. Under the No Action Alternative, current management practices and visitor use would continue, so

[9] NPS 2000

there would be no new effect on soundscape. Because the treatment alternatives would result in short-term negligible adverse effects with no long-term effect and the No Action Alternative would have no new effect, soundscape was dismissed as an impact topic in this EA.

Floodplains

Executive Order 11988: Floodplain Management requires an examination of impacts to floodplains and potential risks involved in placing facilities within floodplains. NPS Management Policies 2006 and Director's Order 77-2: Floodplain Management provides guidelines for proposed actions in floodplains. No areas of flooding have been identified in the project area. The EA alternatives do not propose work activities or structures in a floodplain. Because there would be no impact to floodplains under any alternative, floodplains was dismissed as an impact topic in this EA.

Water Resources

The Clean Water Act and NPS Management Policies 2006 direct the NPS to protect monument waters and avoid pollution of monument waters by human activities. There are no free flowing streams in SCBL and there are no streams in the immediate project area.[10] Most of the ground disturbance associated with the treatment alternatives would be on the east side of Mitchell Pass. The areas of disturbance would be a minimum of about 1,600 feet from the nearest ephemeral stream channel. A stormwater pollution prevention plan and erosion and sediment control best management practices would be implemented during construction to prevent or minimize the potential for erosion and transport of sediments to streams. With the SWPPP in place, potential effects on water resources from the treatment alternatives would be short term, negligible, and adverse. In the long term, implementing the treatment alternatives would have a beneficial effect on water quality by reducing trail erosion. Under the No Action Alternative, current management practices and existing levels of erosion would continue; therefore the No Action Alternative would have no new effect on water resources. For these reasons, water resources were dismissed as an impact topic.

Wetlands

Executive Order (EO) 11990, NPS Management Policies 2006, and Director's Order – 77-1 direct that wetlands be protected, and that wetlands and wetland functions and values

[10] NPS 1998

be preserved. These orders and policies further direct that direct or indirect impacts to wetlands be avoided when practicable alternatives exist. The project area is covered by upland vegetation typical of the Great Plains. The National Wetland Inventory website does not show any mapped wetlands in the project area and field observations confirmed that there are no wetlands in the proposed area of disturbance.[11] Because there would be no impacts to wetlands from the EA alternatives, wetlands were dismissed as an impact topic in this EA.

Ethnographic Resources

Ethnographic resources are defined by the NPS as any "site, subsistence, or other significance in the cultural system of a group traditionally associated with it" (Director's Order 28). No specific issues related to ethnographic resources have been identified. Because it is unlikely that ethnographic resources would be affected by the EA alternatives, and because appropriate steps would be taken to protect any ethnographic resources that are inadvertently discovered, ethnographic resources was dismissed as an impact topic in this EA.

Museum Collections

Museum collections include historic artifacts, natural specimens, and archival and manuscript material. These collections may be threatened by fire, vandalism, natural disasters, and careless acts. The preservation of museum collections is an ongoing process of preventative conservation, supplemented by conservation treatment, when necessary. The primary goal is preservation of artifacts in the most stable condition possible to prevent damage and minimize deterioration. The proposed EA alternatives would not affect the museum objects of SCBL and there is no potential to add objects to the collection; therefore, museum collections were dismissed as an impact topic in this EA.

Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by the Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights. The order represents a duty to carry out the mandates of

[11] USFWS 2010

the federal law with respect to American Indian and Alaska Native tribes. None of the lands of SCBL are trust resources according to this definition; therefore, Indian trust resources were dismissed as an impact topic in this EA.

Wilderness

The Wilderness Act and NPS Management Policies 2006 require that all lands administered by the NPS be evaluated for their suitability for inclusion within the National Wilderness Preservation System.[12] There are no designated wilderness areas within monument boundaries. Because there would be no direct effects on wilderness resources and values, this impact topic was dismissed from further evaluation in this EA.

Wild and Scenic Rivers

No Wild and Scenic Rivers are designated within SCBL; therefore, this impact topic was dismissed in this EA.

Socioeconomics

The local economy and most businesses within the communities adjacent to SCBL are based on professional services, construction, tourism, and light industry. The treatment alternatives would improve the overall quality of the visitor experience, which could be a negligible benefit to the local economy. Under the No Action Alternative, current levels of economic activity would continue and it would have no new beneficial or adverse socioeconomic. No adverse socioeconomic effects were identified; therefore, this impact topic was dismissed from detailed discussion in the EA.

Environmental Justice

Executive Order 12898: General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the Environmental Protection Agency, environmental justice is the

> …fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and

[12] NPS 2000: Section 6.2.1

> policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

The goal of 'fair treatment' is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects, and identify alternatives that may mitigate these impacts. No actions in the EA alternatives would have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's "Draft Environmental Justice Guidance" (July 1996); therefore, this topic was dismissed from further consideration in this EA.

Wildlife

Information about wildlife resources is based on the monument's GMP (1998) and on Cox and Franklin's 1989 article "Terrestrial vertebrates of Scotts Bluff National Monument." The monument is one of the few places in the Panhandle region of Nebraska where wildlife is protected in a natural environment. More than 100 bird, 28 mammal, nine reptile, and six amphibian species have been identified within the monument. The project area is located within habitat for a number of these wildlife species. Under the action alternatives, construction activities would temporarily displace wildlife in and near the project area. Because of the large amount of similar habitat nearby, the displacement would have a negligible effect on wildlife. In addition to temporary displacement of wildlife, Alternative 3 would result in the permanent loss of at most 0.61 acre of vegetation that provides wildlife habitat, primarily for birds and small mammals. The loss of habitat would have a negligible adverse effect on wildlife because the lost habitat is a small fraction of similar habitat in the monument. Because the location of the proposed improvements are in the immediate vicinity of the existing trail, which is an area of high visitor use, and includes areas with no wildlife habitat (the existing trail), adverse impacts to wildlife are expected to be negligible. Under the No Action Alternative, current management practices would continue and there would be no loss of wildlife habitat; therefore, the No Action Alternative would have no new effect on wildlife. Adverse effects on wildlife under the No Action Alternative and Alternative 2 would be local, short-term, and negligible and adverse effects under Alternative

3 would be local, long-term, and negligible; therefore, wildlife was dismissed as an impact topic in this EA.

Special Status Species

Special status species include species listed as threatened or endangered under the Endangered Species Act (ESA), species protected other federal regulations, and other species considered sensitive by the monument and the state of Nebraska. Black-footed ferret (*Mustela nigripes*) and whooping crane (*Grus Americana*) are the two Federally-listed species with potential habitat in SCBL.[13] River otter (*Lutra Canadensis*) and swift fox (*Vulpes velox*) are the two state-listed species listed as having potential habitat in Scotts Bluff County.[14] Two other protected species previously observed in SCBL are bald eagle (*Haliaeetus leucocephalus*) and burrowing owl (*Athene cunicularia*). Both species are protected by the Migratory Bird Treaty Act (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755) and bald eagle is additionally protected by the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c). Whooping crane, river otter, and bald eagle are primarily associated with riverine and riparian habitats, which are not present in the project area. Large black-tailed prairie dog colonies are the primary habitat for burrowing owl; no prairie dog burrows are present in the project area. Although suitable habitat for swift fox may be present in other parts of Scotts Bluff County, the terrain of the monument is more broken and crossed by ravines than is preferred by the species. Swift fox has also never been observed in SCBL. Based on monument resource data and staff knowledge, there are no federally- or state-listed species or special status species known to be present in the project area that would be affected by the EA alternatives. Because no special status species would be adversely impacted by the EA alternatives, this topic was dismissed from consideration in this EA.

Solid Waste

Under the No Action Alternative, current management practices would continue and there would be no change in the type or amount of solid waste generated in the monument. The treatment alternatives would generate small quantities of solid wastes during construction. Solid waste could include miscellaneous trash, excess excavated soil, and scrap building materials such as crusher fines, wood, and packing material. The treatment

[13] USFWS 2007
[14] Nebraska Game and Parks Commission 2008

alternatives would be unlikely to generate waste meeting definitions of hazardous materials that would require disposal in special solid waste facilities. Because changes in solid waste management under the action alternatives would be short term and negligible, solid waste was dismissed from consideration in this EA.

Energy

Under the No Action Alternative, current management practices would continue and there would be no new uses of energy. The treatment alternatives would require expenditures of energy, including natural and depletable resources, during construction; however, the use would be short-term and would have negligible impacts to energy resources with no appreciable effect on energy availability or costs. Because impacts would be no greater than negligible, energy resources was dismissed as an impact topic in this EA.

Utilities

Generally speaking, some kinds of projects, especially those involving construction, may temporarily effect above and below-ground telephone, electrical, natural gas, water, and sewer lines and cables, potentially disrupting service to customers. None of the alternatives would affect utilities, and therefore utilities are eliminated from any additional analysis.

Chapter 2. Landscape History

a. Introduction

In the mid-1800s emigrants began travelling the Oregon Trail for over 2,000 miles from Missouri to the Oregon Territory along routes first established by Native Americans and fur traders. The first organized party of Oregon-bound emigrants travelled across the west in 1841, and soon was followed by thousands of pioneers headed west to settle new lands. By 1848 word of gold found in California dramatically increased the number of emigrants headed west along the route. The Oregon and California trails followed the same route until they reached Idaho, where the trail split with one heading toward Oregon and the other toward California.

The Oregon - California Trail, primarily referred to in this document as the Oregon Trail, is an important feature of the landscape of Scotts Bluff National Monument. The area between Scotts Bluff and South Bluff forms Mitchell Pass also known as "The Gap" during the days of the emigrant migration. "The initial route of the Oregon Trail that began in 1841 followed the south side of the North Platte River, until it approached the badlands area near Scotts Bluff. At that point, the travelers were forced to make a wide swing through Robidoux Pass, as the terrain through Mitchell Pass would not accommodate wagons. Beginning in 1850, unknown laborers excavated the most treacherous segments which allowed passage and significantly shortened the distance traveled by the overland emigrants." [1] The trail through Mitchell Pass eliminated approximately eight miles off the emigrant trail and became the major passageway to the West. Depending on terrain, emigrants travelled between three to 28 miles a day, so the trail through Mitchell Pass would have eliminated the better part of a day from their travels. [2] Emigrants reaching this landmark and successfully navigating through Mitchell Pass would have completed one-third of their journey to Oregon.

With the arrival of the first emigrants in Oregon and California came the demand for overland mail service. The Pony Express was established in 1860 and also traveled the same trail through Mitchell Pass in an effort to deliver mail from east to west coast in a timely

[1] NPS 1996
[2] *William Porter's Oregon Trail Diary 1848*

manner. The Pony Express was short lived and was replaced with the transcontinental telegraph line in 1861.

The largest voluntary mass migration in human history along the Oregon Trail ended in 1869 with the completion of the transcontinental railroad. The transcontinental railroad was known as the "Overland Route" and was built by the Central Pacific Railroad of California and Union Pacific Railroad.[3] The railroad connected Omaha, Nebraska and Sacramento, California. The risky journey that once took months could now be completed in a matter of days.

Evidence of activities occurring along the monument's stretch of the Oregon Trail becomes unclear after the opening of the transcontinental railroad. Some sections of the trail may have been used by freighters, cattle drives or a means for local traffic.[4] Other areas of the trail were obliterated due to agricultural activities and construction of the State Highway (now county road Old Oregon Trail).

Scotts Bluff National Monument was established in 1919 recognizing the significance of the Oregon-California Trail, Mitchell Pass and Scotts Bluff and encouraging preservation of the landscape and memories that defined the mass migration of the late 19th Century.

b. Periods of Development

Six periods of landscape change describe the physical evolution of the Oregon - California Trail as it relates to SCBL. The period of significance for the Oregon Trail within SCBL ranges from 1851 to 1869 and is listed below in italics. The periods of landscape change document the physical changes that modified the historic landscape of the Oregon/California Trail throughout its history.

- **Pre-Oregon Trail**
- **Oregon Trail (Robidoux Pass) Pre Mitchell Pass (1841-1850)**
- ***Oregon Trail - Mitchell Pass (1851-1869)***
- **Transition/Early Monument (1870-1932)**
- **Road Construction/Improvements (1933-1955)**
- **Modern Monument (1956-Present)**

[3] *The Transcontinental Railroad*
[4] Knudsen

The beginning and end of each period corresponds to, and documents, points of physical change of the emigrant trail adjacent to and within SCBL (physical change is the primary rationale in defining the beginning and end of each period for the purposes of this study). Major physical change includes modifications to the topography, the development of the emigrant trails, road construction and other site improvements.

Pre-Oregon Trail

The lands now included within Scotts Bluff National Monument have probably been used by people for at least 9,000 years. Archeological sites have been found on all landforms in the park with many found near the springs north of the Oregon Trail. Areas in the vicinity of the monument are recorded as being favorite bison hunting grounds of the Pawnee, Cheyenne, Sioux and Arapaho Indian tribes.

Oregon Trail (Robidoux Pass) Pre-Mitchell Pass (1841-1850)

The area within what is now known as SCBL was a physical barrier during the earlier days of the emigrant trail. The bluffs within SCBL were important natural landmarks that not only marked the direction of the emigrant trail but also signified the completion of the first one-third of the journey to Oregon. The trail initially swung south of the bluffs to avoid navigating through the many deep gullies, ravines and badlands. This first route known as "the Pass at Scotts Bluff" by the emigrants, (later known as Robidoux Pass) was used exclusively until the Mitchell Pass route was improved in 1851.

Oregon Trail Mitchell Pass (1851-1869)

In 1850 anonymous laborers physically altered the area known as Mitchell Pass by filling gullies and building earthen ramps into the side of ravines. This allowed wagons the opportunity to safely navigate "The Gap," now known as Mitchell Pass. This became the primary route in 1851 and cut approximately eight miles off the trail route. During 1852, the peak migration year, approximately 50,000 people passed through the area. The completion of the transcontinental railway in 1869 greatly reduced the number of emigrants using the Oregon Trail as cross country travel via railroad became available.

Transition/Early Monument (1870 – 1932)

Little is known about the area during this period of transition. It is believed that the Oregon Trail received little use during this period and limited changes occurred within the landscape other than natural weathering of the resources including soil erosion and vegetation encroachment. It is likely significant erosion may have occurred directly after the end of the migration due to the highly erosive soils and the initial lack of vegetation within the ruts.

After several efforts the area was finally designated a National Monument in 1919. Landscape development during this period focused on site improvements and trails associated with Scotts Bluff.

According to historic maps, in 1929 the Nebraska State Highway 92 (also known as Highway 86 and currently as the county road Old Oregon Trail) through the monument and over Mitchell Pass was still a country road. By 1930, the dirt road was part of the State Highway system and by 1931 the road was improved from dirt to gravel.[5] The road construction altered and obscured portions of the Oregon Trail.

Road Construction/ Improvements (1933-1955)

The beginning of this period focused on the Civil Conservation Corps (CCC) work that included the Summit Road to the top of Scotts Bluff, new trails, picnic grounds, and reclamation power lines. The Reclamation Power Line was installed and disturbed portions of the Oregon Trail. Realignment, grading, and seeding of Nebraska State Highway 92 also occurred. The initial construction and later re-alignment of the highway altered and obscured portions of the emigrant trail resources within SCBL. In 1953 the State Highway was realigned and straightened again. The initial construction and later re-alignment of the highway altered and obscured portions of the emigrant trail resources within SCBL. During this period, erosion and vegetation encroachment continued to occur, obscuring the emigrant trail resources.

[5] Lind 2010

Modern Monument (1956-Present)

Mission 66 was influential during the beginning of this period. Mission 66 improvements primarily focused on small structure and new building construction. Portions of the Oregon Trail from the Visitor Center to W.H. Jackson's Campsite were paved. A portion of the asphalt trail near the campsite altered the topography created by the emigrant trail. The emigrant trail continued to erode and vegetation encroachment continued. The monument seeded sections of the Oregon Trail in the area of Mitchell Pass where erosion was a maintenance issue with grasses. The State Highway was re-aligned at the Monument's west boundary c. 1989 to its current alignment. The highway was also resurfaced, turned over to the County and renamed county road Old Oregon Trail. The Reclamation Power line was also removed, and the Boy Scouts installed trail markers showing the approximate locations of the Oregon Trail.

c. Regional History

Geologic History

Scotts Bluff, like the adjoining Wildcat Hills and nearby Chimney Rock, Courthouse and Jail Rock, has been and continues to be weathered out of geologic deposits of alluvial origin that made up the ancient high plains of the region prior to regional uplifting. Wind and stream deposits of sand and mud, wind deposits of volcanic ash, and supersaturated groundwater rich in lime formed the layers of sandstone, siltstone, volcanic ash and limestone that now comprise Scotts Bluff's steep elevation, ridges, and the broad alluvial fans at its base. Once regional uplifting began, the high plains that existed at that time now began to gradually erode away, except at certain locations that were protected by a cap rock of hard limestone that was more resistant to erosion. This cap rock covers the tops of the bluffs in the area, slowing their rate of erosion relative to the unprotected surrounding (and eroded) countryside. Erosion is usually unseen by humans, as wind, rain, and snow slowly wash away grains and particles of sand, silt and ash. This process resulted in the area's unique geologic features, such as Scotts Bluff.[6]

[6] *Geologic Features* 2006

Native Americans

Native American tribes such as the Pawnee, Cheyenne, and Sioux inhabited western Nebraska until shortly before statehood in 1867.[7] A Trail Map, c1936 (Figure 2-4) denotes an "Old Indian Trail" in the Wild Cat Hills, indicating an earlier (and elevated) route through the region.

Manifest Destiny and the Oregon Trail

The story of the Oregon Trail lies within the broader context of "Manifest Destiny," referring to the territorial expansion of the United States from approximately 1800 to 1860. The Louisiana Purchase in 1804 and the War of 1812 laid the foundations for a national belief that the United States would eventually encompass all of North America, known as "continentalism." In 1818, the United States-Canada border was expanded as far west as the Rocky Mountains, and provided for the joint occupation of the region known as Oregon Country.

In 1843, Fort Bridger was established on the Green River (present day southwestern Wyoming). This was the first trading post designed specifically to re-supply migrants traveling the Oregon Trail, not for trading fur-trappers. Consequently, The Great Migration, a party of one thousand pioneers, headed west from Independence, Missouri, on the Oregon Trail guided by Dr. Marcus Whitman, who was returning to his mission on the Columbia River. They formed a train of more than one hundred wagons and had a herd of 5,000 cattle. The entire journey pioneers stayed close to a water source, beginning their travels along the south bank of the Platte before crossing north to Fort Laramie in Wyoming. There they followed the North Platte to the Sweetwater, which lead up into South Pass. Once through the pass, they crossed the Green River Valley to newly established Fort Bridger, then the pioneers turned north to Fort Hall on the Snake River, which lead them to Whitman's Mission. Once in Oregon, they struck out along the Columbia for the fertile lands of the Willamette Valley, the endpoint to a journey of 2,000 miles. After the mass exodus of 1843, the migration to Oregon became an annual event, with thousands more making the trek every year.[8]

[7] *Cultural Diversity* 2003
[8] *Events in the West 1840-1850* 2001

In 1846, the Oregon Treaty divided the jointly occupied "Oregon Country" on the 49th Parallel. More pioneers were motivated to emigrate, as there was now an official US territory. This boundary remains today as the border between the United States and Canada west of the Great Lakes.

Hiram Scott

Hiram Scott was born about 1805 in St. Charles County, Missouri, and was an employee of William Ashley's Rocky Mountain Fur Company. He is also described as unusually tall and muscular. In 1826, Hiram Scott is believed to have taken part in the first fur trader rendezvous held near the Great Salt Lake, and it has been assumed that he attended those held in 1827 and 1828.[9]

It is believed that Hiram Scott was returning to St. Louis from the 1828 rendezvous when he died near the bluff which now bears his name. Almost immediately after his death, the bluffs along the North Platte River came to be known as Scott's Bluffs.[10]

The story of what happened near Scott's Bluffs was told and retold. With each telling the story took on new perspectives. Some stories included dramatic attacks by Indian warriors while other suggest murder and foul play. Some stories include the noble theme of the doomed Scott insisting that his comrades leave him behind so they might save themselves from his fate[11].

Over the years, the geological features known as "Scott's Bluffs" have taken on their own individual names. They are now known as Dome Rock, Crown Rock, Sentinel Rock, Eagle Rock, and Saddle Rock. However, the largest and most prominent is known as Scotts Bluff, and still stands as a landmark for travelers.[12] Another feature named for Hiram Scott is Scotts Spring, located at the southern base of the bluff at an elevation of 4,150-feet. Scotts Spring, like Mud Springs (near Dalton, Nebraska), was an important water source for travelers through the region. Today, a plaque dedicated to Hiram Scott's memory is located along the North Overlook Trail on the summit of the bluff that bears his name.[13]

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[9] *Hiram Scott* 2006
[10] Ibid.,
[11] Ibid.,
[12] Ibid.,
[13] Ibid.

W. H. Jackson

William Henry Jackson was originally from New York and grew up painting and sketching. He learned the trade of photography before being called to service during the Civil War. Not long after the war ended, he decided to head west to Montana to seek his fortune.[14]

From Nebraska City, he took a job as a bullwhacker for a freight caravan headed west. Jackson began sketching the things he saw and the people he met. After passing through the Scotts Bluff region and forsaking his dream of striking it rich, Jackson left the freight train near South Pass in Wyoming and headed south for Salt Lake City and eventually California. His experiences in the West struck a chord in Jackson, and he began to realize that documenting the settling of the frontier might become his life's work.[15]

Jackson opened a photography studio in Omaha, Nebraska in 1869. He began photographing American Indians from the nearby Omaha reservation and the construction of the Union Pacific Railroad.[16]

These photographs came to the attention of Dr. Ferdinand Hayden, who was organizing an expedition that would explore the geologic wonders along the Yellowstone River. Hayden realized that a photographer would be useful in recording what they found. When offered the position, Jackson jumped at the opportunity.[17]

For the next several years, Jackson worked with Dr. Hayden for the United States Geological Survey. The Survey took him to such unique and unexplored places as Mesa Verde and Yosemite, which Jackson documented with thousands of photographs.[18]

Jackson's work for the U.S.G.S. ended in 1878. He continued to work in the West, opening a studio in Denver, Colorado, returning to portrait photography as well as documenting railroad construction to mining towns in the Rockies.[19]

At an age when most men have already retired, William Henry Jackson embarked on a new career. He chose to put down his camera and pick up a paintbrush at the age of 81. Jackson's eye for composition, coupled with the fact that he had experienced the

[14] *William Henry Jackson* 2006
[15] Ibid.,
[16] Ibid.,
[17] Ibid.,
[18] Ibid.,
[19] Ibid.,

transformation of the West firsthand gave added credibility to his work. Soon his paintings of western scenes were in demand for illustrating books and articles. Jackson completed approximately 100 paintings, mostly dealing with historic themes such as the Fur Trade, the California Gold Rush and the Oregon Trail. Jackson revisited many of the sites he depicted in his paintings so he could paint them as accurately as possible. For those scenes that predated his own lifetime, he sought out and interviewed surviving participants.[20] Jackson originally passed through the Scotts Bluff region with emigrants from 1866-1867 at the age of 23. He returned to the region to paint after retirement in the 1920s and 1930s. A marker at the W. H. Jackson campsite within Scotts Bluff National Monument exists today.

William Henry Jackson died on June 30, 1942 at the age of 99, and was laid to rest in Arlington National Cemetery. His long and active life paralleled the formative years in the life of the United States, and his many contributions as a soldier, bullwhacker, photographer, explorer, publisher, author, artist, and historian have left a lasting legacy.[21]

W. H. Jackson is best known as the first person to photograph the wonders of Yellowstone. His images adorned the parlors of millions of American households and aided in the effort to create the world's first national park.[22]

Robert Byington Mitchell

Robert B. Mitchell was born in 1823 in Mansfield, Ohio. He studied law in Mount Vernon, Ohio then established a practice in Mansfield before heading off to fight in Mexican-American War. After the war, he returned to his law practice and in 1855 began a political career when he was elected mayor of Mount Gilead, Ohio.[23]

The following year he moved to Kansas where he served in the territorial legislature from 1857 until 1858 and as treasurer of the territory from 1859 until 1861.[24]

When the Civil War erupted, Mitchell was commissioned Colonel of the 2nd Kansas Volunteer infantry. He was later called to service in Kentucky, Tennessee, and Washington D.C. During the latter part of the war, he commanded Districts in Nebraska and Kansas.[25]

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[20] *William Henry Jackson* 2006
[21] Ibid.,
[22] Ibid.
[23] *A Civil War Biography, Robert Byington Mitchell.*
[24] Ibid.,
[25] Ibid.

While in Nebraska, Mitchell ordered the establishment of Camp Shuman in 1864 to protect traffic along the Great Platte River Road between Julesburg and South Pass and also the nearby Scott's Bluff stage station. Later named Fort Mitchell in his honor, the post was abandoned after the Fort Laramie peace conference of 1867. The ground plan of Fort Mitchell consisted of a stockade with a sallyport, firing loopholes, and a sentinel tower. Today no trace of the Army fort remains; however, its location is known. The site is noted to the public by Nebraska Historical Society Marker 190 on State Highway 92 two miles west of present day, Scottsbluff, Nebraska. Mitchell Pass and the city of Mitchell, Nebraska, derive their names this military post.[26]

After serving in the military, Mitchell served as governor of the New Mexico Territory from 1866 to 1869 before moving to Washington D.C. He died in 1882 and was buried with full military honors in Arlington National Cemetery.[27]

[26] *Fort Mitchell, Nebraska* 2010
[27] *A Civil War Biography, Robert Byington Mitchell*

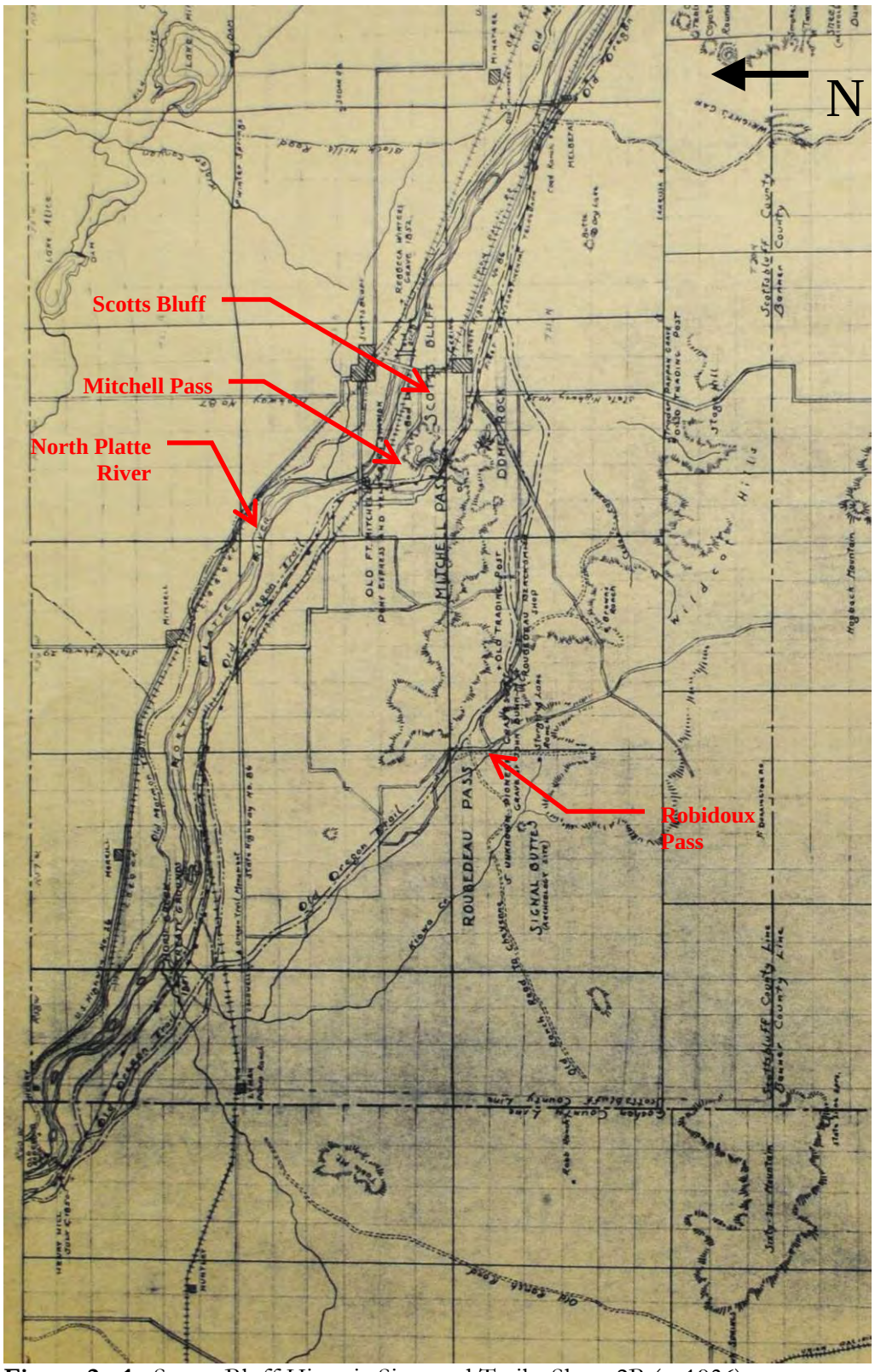

Figure 2 - 1. Scotts Bluff Historic Sites and Trails: Sheet 2B (c. 1936) (source: SCBL Archives) (DSC_0122.JPG)

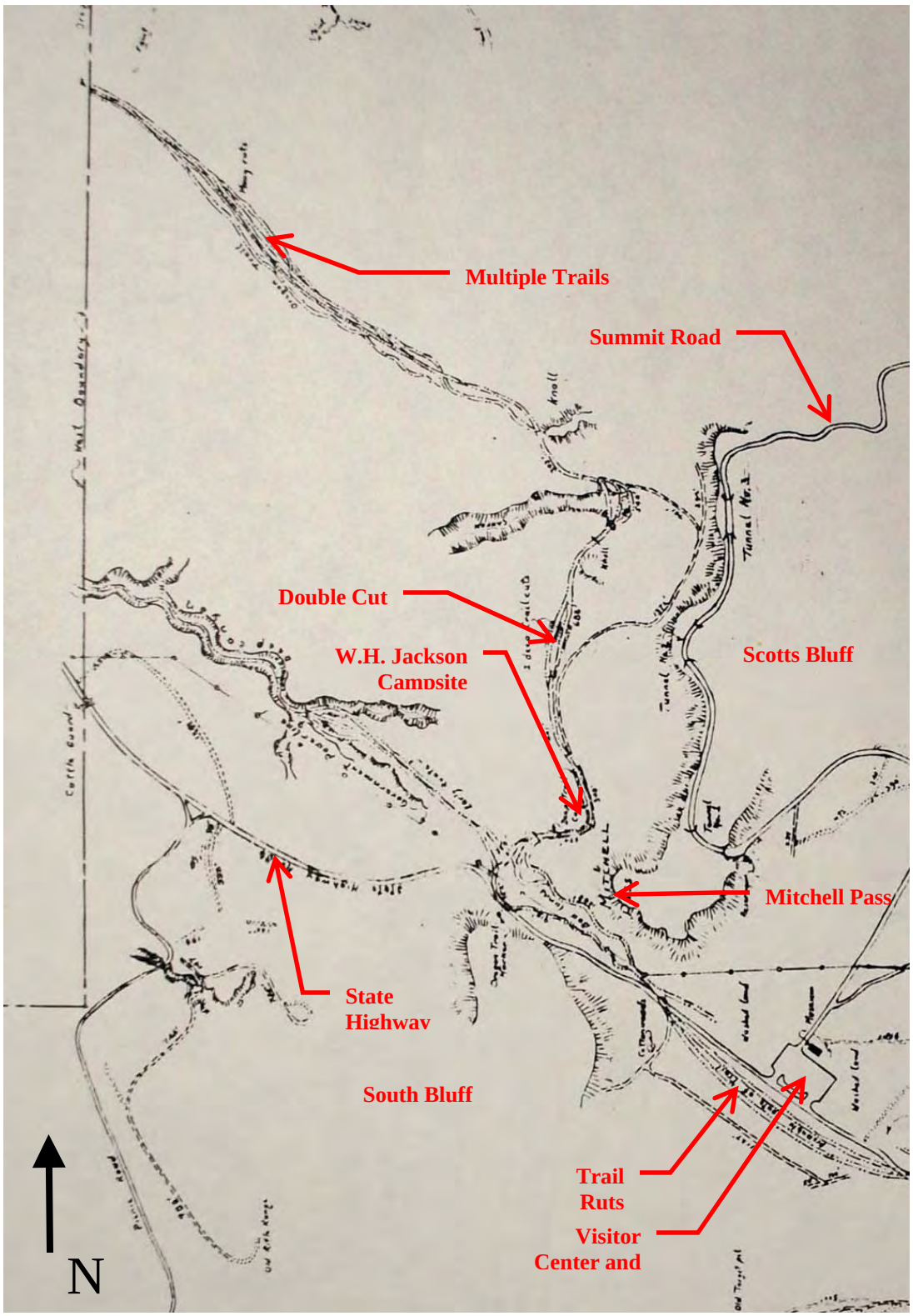

Figure 2 - 2. Oregon Trail and Road Obliteration Plan (zoomed in on Mitchell Pass) (c. 1936) (source: SCBL Archives) (DSC_0136.JPG)

Figure 2 - 3. Scotts Bluff National Monument (c. 1936) (source: SCBL Archives) (DSC_0120.JPG)

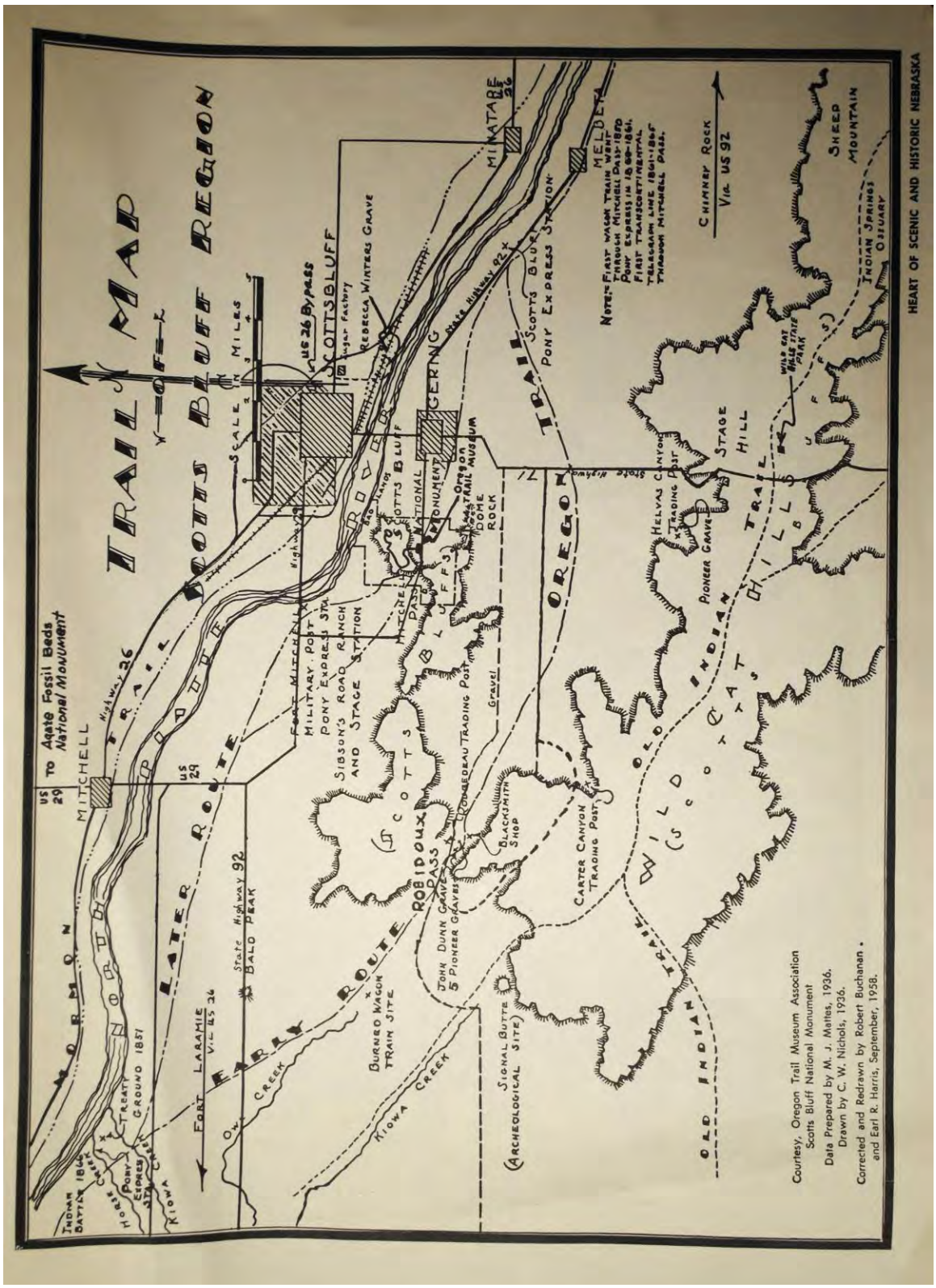

Figure 2 - 4. Trail Map Scotts Bluff Region (*showing Robidoux Pass "early route" and Mitchell Pass "later route"*)(c. 1936) (source: SCBL Archives) (DSC_0147.JPG)

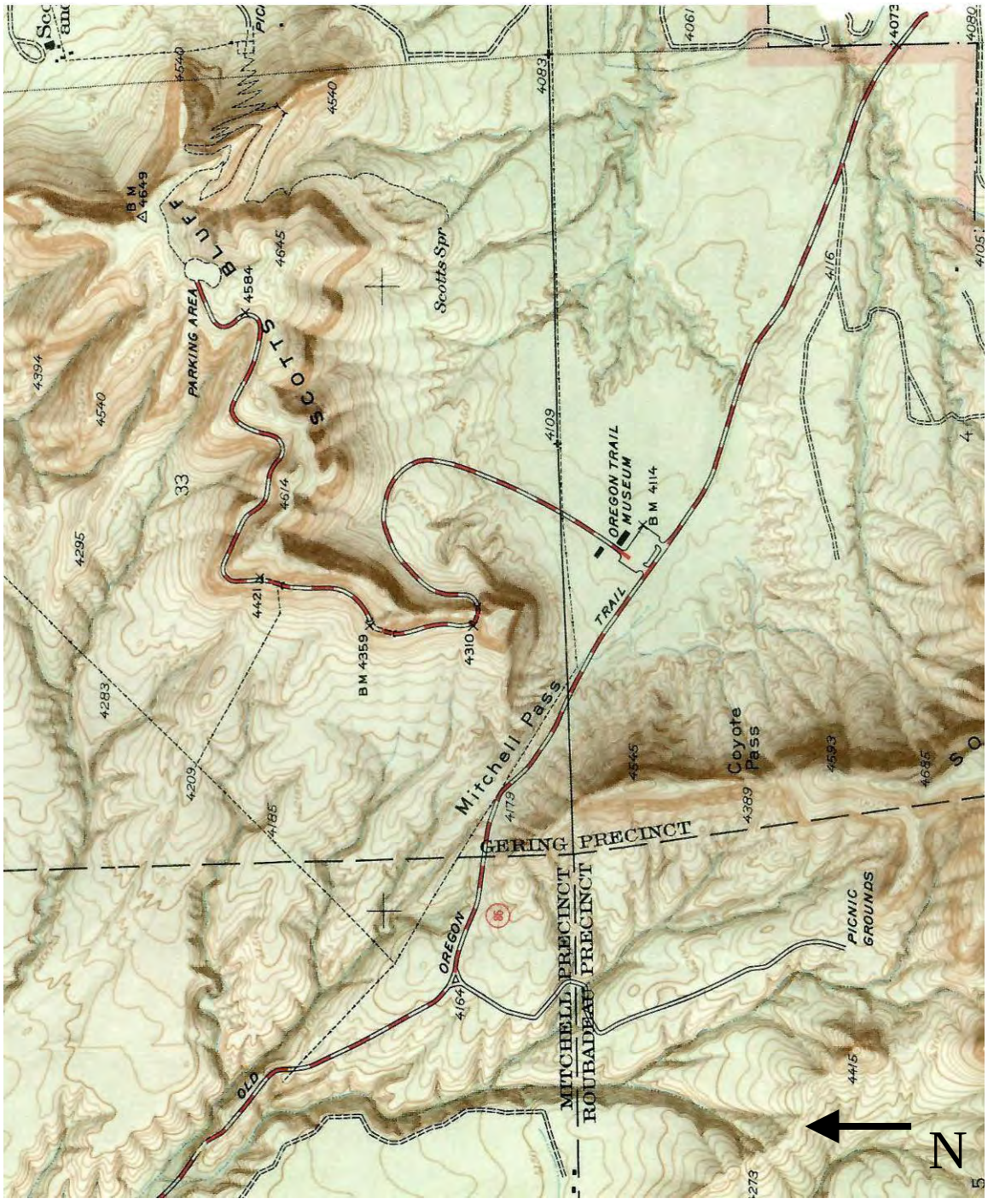

Figure 2 - 5. Scotts Bluff USGS Survey-showing original State Highway Alignment (c. 1936) (source: SCBL Archives) (DSC_0127.JPG)

Figure 2 - 6. Old Oregon Trail Illustration (c. 1948) (source: SCBL Archives) (DSC_0158.JPG)

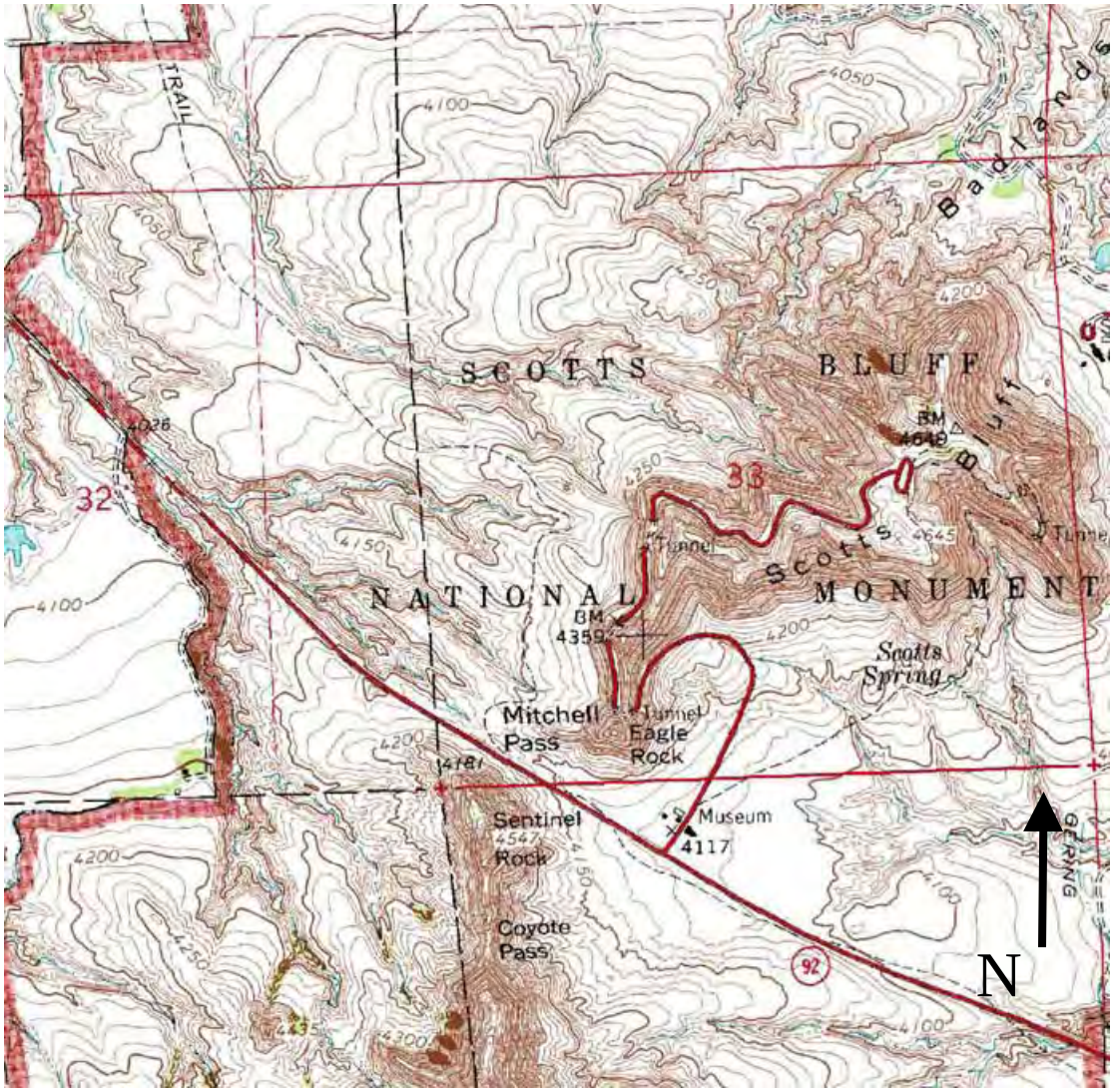

Figure 2 - 7. Scotts Bluff USGS Survey-shows current county road Old Oregon Trail alignment (c. 1981) (source: SCBL Archives) (DSC_0153.JPG)

Figure 2 - 8. W. H. Jackson watercolor depicting a wagon train through Mitchell Pass, looking east (painting c. 1930s) (source: SCBL Archives) (DSC_0197.JPG)

Figure 2 - 9. View from headquarters area, looking west towards Mitchell Pass, before building construction (c. 1935) (source: SCBL Archives) (DSC_0194.JPG)

Figure 2 - 10. Markers on Mitchell Pass with North Wall in background (c. 1935) (source: SCBL Archives) (DSC_0203.JPG)

Figure 2 - 11. Mitchell Pass markers (c. 1936) (source: SCBL Archives) (DSC_0199.JPG)

Figure 2 - 12. Oregon Trail, trough below 1st tunnel (c. 1936) (source: SCBL Archives) (DSC_0251.JPG)

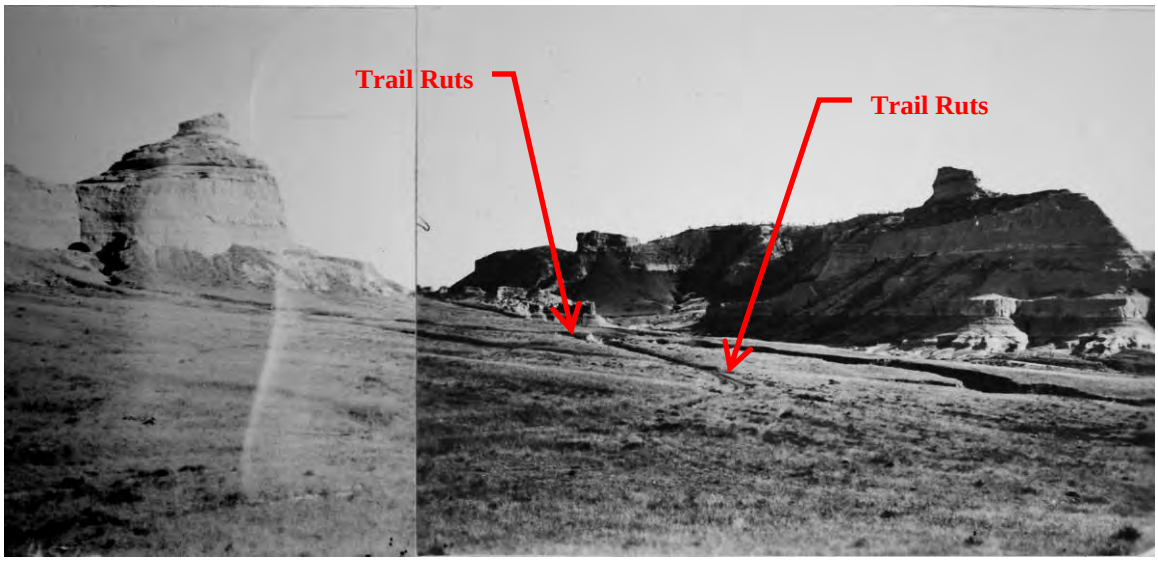

Figure 2 - 13. Panorama of trail on west side of Mitchell Pass (c. 1936) (source: SCBL Archives) (DSC_0254.JPG)

Figure 2 - 14. View from double cut, west towards Fort Mitchell (c. 1936) (source: SCBL Archives) (DSC_0253.JPG)

Figure 2 - 15. William H. Jackson campsite (c. 1938) (source: SCBL Archives) (DSC_0267.JPG)

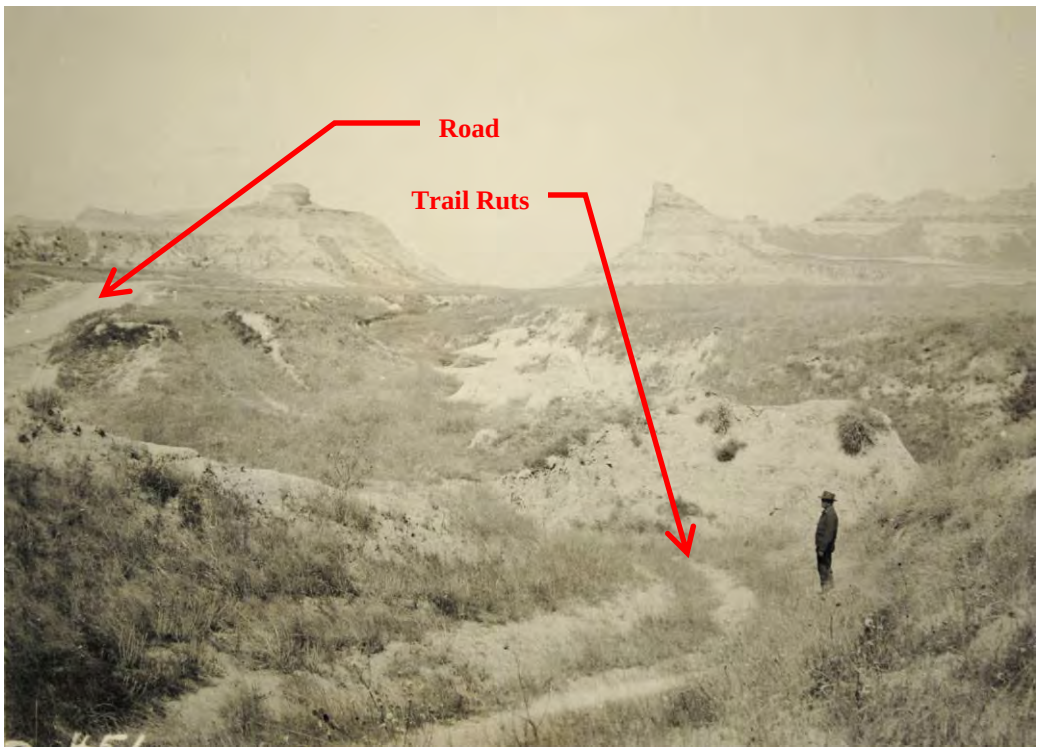

Figure 2 - 16. View to west toward Mitchell Pass from eastern portion of monument (c. 1939) (source: SCBL Archives) (DSC_0210.JPG)

Figure 2 - 17. View of Oregon Trail cut below 1st tunnel (c. 1939) (source: SCBL Archives) (DSC_0216.JPG)

Figure 2 - 18. Reclamation power line- view looking west through Mitchell Pass. Oregon Trail in foreground (c. 1939) (source: SCBL Archives) (DSC_0258.JPG)

Figure 2 - 19. View from Oregon Trail looking east below 1st tunnel (c. 1940) (source: SCBL Archives) (DSC_0223.JPG)

Figure 2 - 20. Mitchell Pass View to west, from top of Dome Rock (Trail ruts not visible in this photo) (c. 1940) (source: SCBL Archives) (DSC_0202.JPG)

Figure 2 - 21. View of Oregon Trail on east side of Mitchell Pass looking west (c. 1941) (source: SCBL Archives) (DSC_0220.JPG)

Figure 2 - 22. View from Oregon Trail near Mitchell Pass looking east (c. 1941) (source: SCBL Archives) (DSC_0221.JPG)

Figure 2 - 23. Boy Scouts on Oregon Trail (c. 1941) (source: SCBL Archives) (DSC_0228.JPG)

Figure 2 - 24. Oregon Trail visitors at double cut below 2nd tunnel, looking west (c. 1941) (source: SCBL Archives) (DSC_0225.JPG)

Figure 2 - 25. Oregon Trail visitors east of double cut looking west (c. 1941) (source: SCBL Archives) (DSC_0226.JPG)

Figure 2 - 26. View of Oregon Trail near Mitchell Pass, looking southwest (c. 1950) (source: SCBL Archives) (DSC_0274.JPG)

Figure 2 - 27. Reclamation power line with Oregon Trail Ruts (c. 1956) (source: SCBL Archives) (DSC_0256.JPG)

Figure 2 - 28. Conestoga Wagon on Oregon Trail near Mitchell Pass, looking east (c. 1961) (source: SCBL Archives) (DSC_0173.JPG)

Figure 2 - 29. Oregon Trail Ruts looking eastward with Dome Rock in distance (c. 1969) (source: SCBL Archives) (DSC_0241.JPG)

Figure 2 - 30. Erosion of Oregon Trail ruts, east of Mitchell Pass (c. 1970) (source: SCBL Archives) (DSC_0185.JPG)

Figure 2 - 31. Erosion of Oregon Trail ruts, east of Mitchell Pass (c. 1970) (source: SCBL Archives) (DSC_0185.JPG)

Figure 2 - 32. End of surface path and beginning of visible Oregon Trail ruts. Interpretive sign and rest bench on left. (c. 1970) (source: SCBL Archives) (DSC_0261.JPG)

Figure 2 - 33. View to east from Oregon Trail ruts, power line and Dome Rock and Monument headquarters in background (c. 1970) (source: SCBL Archives) (DSC_0263.JPG)

Figure 2 - 34. Sod planted in ruts to stop erosion (c. 1971) (source: SCBL Archives) (DSC_0270.JPG)

Figure 2 - 35. Erosion along trail (c. 1971) (source: SCBL Archives) (DSC_0283.JPG)

d. Historic Landscape Chronology

The chronology documents the evolution of the emigrant trail from the time the Oregon Trail was improved on Mitchell Pass to the present. The chronology builds upon that presented in the CLI.

Year	Event	Description
1851 AD	Moved	Path of Oregon Trail moved from Robidoux Pass to Mitchell Pass
1860 AD	Established	Inauguration of Pony Express through Mitchell Pass. Pony Express used Mitchell Pass from April 1860-October 1861.
1861 AD	Installed	Telegraph wires installed through Mitchell Pass
1862 AD	Established	Route of overland coach to California traveled through Mitchell Pass
1864-1867 AD	Established	Fort Mitchell – Military Post site on the North Platte River bend northwest of Scotts Bluff
1866 AD		W.H. Jackson camps at Mitchell Pass
1869 AD	Abandoned	Completion of the Transcontinental Railroad marked the end of the Oregon-California Trail as a major transcontinental transportation route
1912 AD	Installed	The first interpretive marker was placed in Mitchell Pass by the State of Nebraska.
1919 AD	Established	Scotts Bluff National Monument proclaimed by President Woodrow Wilson on December 12th
1929 AD	Constructed	State Highway 92 (also known as State Highway 86 and currently as the county road Old Oregon Trail) over Mitchell Pass constructed

Year	Event	Description
1933-1934 AD	Planted	Workers began seeding and planting at key points in the Monument to control erosion (may have affected the Oregon Trail)
1935 AD	Built	Oregon Trail Museum completed
1935 AD	Constructed	CCC constructed picnic grounds west and south of Mitchell Pass, built road from Oregon Trail Museum to camp, installed water system, fenced monument boundaries, and continued seeding and planting operations. (utilities crossed Oregon trail ruts)
1936 AD	Installed	The first interpretive marker was installed at W.H. Jackson's campsite.
1937-1940 AD	Constructed	CCC began realigning, grading and filling and seeding State Highway 86 (became Highway 92 in 1961) in Mitchell Pass area. Work was completed by Works Progress Administration.
1949-1956 AD	Planted	48,634 junipers and ponderosa pine were planted throughout the monument under the Soil and Moisture Conservation Program.
1953 AD	Constructed	Original State Highway 86 (county road Old Oregon Trail) was realigned through Mitchell Pass.
1955 AD	Constructed	State Highway 86 (county road Old Oregon Trail) was paved from the east monument boundary to Gering
1958 AD	Constructed	Portions of the Oregon Trail were paved from the Visitor Center to the W.H. Jackson Campsite.
1959 AD	Installed	The original sign marking W.H. Jackson's Campsite was removed and replaced with a new sign.
1966 AD	Established	Scotts Bluff National Monument was included on the National Register of Historic Places on October 15, 1966.

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Year	Event	Description
1967 AD	Constructed	A new foot trail opened that runs for ½ mile from the visitor center to the W.H. Jackson Campsite.
1978 AD	Established	Congress designates the Oregon Trail a National Historic Trail
1983 AD	Constructed	Overhead utility lines that served the Visitor Center from the east were removed and replaced underground
2007	Constructed	The "Old Oregon Trail" highway through Scotts Bluff National Monument was resurfaced and turned over to the County
Date Unknown	Installed	Boy Scouts install markers marking trail

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Chapter 3. Existing Conditions/Affected Environment/ Landscape Analysis

a. Existing Conditions Introduction

The historic landscape related to the Oregon Trail ruts at Scotts Bluff National Monument contains historic resources related to the Oregon Trail, California Trail, and Pony Express. These are also referred to as emigrant trail resources in this section.

A site survey and field work was undertaken in November 2009, to better understand the emigrant trail resources within the monument. The resources include emigrant trail ruts, natural vegetation, and other landscape and small scale features related to the trail. Visible trail rut resources were located and documented based on historic mapping, review of historic photographs, conversations with SCBL staff and field observations. Trail ruts within the monument range from buried non-visible trail ruts to defined, two-track trail ruts, to wider corridors or 'troughs'. These findings are organized and presented in this study by landscape character areas. Photographs are presented sequentially and are identified by figure numbers. Detailed plans of existing conditions and associated character area descriptions are located at the end of the chapter.

b. Environmental Context and Natural Systems/Affected Environment

This section provides an overview of the environmental context within which the monument is located and the natural systems in the monument. This section also describes resources potentially affected by the alternatives. It is organized by impact topics that were derived from internal monument and external public scoping. More information on the scope and detail of all resources in SCBL may be found in the GMP (1998).

Environmental Context and Natural Systems

The monument consists of about 3,003 acres of prairie and bluff habitat within the western Great Plains in an area that was once almost continuous mixed and short grass prairie and that is now primarily farm and ranch land. The monument includes two large, cliff-rimmed bluffs, Scotts Bluff and South Bluff. Most of the land within the monument boundary is native mixed-grass prairie with non-native species present in some previously disturbed areas. There is also an area of mostly barren badlands between the base of Scotts

Bluff and the North Platte River. The monument, particularly in the badlands, also contains significant fossil deposits within its geological strata. The climate at the monument is characterized by cold winters and hot summers with large variations in weather conditions from day to day.

The region's landscape and that of the monument are very different than they were 150 years ago. A large portion of the prairie vegetation has been disturbed, now resembling a "patch work" pattern of multiple disturbance events of various levels of intensity, size, and recovery. Many of the natural processes that helped shape the landscape, such as grazing by bison and other native fauna, and naturally ignited fires, are now gone or strictly controlled. Climatic influences and erosion still take place, but in some places the natural erosion rate may be accelerated by human-caused impacts.

Soils

The general soil associations in the monument are Tassel-Anselmo-Rock outcrop (sandy soils and outcrops of rock on uplands), Mitchell-Keith-Epping association (loamy and sandy soils on uplands), and Mitchell-Otero-Buffington association (deep, silty, sandy, and clayey soils on valley floors).[1] Along the Oregon Trail in the project area, soil map units include Valent and Dwyer loamy fine sands, rolling; Mitchell silt loam, 6 to 9 percent slopes; Jayem fine sandy loam, 6 to 9 percent slopes; and rock outcrop-Epping complex.[2] These soils have rapid permeability, low water capacity, and are highly erodible.

The greatest potential threat to soils is erosion. Erosion occurs as wind, rain, and snow slowly wash away grains and particles of sand, silt and ash. The erosion potential is highest during and after precipitation events. Annual precipitation is approximately 14.5 inches, most of which falls during the spring and summer, usually with thunderstorms. June receives the highest average precipitation during the year. Ongoing erosion has affected the Oregon Trail, particularly Character Area A where the steep sections of the Oregon Trail coincide with the visitor trail, foot traffic and steep slopes exacerbate soil erosion.

[1] NRCS 1968
[2] NRCS 2010

Vegetation

Information on vegetation resources is based on the Scotts Bluff National Monument General Management Plan (1998) and the Scotts Bluff National Monument Fire Management Plan Environmental Assessment (2000). Four hundred fifty-two species, subspecies, and varieties of vascular plants have been identified at the monument. The vegetation is divided into three major plant associations: mixed-grass prairie, coniferous forest, and riparian woodland.

Mixed-grass prairie covers about 87 percent of the monument and is the predominant plant community in the relatively flat prairie and grassy slopes surrounding the bluffs. The mixed-grass prairie is dominated by blackroot sedge (*Carex filifolia* var. Nutt.) and needle-and thread grass (*Stipa comata*). Other native grasses common in this community include western wheatgrass (*Agropyron smithii*), blue grama (*Bouteloua gracilis*), prairie sandreed (*Calamovilfa longifolia*), and sideoats grama (*Bouteloua curtipendula*).

Coniferous forests dominated by ponderosa pine (*Pinus ponderosa*), Rocky Mountain juniper (*Juniperus scopulorum*), and eastern red cedar (*Juniperus virginiana*) cover about 10 percent of the monument and can be found on the summits of bluffs, on slopes, and in sheltered ravines. The forest communities have been altered in the monument because ponderosa pine, rocky mountain juniper, and eastern red cedar were variously planted in the monument to stabilize soils from the 1930s to 1951. Limited planting of ponderosa pine is known to have occurred as late as 1971. Eastern red cedars were planted in the ravines to reduce soil erosion and have become self-propagating. Ponderosa pine, with a mixture of rocky mountain juniper, is the most abundant tree species on the summits. Eastern red cedar is more commonly found in the ravines and draws of the prairie. The most abundant grass species in the understory are little bluestem (*Schizachyrium scoparium*), needle-and-thread, blue grama, and side oats grama. Western snowberry (*Symphoricarpos occidentalis*), skunkbush sumac (*Rhus trilobata*), and various sedges occur in the ravines and draws.

Riparian woodland covers about three percent of the total acreage of the monument and is found along the North Platte River floodplain on the monument's northern boundary. This plant community contains cottonwood (*Populus deltoides*), box elder (*Acer negundo*), green ash (*Fraxinus velutina*), and Siberian elm (*Ulmus pumila*). Poison ivy (*Toxicodendron rydbergii*) and shrubs are common in the understory.

Non-native vegetation, including state-designated noxious weeds, has invaded an estimated 1,500 acres within the monument. Non-native vegetation occurs primarily in the damp ravines and in the floodplain.[3] Canada thistle (*Cirsium arvense*) and musk thistle (*Carduus nutans*) are state of Nebraska designated noxious weeds that occur at the monument and are considered the highest priority for control. Canada thistle occurs along the irrigation canals and both species occur along the bottoms of ravines and in riparian zones neat the North Platte River. More than 100 species of exotic plants, though not state-designated as noxious weeds, infest large areas of native prairie in varying concentrations. These include smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), kochia (*Kochia scoparia*), white sweet clover (*Melilotus alba*), yellow sweet clover (*Melilotus officinalis*), and Russian thistle (*Salsola iberica*).[4] In general, these exotic plants have degraded native plant communities in the monument.

Visitor Experience and Recreation Resources

Visitors to the monument are able to experience a significant representation of the westward expansion era as it relates to the historic trails, Pony Express, and first transcontinental telegraph. Visitors can walk in the Oregon Trail through Mitchell Pass just as emigrants did over 150 years ago. Additional trails are open to hikers and bicyclists to enjoy and experience the monument's mixed-grass prairie and summits. For those visitors who hike or drive to the summit of the 800-foot high Scotts Bluff, a significant part of their experience is the panoramic view from the summit.[5]

Scotts Bluff National Monument is often a brief stop on the vacation route of visitors who are often on their way to other destination areas such as Yellowstone National Park or the Black Hills of South Dakota. For other visitors, the monument is their destination. Most visitors spend time in the monument's museum and visitor center and travel to the summit of the bluff. Visitor use is highest from June through August, with the greatest number of visitors staying for a few hours. On average, the monument has 120,000 visitors per year.[6]

[3] NPS 2005
[4] Ibid.
[5] NPS 1998
[6] NPS 2000

Visitor experiences associated with each character area in the study area are described in the section on Landscape Character Areas- Existing Conditions and Assessment (Section 3.e).

Public Health, Safety, and Monument Operations

The NPS seeks to provide a safe and healthful environment for visitors and employees.[7] To that end, the NPS works to prevent "visitor injuries while preserving natural and cultural resources and providing an enjoyable experience consistent with the conservation of those resources" (DO-50C). Although there is a focus on visitor safety, the NPS recognizes that "(s)ome forms of visitor safeguards typically found in other public venues—such as fences, railings, and paved walking surfaces—may not be appropriate or practicable in a national park setting." [8] This analysis includes the visitor trail from the visitor center to the W. H. Jackson site, including a reach that coincides with the emigrant trail remnants.

Currently, an asphalt trail with wood edging (Figure 3 -14) extends from the Visitor Center to an interpretive wayside. From the wayside, the visitor trail coincides with the compacted earthen surface of the emigrant trail ruts as the trail climbs up Mitchell Pass. Toward the top of the pass, the visitor trail diverges from the emigrant trail rut and continues as a chip-sealed path to the W. H. Jackson site. When wet, the earthen surface of the trail becomes slick and muddy, creating an unsafe surface for visitors. The earthen surface is also uneven because of erosion and foot traffic. The steep portions of the trail are difficult for some visitors to negotiate safely. Despite the varying conditions of the trail, serious visitor injuries are uncommon.

For the purposes of this EA, monument operations refers to the quality and effectiveness of the infrastructure, and the ability of monument staff to maintain the infrastructure used in the operation of the monument to protect and preserve vital resources and provide for a high quality visitor experience. The resource addressed in the analysis is the reach of visitor trail in Character Area A, including the segment of emigrant trail that coincides with the visitor trail. Currently, maintenance of the visitor trail is limited to occasionally filling patches of eroded areas and removing sediment from the asphalt portions of the visitor trail.

[7] NPS 2006
[8] Ibid., Section 8.2.5.1

Cultural Resources

Section 106 of the NHPA of 1966, as amended (16 U.S.C. 470, et seq.) and its implementing regulations under 36 CFR 800 require all federal agencies to consider effects of federal actions on cultural properties eligible for or listed in the NRHP. In order for a site to be listed in the NRHP, it must be associated with an important historic event, person(s), or that embodies distinctive characteristics or qualities of workmanship. Several resource studies and inventories have identified historic or prehistoric archeological, structural, and landscape resources in SCBL.

The SCBL cultural landscape is a mix of archeological remains; natural landmarks and ecological systems modified by Native American and Euro-American people of the past; and historic buildings and infrastructure associated with the area's management and use as a national monument, including the monument headquarters, the Summit Road and trails, the irrigation systems and railroad grade; and the Civilian Conservation Corps (CCC) infrastructure remains. All these integrate into a set of resources and views of those resources that have integrity and spatial organization, and by law are to be conserved without impairment.

The lands now included within SCBL have probably been used by people for at least 9,000 years, since there is evidence of human use to that date at sites such as the Scottsbluff Bison Quarry and Signal Butte site 15 miles west of Scotts Bluff, and at the Ash Hollow State Historical Park and Clary Ranch sites, which are about 90 miles southeast of the monument. The known archeological record at SCBL is based on monument-wide archeological survey of the monument that identified 56 archeological sites, 49 of which were classified as prehistoric.[9] At least one artifact described in the survey is probably about 10,000 years old. Most of the investigated archeological sites in the monument date between AD 600 and AD 1450. Although sites are present throughout the monument, many are close to springs. It is likely other sites are present, possibly under deep deposits of wind-blown soils.

Several known archeological sites are located in the project area, including two prehistoric sites, and undetected artifacts may be present on or below the ground surface. Throughout the monument, archeological sites are adversely affected by soil erosion, which

[9] NPS 1994

exposes the artifacts to damage from the elements. In addition to exposing artifacts to damage, erosion can compromise the historic integrity of archeological resources by changing the context in which they are found. Archeological resources in the emigrant trail corridor are subject to exposure in eroded ruts.

Scotts Bluff National Monument was listed on the National Register of Historic Places in 1966. In addition to the monument itself, eighteen structures in the monument are eligible for listing on the National Register of Historic Places. Eligible structures include the emigrant trail and roads, trails, and buildings associated with 1930s Civilian Works Administration (CWA) and Civilian Conservation Corps (CCC) construction projects. The emigrant trail remnants, already listed as a historic structure, have also been determined to be a component landscape that is individually eligible. The emigrant trail remnants are described in a subsequent section of this chapter (Section 3.e).

c. Landscape Analysis Methodology

The landscape analysis of the Oregon Trail emigrant trail resources first identified the known area or corridor of the emigrant trail resources and then examined that study area as a component landscape that is part of the larger cultural landscape of the monument. The analysis identifies and evaluates the all of the landscape characteristics that retain integrity and contribute to the Oregon Trail ruts historic landscape. The analysis compares the site history of the resources with their existing condition.

The primary landscape characteristics associated with the Oregon Trail are:

- Topography – includes bluffs, cliffs, slopes and drainages and how they relate to other site features.
- Views – includes views of the bluffs and views of the emigrant trail are important components of the historic landscape.
- Vegetation – includes indigenous vegetation, primarily shrubs and grasses that affect erosion potential and trail rut resources.
- Small-Scale Features (trail ruts, visitor trails, site furnishings) - elements that provide detail and diversity combined with function and aesthetics. Most important to the monument landscape are the emigrant trail resources, visitor trails and amenities.

Each landscape characteristic is evaluated to determine the features (as noted above) that contribute to the significance of the historic landscape and those that do not. Contributing features are physical attributes that contribute to the significance of the historic landscape. A feature is considered contributing if all of the following are true: it was present during the period of significance; it relates to the documented significance of the property; it possesses historic integrity; and is capable of revealing information about the period. Non-contributing features are those that were not present during the period of significance, do not relate to the significance of the landscape, or no longer possess historic integrity.

Compatible features are those that do not detract from the historic character of the landscape, and are of similar materials and scale to contributing features from the period of significance. Non-compatible features are visually incongruous with the historic landscape, and conflict with the mass, scale, form, materials, texture or color of contributing historic features.[10]

The condition of the Monument's historic landscape features have been evaluated using the standard CLR evaluation criteria with the exception of the trail ruts which were evaluated using the criteria described under, d. Trail Resources Classification.

The following criteria were used to evaluate the condition of landscape features:

GOOD – These features of the landscape that do not require intervention; only minor or routine maintenance is needed at this time.

FAIR – Some deterioration, decline, or damage is noticeable; the feature may require immediate intervention; if intervention is deferred, the feature will require extensive attention in a few years.

POOR – Deterioration, decline, or damage is serious; the feature is seriously deteriorated or damaged, or presents a hazardous condition; due to the level of deterioration, damage, or danger the feature requires extensive and immediate attention.

Much of the research for this study drew upon source materials available at the archives of Scotts Bluff National Monument and from the Technical Information Center (TIC) of the National Park Service's Denver Service Center. Primary resources included on site investigations, and review and study of historic drawings and photographs. Additional

[10] US Dept of the Interior, NPS 1997: 84

studies and published works were also consulted. A complete listing is located in the bibliography.

d. Trail Resources Classification

Trail Resources

The emigrant trail resources within the monument were evaluated using the 1993 classification system and manual developed by the Oregon-California Trails Association titled Mapping Emigrant Trails (MET). The system is used to describe and classify trail rut resources based on historic use, existing condition and documentation; and is widely accepted as the means for evaluating and documenting the Oregon-California Trail. For the LS this system was adapted and used to describe, differentiate and classify the various sections of the trail within the monument into categories that describe the appearance and general condition of the trail. The trail rut resources were then evaluated as a feature under a traditional historic landscape methodology. A secondary objective of using the MET system for analysis was to use a methodology for documenting emigrant trails within the monument that can be integrated with the documentation of other sections of the Oregon-California Trail outside the monument. The following is a table that was utilized to classify the emigrant trail.

253 **Emigrant Trail Classification Category Table – Derived from the MET Manual**

Classification	Definition	Description
Class 1 Unaltered Original Trail	The original trail and its immediate natural environment remain unaltered and used.	The trail route remains representative of its original condition, not having been significantly altered by contemporary improvements or actions. There is clear physical evidence of the original trail in the form of depressions, ruts, swales, cuts or tracks. Some of the resource may be eroded, vegetated and/or visible only intermittently.
Class 2 Used Original Trail	The original trail is or has been used or altered by contemporary actions but retains its original character and immediate natural environment.	The trail route retains its original location and character although altered. The trail has not been bladed, graded, crowned, or otherwise improved and typically remains as a two-track road in the original location. Some of the resource may be eroded, vegetated and/or visible only intermittently.
Class 3 Verified Original Trail	The original trail is no longer extant but its location has been verified and its immediate natural environment remains intact.	The trail route is accurately located and documented from written, cartographic, artifact, wagon rust, and/or topographic evidence, but due to subsequent natural forces the remains of the trail are non-extant. What does remain is a trail corridor with no visible development scars.
Class 4 Impacted Original Trail	The original trail and its immediate natural environment are impacted permanently but the location of the trail is accurately known.	The trail route is located and verified accurately but the trail itself is non-extant. The resource has been degraded and has lost original physical and environmental integrity due to the impact of development or contemporary actions.
Class 5 Approximate Original Trail	The original trail is not visible or is non-extant. The location of the trail is not accurately known.	The trail route is not apparent. The route has either been obliterated, or is potentially intact but not visible (e.g. under a contemporary road). Only an approximate route is known.

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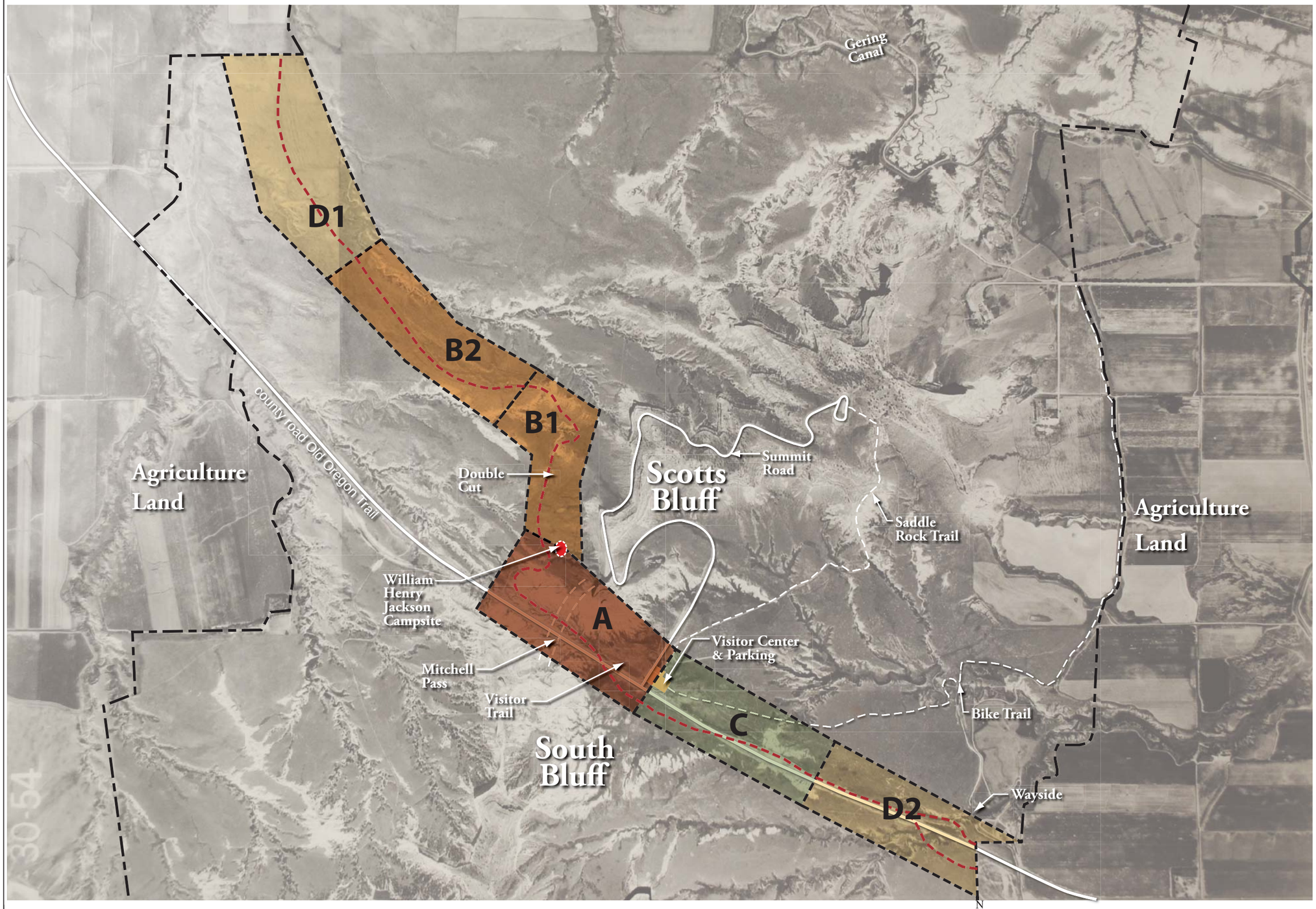
e. Landscape Character Areas - Existing Condition Assessment and Landscape Analysis

The existing condition assessment and landscape analysis are presented in this section. This section describes the characteristics of the emigrant trail resources including topography, views and vistas, small-scale features and vegetation that contribute to the significance of the Oregon Trail.

The first portion of the description for each landscape characteristic pertains to existing conditions and the latter to landscape analysis. This landscape analysis compares the landscape history with its existing condition to identify and evaluate those characteristics that retain integrity and contribute to the significance of the emigrant trail resource. Small scale features are organized into tables that describe their existing condition and evaluate if they are a contributing landscape feature.

The trail resources within SCBL are primarily confined to an hourglass shaped corridor. The trail resources are most narrowly confined and concentrated at Mitchell Pass in the center of the corridor, constricting from the east and then branching out into multiple trails on the western side of the pass. As the trail moves away from the Pass and steep topography, the ruts branch out creating a series of braided relatively undefined trails on the western side of the pass.

The emigrant trail resources at Scotts Bluff National Monument are organized into six landscape character areas. The following character areas (Figure 3-1) have been identified for the Oregon Trail ruts landscape at Scotts Bluff National Monument.



Legend

- A — Character Area A
- B — Character Area B1/B2
- C — Character Area C
- D — Character Area D1/D2
- Monument Boundary
- National Park Service Boundary
- Oregon/ California Trail and Pony Express Resources

N
W E
S

0 1,150' 2,300'

FIGURE 3 - 1

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT

DRAWING TITLE
CHARACTER AREA MAP

NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

Character Area A

Character Area A is the primary area of visitor use related to the emigrant trail and includes Mitchell Pass and the areas immediately east and west of the pass. Area A contains visible emigrant trail resources, visitor trails and amenities. This area has highly erosive soils and is one of the steepest portions of the emigrant trail through the monument.

Existing Condition

- A large portion of the visitor trail in Character Area A is located on the emigrant trail rut resources – see analysis for evaluation of the trail rut resource.
- A large portion of the emigrant trail ruts in Character Area A are along the steep approach to Mitchell Pass from the east side. The resources in this area are 'trough like' rather than individual ruts. These are areas of concentrated storm water runoff and high erosion potential.
- An asphalt visitor trail with wood edge provides access from the Visitor Center to the Oregon Trail ruts. This trail section is not located on the alignment of the historic emigrant trail.
- An asphalt/chip seal visitor trail extends from the W.H. Jackson campsite to the west end of the 'trough like' ruts.
- The location of William Henry Jackson's 1866 campsite is marked with an interpretive sign and bench and is located at the end of the asphalt/chip seal trail.
- The area has a variety of contemporary elements in place such as interpretive panels and drainage improvements. For condition and contributing rationale refer to Table 1.

Analysis

Trail Rut Resource

- Approximately 25% of the trail in this area is a Class 5 (approximate original trail) due to the construction impact of the various phases of the county road Old Oregon Trail. The exact location of the trail is unknown - no trail resources are visible as the trail ruts were covered by the road or fill material for the road. It is unknown whether extant resources lie beneath the road. The Class 5 sections of the trail are non-contributing due to the trail not being visible. The original trail alignment has been lost.

- Approximately 50% of the emigrant trail in Character Area A that is located between the two sections of the paved visitor trail is a Class 4 (altered and impacted) resource. The ruts have been altered by erosion, sediment deposition and visitor use. The Class 4 section of the trail is close to the original alignment and the trail is a contributing feature.
    - The soils are highly erosive, leading to significant erosion along sections of the trail. Erosion occurs primarily in large storm events.
    - This portion of the trail is said to have been excavated to allow crossing of Mitchell Pass. Sections of the emigrant trail in this area are straight and steep. The combination of trail alignment, natural topography, erosive soils and visitor use contributes to erosion and runoff issues.
    - Drainage ditches and culverts have been constructed to control runoff and damage to the resources with limited success.
- Approximately 25% of the emigrant trail resource remains intact and is classified a Class 1 (unaltered original trail). The Class 1 section of the trail is located adjacent to the paved trail extending past the W.H. Jackson site and toward Character Area B. This section of trail in this character area is contributing.
    - In areas of Class 1 (unaltered original trail) trail resources historic photos indicate that vegetation has encroached into the trail areas protecting them from excessive erosion. The vegetation encroachment and establishment of grasses helps reduce the erosion within and adjacent to the trail ruts.
- Much of the landscape adjacent to this area consists of naturally occurring, highly erosive soils and minimal natural vegetation. This increases runoff volumes along the trail corridor, particularly along the north (bluff) side of the trail.
- Degradation due to visitor use and erosion of the trail rut resources in Character Area A will continue to occur if actions are not taken.

Visitor Experience

- According to monument staff interviews, Character Area A has the highest number of visitors in the study area, primarily due to the close proximity to the Visitor

Center and trail accessibility. The most convenient opportunity for visitors to experience the emigrant trail is in this area.

- Visitor experience could be enhanced and clarified with rehabilitation of interpretive resources, walking trails and the preservation of emigrant trail resources.

Figure 3 - 2. Character Area A *Above* - Trail ruts existing condition (2010) (MBD DSC_00151.JPG); *Below* - Trail ruts looking eastward (c. 1969) (MBD DSC_0241.jpg) (source: SCBL archives)

Figure 3 - 3. Character Area A *Above* - W. H. Jackson Campsite (2009) (MBD DSC_0235.jpg); *Below* - W.H. Jackson Campsite (c. 1943) (MBD DSC_0035.JPG) (source: SCBL archives)

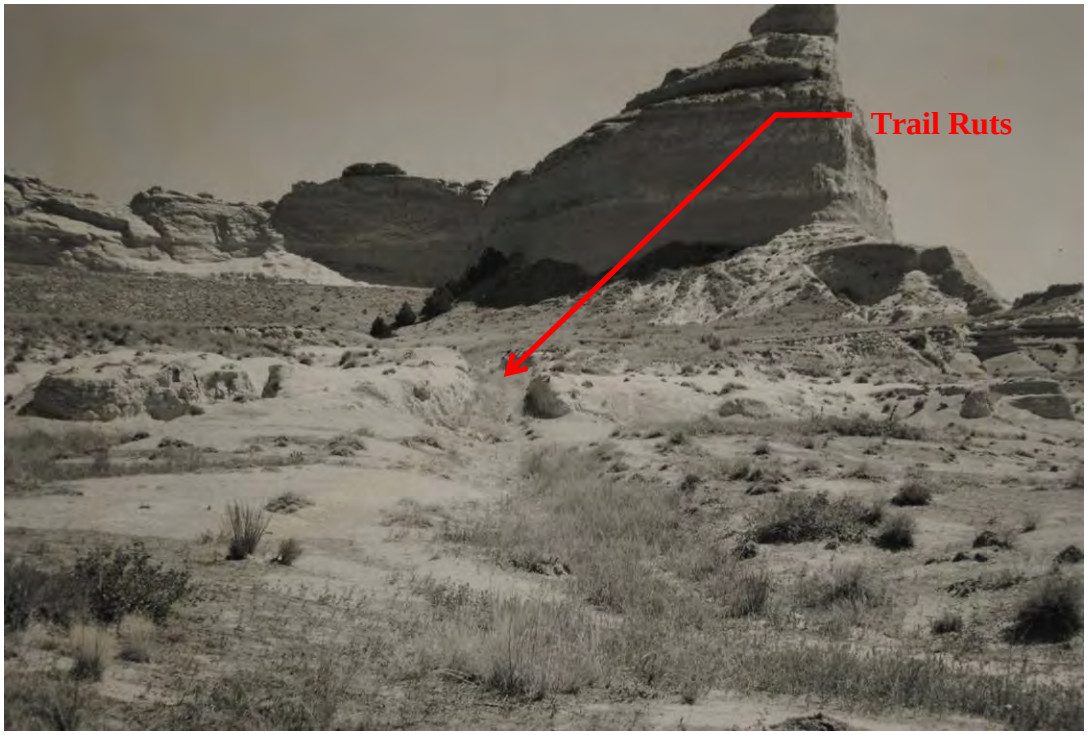


Figure 3 - 4. Character Area A *Above-* Oregon Trail resource on left with asphalt trail adjacent to trail resource (2009) (MBD DSC_0012.JPG); B*elow* - Oregon Trail (c. 1950) (MBD DSC_0026.JPG) (source: SCBL archives)

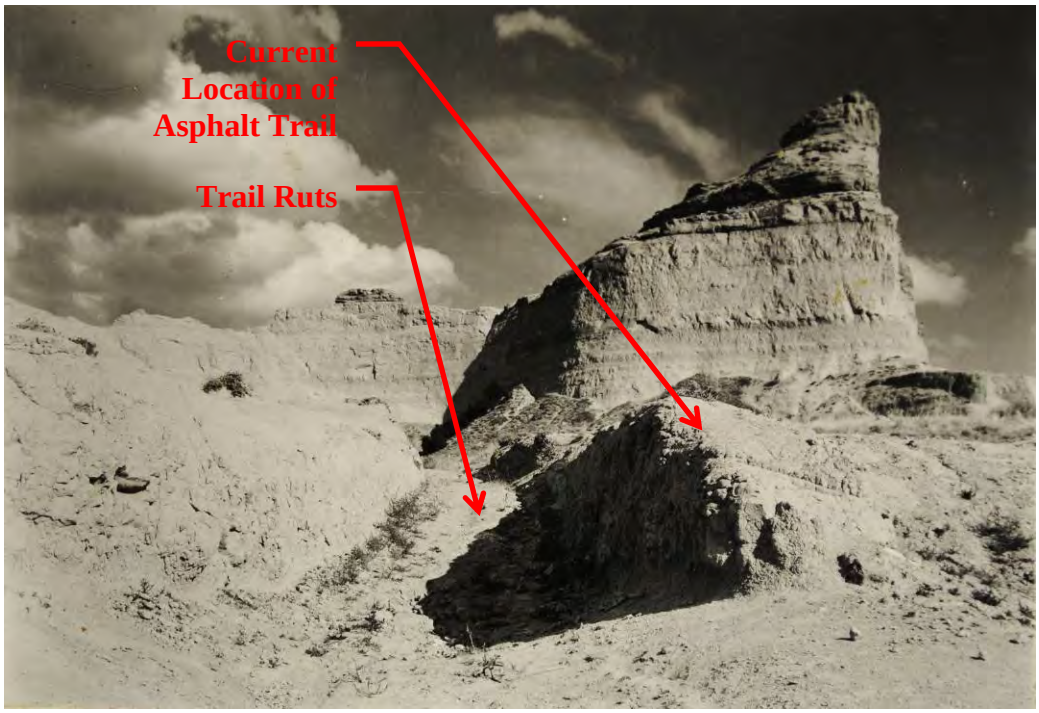


Figure 3 - 5. Character Area A *Above*- Oregon Trail resource on left with asphalt trail adjacent to trail rut resource (2010) (MBD DSC_00137.jpg); *Below* - Oregon Trail looking northeast toward Scotts Bluff (c. 1939) (MBD DSC_0216.jpg) (source: SCBL archives)

Figure 3 - 6. Wayside with granite bench and interpretive sign in Character Area A at the intersection of asphalt trail from Visitor Center and Oregon Trail resource- Class 4 (2009) (MBD DSC_0012.JPG)

Figure 3 - 7. Visitor trail on trail rut alignment looking east – Class 4 in Character Area A (2009) (MBD DSC_0020.JPG)

Figure 3 - 8. View of trail rut resource in Character Area A (Class 1) from asphalt trail with W.H. Jackson campsite and double cut in background (2009) (MBD DSC_0031.JPG)

Figure 3 - 9. Transition from soft surface trail to asphalt trail in Character Area A – trail shifts from location on trail resource to adjacent to trail resource- Class 4 (c 2009) (MBD DSC_0024.JPG)

Figure 3 - 10. View of Eagle Rock from asphalt trail from Visitor Center in Character Area A. (2009) (MBD DSC_0045.jpg)

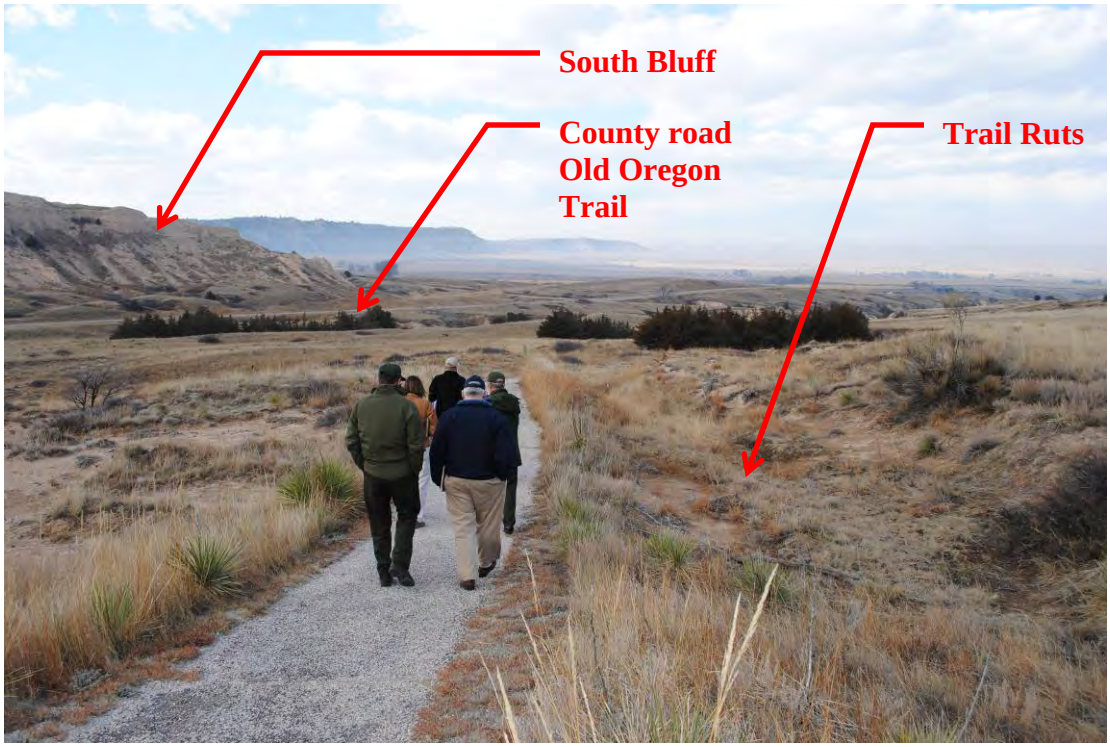


Figure 3 - 11. View of county road Old Oregon Trail and South Bluff in Character Area A from asphalt trail (2009) (MBD DSC_0040.jpg)

Figure 3 - 12. Watershed to north of trail in Character Area A (2009) (MBD DSC_0071.jpg)

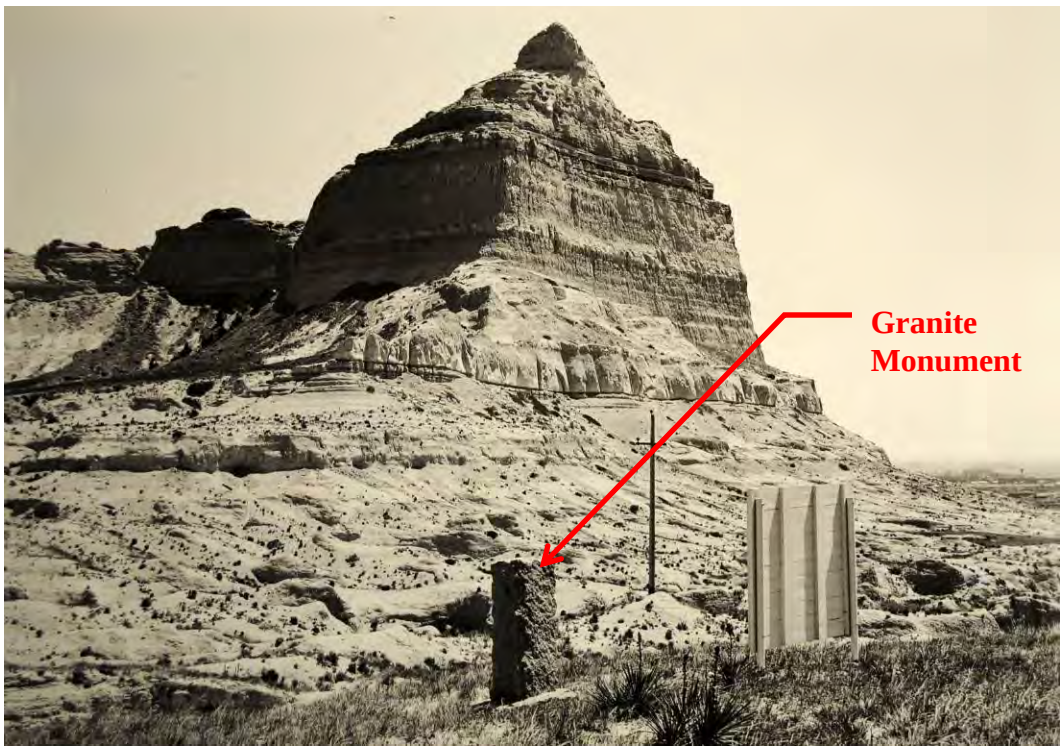


Figure 3 - 13. Character Area A *Above*- Eagle Rock, north wall looking northeast (2010) (MBD DSC00157.jpg); *Below* - Eagle Rock, north wall from old memorial site on road (c. 1935) (MBD DSC_0203.jpg) (source: SCBL archives)

405 **Table 1: Character Area A - Small Scale Features**
406

Feature	*Figure #*	*Description*	*Condition*	*Contributing/Non-contributing*
Asphalt Trail with Wood Edge	3-14	Asphalt trail with wood edge extending from Visitor Center to Oregon Trail in Character Area A	Fair	non-contributing non-compatible *outside period of significance, materials non-compatible*
Replica Murphy and Conestoga Wagon	3-15	Wagons adjacent to asphalt trail with wood edger in Character Area A	Fair	non-contributing compatible *outside period of significance*
Interpretive sign- "Traces of the Trail"	3-16	Interpretive sign with metal frame in wayside in Character Area A where ruts cross county road Old Oregon Trail	Good	non-contributing compatible *outside period of significance*
Granite bench	3-17	Granite memorial bench on concrete pad at wayside in Character Area A	Good	non-contributing non-compatible *outside period of significance materials non-compatible location non-compatible*
Corrugated metal culvert	3-18	Corrugated metal culvert through sloped topography connecting man-made drainage channel along portions of trail in Character Area A	Fair	non-contributing compatible *outside period of significance*
Corrugated metal culvert encased in concrete	3-19	Corrugated metal culvert with concrete headwalls connecting man-made drainage channel along trail in Character Area A	Fair	non-contributing non-compatible *outside period of significance materials non-compatible*
Asphalt Trail	3-20	Asphalt trail with chip seal surface along portions of trail in Character Area A	Fair	non-contributing non-compatible *outside period of significance materials non-compatible*
Granite Monument	3-21	Granite monument engraved.	Good	non-contributing compatible *outside period of significance location non-compatible*

407

408

Table 1: Character Area A-Small Scale Features, continued

Feature	*Figure #*	*Description*	*Condition*	*Contributing/Non-contributing*
Interpretive sign for W. H. Jackson's campsite	3-22	Interpretive sign with metal frame in wayside in Character Area A at historic location of W.H. Jackson Campsite	Good	non-contributing compatible *outside period of significance*
Wood bench	3-23	Concrete base with wood seat in wayside in Character Area A at historic location of W.H. Jackson Campsite	Poor	non-contributing non-compatible *outside period of significance materials non-compatible*
Boy Scout Trail Marker	3-24	Wood post with emblems indicating trail location of Oregon Trail/California Trail/Pony Express	Good	non-contributing compatible *outside period of significance*

Figure 3 - 14. Looking west toward Mitchell Pass, asphalt trail with wood edge connecting visitor center/parking with Oregon Trail in Character Area A (2009) (MBD DSC_0044.JPG)

Figure 3 - 15. Replica Murphy wagon located adjacent to the asphalt trail in Character Area A (2009) (MBD DSC_0043.JPG)

Figure 3 - 16. Interpretive sign at wayside with erosion sediment depostion in Character Area A (2009) (MBD DSC_0011.JPG)

Figure 3 - 17. Granite memorial bench at wayside in Character Area A (2009) (MBD DSC_0013.JPG)

Figure 3 - 18. Corrugated metal culvert for drainage diversion in Character Area A (2009) (MBD DSC_0016.JPG)

Figure 3 - 19. Corrugated metal culvert encased in concrete in Character Area A (2009) (MBD DSC_0017.JPG)

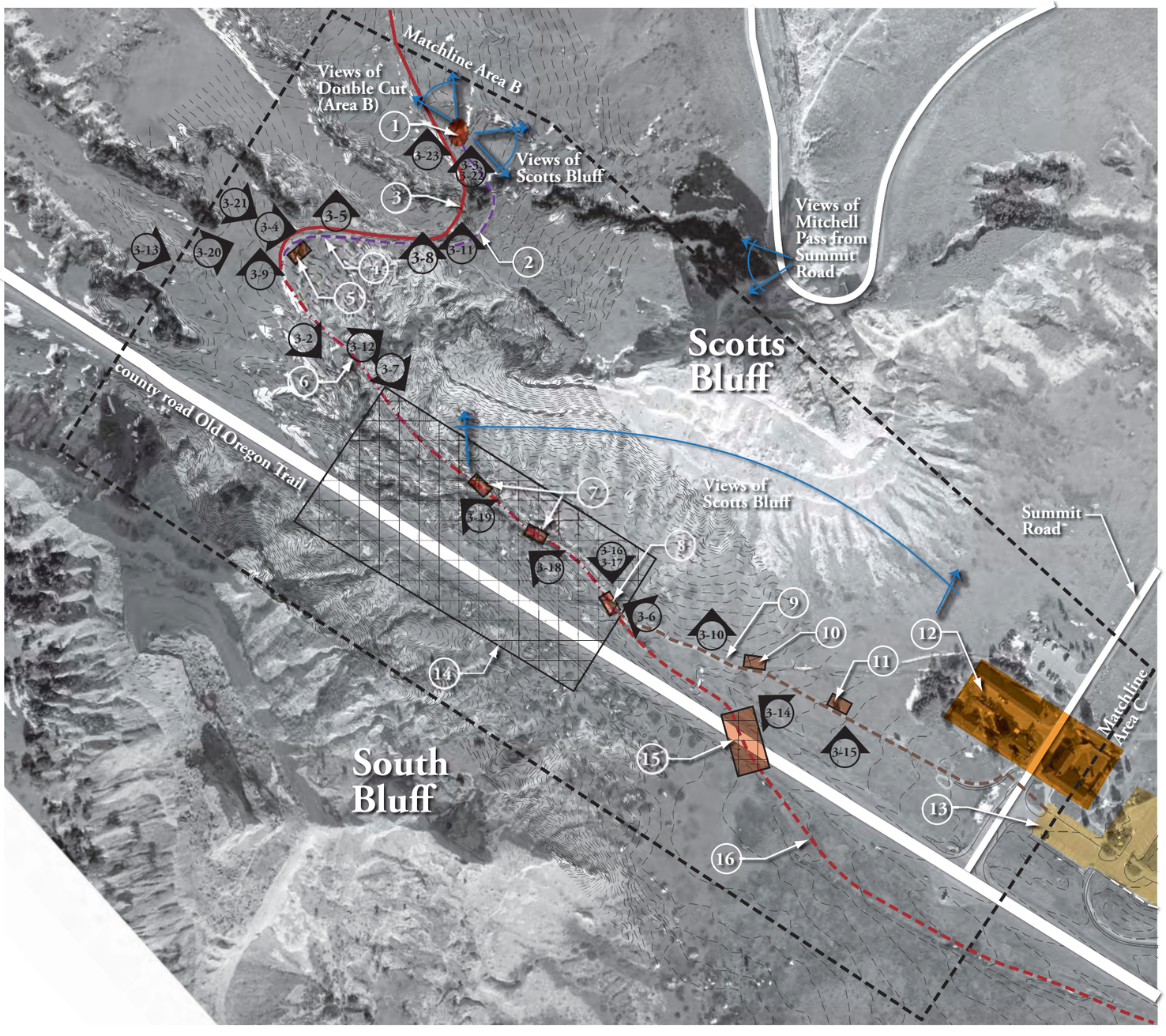
Figure 3 - 20. Asphalt trail in Character Area A (2009) (MBD DSC_0074.JPG)

Figure 3 - 21. Granite monument located along asphalt trail in non-historic location in Character Area A (2009) (MBD DSC_0027.JPG)

Figure 3 - 22. W.H. Jackson Campsite. Interpretive sign with information about W. H. Jackson's 1866 campsite in Character Area A (2009) (MBD DSC_0036.JPG)

Figure 3 - 23. Wood bench at W. H. Jackson campsite in Character Area A (2009) (MBD DSC_0117.JPG)

Figure 3 - 24. Boy Scout Trail Marker in Character Area A (found throughout study area) (2009) (MBD DSC_0029.JPG)



Trail Classification

Class 1 -
Unaltered Original Trail

Class 2 -
Used Original Trail

Class 3 -
Verified Original Trail

Class 4 -
Impacted Original Trail

Class 5 -
Approximate Original Trail

Legend

1. William Henry Jackson Historical Campsite/Wayside - with Interpretive Sign and Bench
2. Asphalt Walking Trail
3. Trail Ruts Location - Class 1 (Unaltered Original Trail)
4. Modified Topography due to Asphalt Walking Trail
5. Stone Oregon Trail Marker
6. Trail Ruts Location - Class 4 (Impacted Original Trail) (Existing Soft Surface Walking Trail Located on Trail Resource)
7. Drainage Improvements
8. Wayside with Interpretive Panel and Granite Bench
9. Asphalt with Wood Edge Trail
10. Replica Conestoga Wagon
11. Replica Murphy Wagon
12. Visitor Center/ Administratoin Offices/ Maintenance Shop/ Employee Residence
13. Parking
14. Mitchell Pass Area
15. Trail Location - Class 5 (Approximate Original Trail) (Road Crossing)
16. Trail Location Class 5 (Approximate Original Trail)

3-1 Photo Reference Figure #

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0 250’ 500’

FIGURE 3 - 25

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT
DRAWING TITLE
CHARACTER AREA A - EXISTING CONDITIONS
NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

Character Area B1

Character Area B1 is located to the west of Character Area A and contains portions of the trail rut resources on the west side of Mitchell Pass. This area contains well established, trail rut resources that are visible as individual ruts and as a corridor or 'trough'. The area is one of secondary visitor use although there are no walking trails in this area.

Existing Condition

- The trail topography within this area consists of rolling topography, flat areas and one large ravine.
- The views of Scotts Bluff are visible along all sections of the trail in this Character Area.
- The 'double cut' where two trail ruts are located side by side through a knoll are visible from the W.H. Jackson Campsite in Character Area A.
- Vegetation encroachment has occurred throughout the trail corridor.
- The only contemporary improvements have been the addition of the wooden trail markers.

Analysis

Trail Rut Resource

- The trail ruts are Class 1 (unaltered original trail) throughout the character area. All of the trail rut resources in this area are contributing resources.
- Most of the trail ruts are visible with the exception of the area in the flatter portions of the character area where depressions are braided and indistinct.
- The 'double cut' is one of the more visually prominent sections of the emigrant trail west of the pass.
- Erosion potential is low due to vegetated ruts and moderate topography. Vegetation encroachment has helped reduce the erosion within and adjacent to the trail ruts by stabilizing the soil.
- Trail ruts in this area are vegetated with grasses, reducing the depth and visual clarity of the ruts.

Visitor Experience

- Monument staff considers Character Area B1 as an area of secondary visitor use. Most visitors walk the trail from the Visitor Center to the W.H. Jackson Campsite

and return. Visitors who chose to experience the trail beyond Character Area A, typically walk to the top of the double cut (the most visible trail ruts in Character Area B1) before turning around and returning to the Visitor Center.

- Visitors who experience this area do not have a formal trail to walk on. Their experience is at exploratory level, as they search for the trail resource.

Figure 3 - 26. Character Area B1 *Above* - existing Oregon Trail ruts (2010) (MBD DSC00146.JPG) *Below* – trail ruts (c. 1939) (MBD DSC_0218.jpg) (source: SCBL archives)

Figure 3 - 27. Character Area B1 *Above* – West of Mitchell Pass - Scotts Bluff on left (2010) (MBD DSC00143.JPG); *Below* – trail ruts (c. 1969) (MBD DSC_0246.jpg) (source: SCBL archives)

Figure 3 - 28. Character Area B1 *Above*- Existing condition of 'double cut' (2010) (MBD DSC_00138.JPG), *Below* - 'double cut' (c. 1941) (MBD DSC_0226.jpg) (source: SCBL archives)

Figure 3 - 29. Character Area B1 *Above* –existing 'double cut' (one side) (2009) (MBD DSC_0084.JPG); *Below* – 'double cut' (c. 1941) (MBD DSC_0224.jpg) (source: SCBL archives)

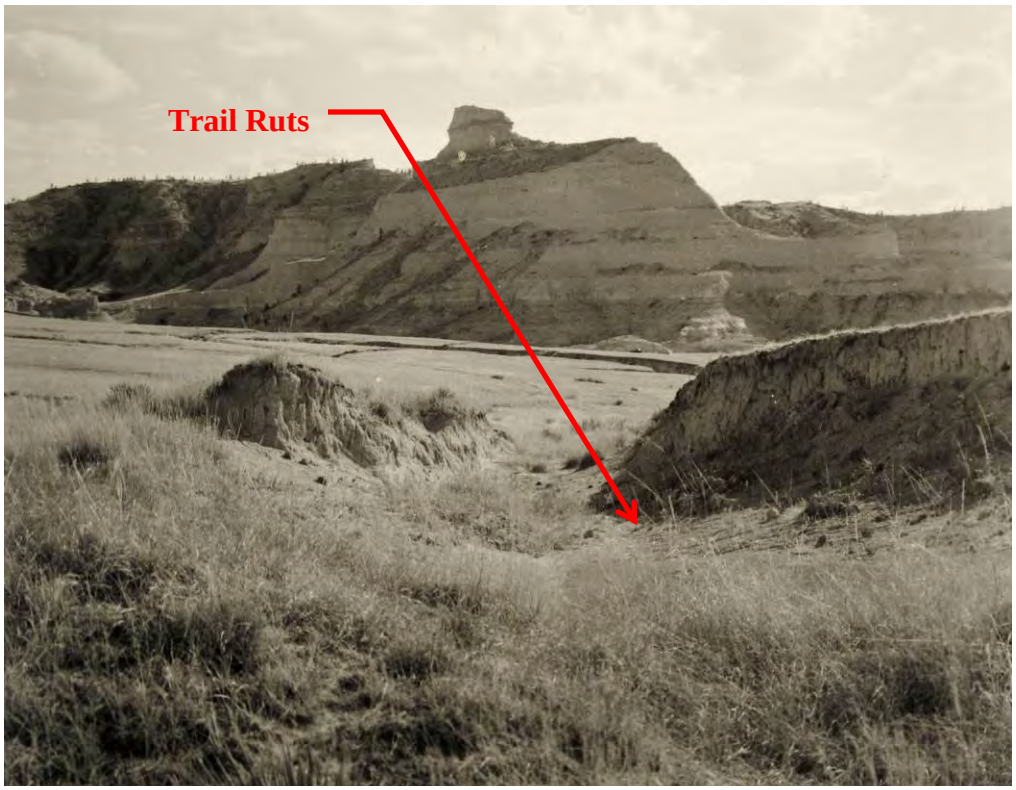


Figure 3 - 30. Character Area B1 *Above* - existing 'double cut' (2010) (MBD DSC00142.JPG) *Below* - 'double cut' below 2nd Tunnel (c. 1939) (MBD DSC_0214.jpg) (source: SCBL archives)

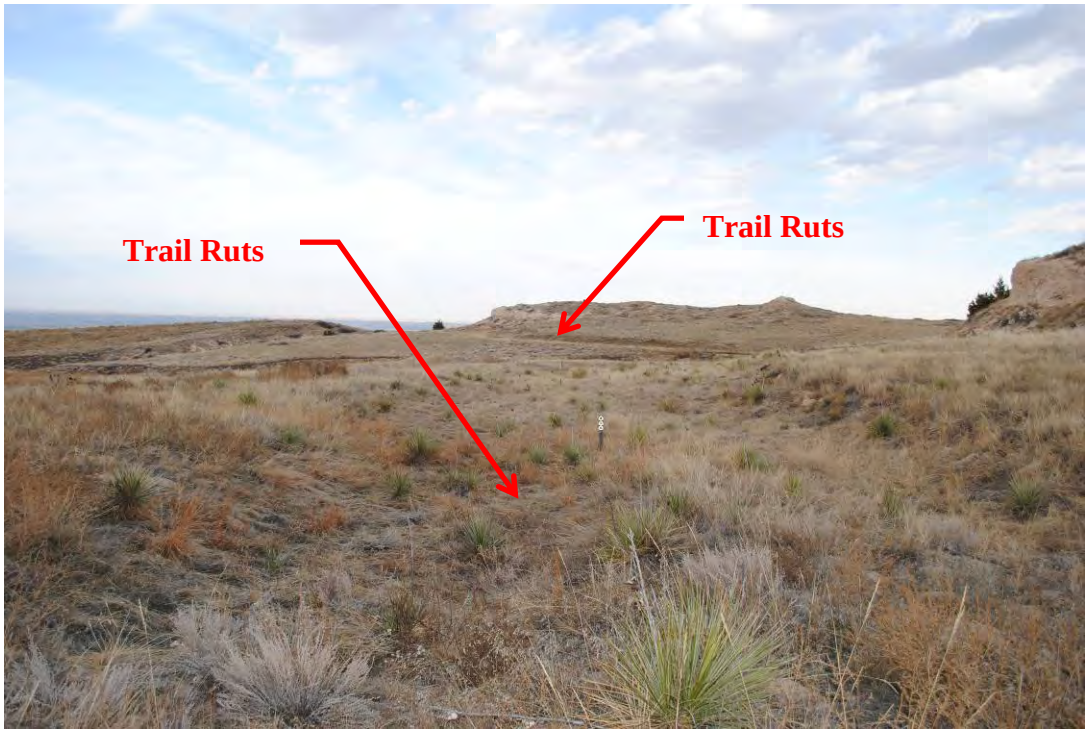


Figure 3 - 31. Existing trail ruts looking northwest in Character Area B1 (2009) (MBD DSC_0086.jpg)

Figure 3 - 32. Existing trail ruts around ravine in Character Area B1 (2009) (MBD DSC_0093.JPG)

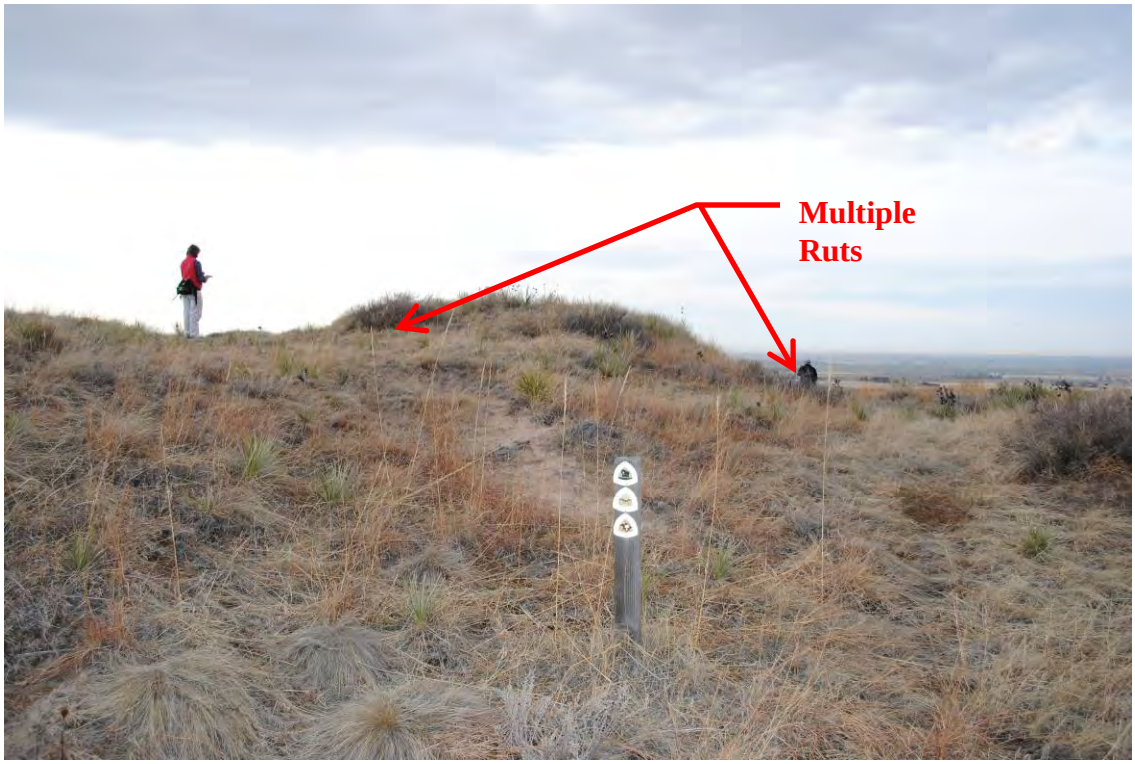
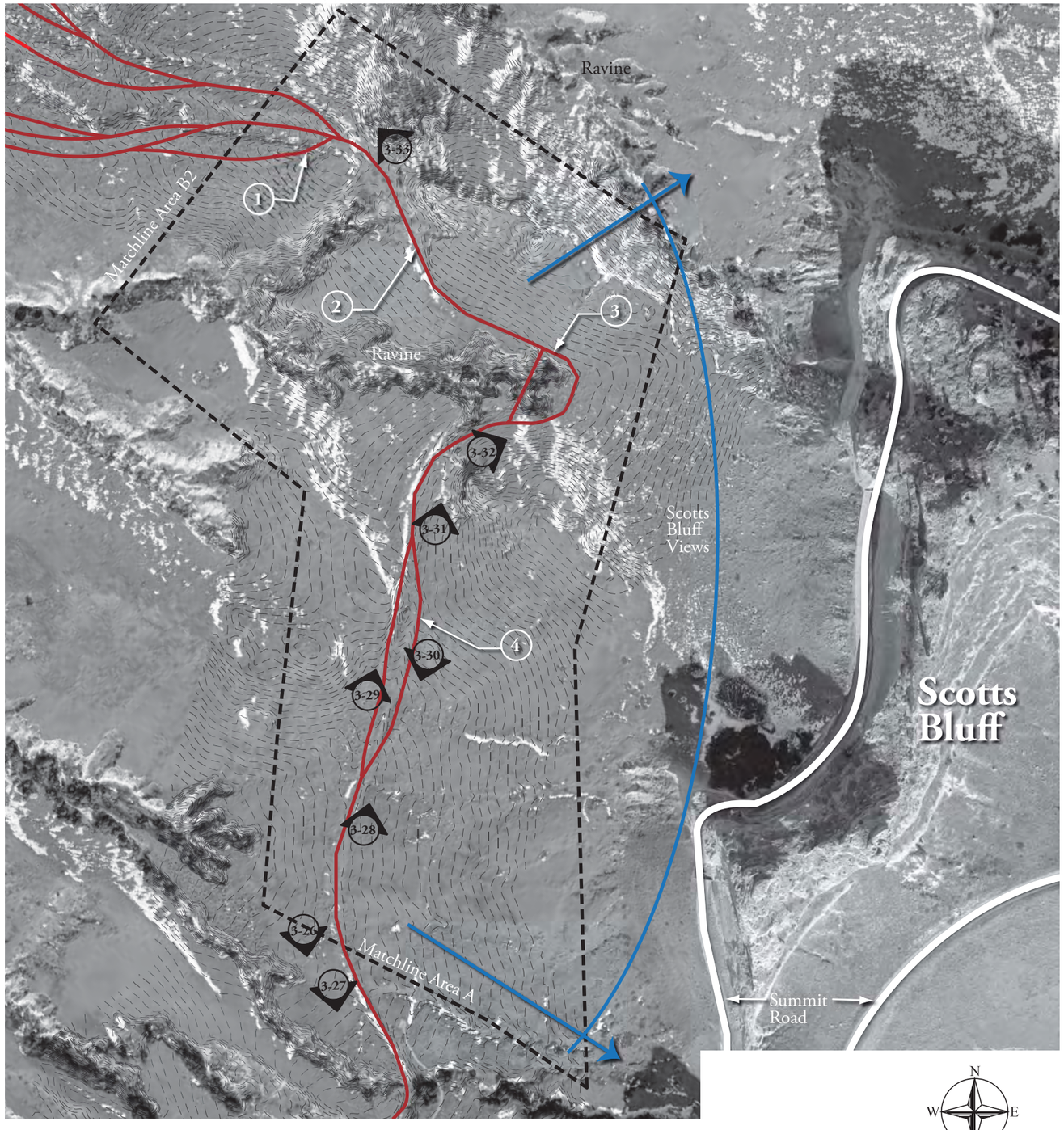


Figure 3 - 33. Multiple trail ruts through knoll at transition between Character Area B2 and C1. Boy Scout trail marker in foreground. (2009) (MBD DSC_0100.JPG)

Table 2: Character Area B1 - Small Scale Features

Feature	*Figure #*	*Description*	*Condition*	*Contributing/Non-contributing*
Boy Scout Trail Marker	3-24	Wood post with emblems indicating trail location of Oregon Trail/California Trail/Pony Express	Good	non-contributing compatible *outside period of significance*



Trail Classification

Class 1 -
Unaltered Original Trail

Class 2 -
Used Original Trail

Class 3 -
Verified Original Trail

Class 4 -
Impacted Original Trail

Class 5 -
Approximate Original Trail

Legend

1. **Multiple Trail Rut Locations (Parallel Scarring Visible) - Class 1 (Unaltered Original Trail)**
2. **Trail Ruts Location - Class 1 (Unaltered Original Trail)**
3. **Trail Ruts Location - Class 1 (Unaltered Original Trail) (Around Ravine)**
4. **Trail Ruts Location - Class 1 (Unaltered Original Trail) (Double Cut) - Visible From William Henry Jackson Campsite (Area A)**

3-1 **Photo Reference Figure #**

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FIGURE 3 - 34

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT

DRAWING TITLE
CHARACTER AREA B1 - EXISTING CONDITIONS

NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

Character Area B2

Character Area B2 is located to the west of Character Area B1 and Mitchell Pass. This Area contains documented emigrant trail resources that are visible. The trail rut resources in this area are braided trails that are in most cases vegetated. The area is one of secondary visitor use although with no formal walking trails in this area.

Existing Condition

- The trail topography within this area is gently sloped to the west with the exception of a large knoll on the east end of the character area. Ravines flank both sides of the trail resources.
- The views and vistas of Scotts Bluff, South Bluff and beyond are prevalent throughout the Character Area.
- Multiple braided trail ruts exist throughout the character area due to the gentle topography and ability of the wagons to spread out in this area.
- Vegetation encroachment has occurred throughout the trail causing less erosion.
- The only contemporary improvements have been the addition of compatible wooden trail markers.

Analysis

Trail Rut Resource

- The trail ruts are Class 1 (unaltered original trail) throughout the character area. All of the trail rut resources in this area are contributing resources.
- According to monument staff, Character Area B2 receives little visitor use. No formal visitor trails exist.
- Erosion potential is low due to vegetated ruts and moderate topography. Vegetation encroachment has helped reduce the erosion within and adjacent to the trail ruts by stabilizing the soil.
- The multiple trails in this area provide an example of how emigrant wagons spread out in flatter topography on the west side of Mitchell Pass.
- The trail ruts in this area are more difficult to visibly discern than in Character Areas A and B1 due to vegetation encroachment, the braided nature of the trails and non-use. While the growth of vegetation (grasses) helps stabilize soils and reduce erosion, it also reduces the visibility of trail ruts, primarily in the flatter sections.

Visitor Experience

- Visitors who visit this area have an opportunity to experience the inspiring views of Scotts Bluff and South Bluff in much the same way emigrants did.
- The emigrant trail in this area is more difficult for visitors to locate and view than the trail in Character Areas A and B1 and receives less use.

Figure 3 - 35. Trail ruts in wide flat area in Character Area B2 (2009) (MBD DSC_0105.JPG)

Figure 3 - 36. View of Scotts Bluff, South Bluff and Mitchell Pass from Character Area B2 (2009) (MBD DSC_0109.JPG)

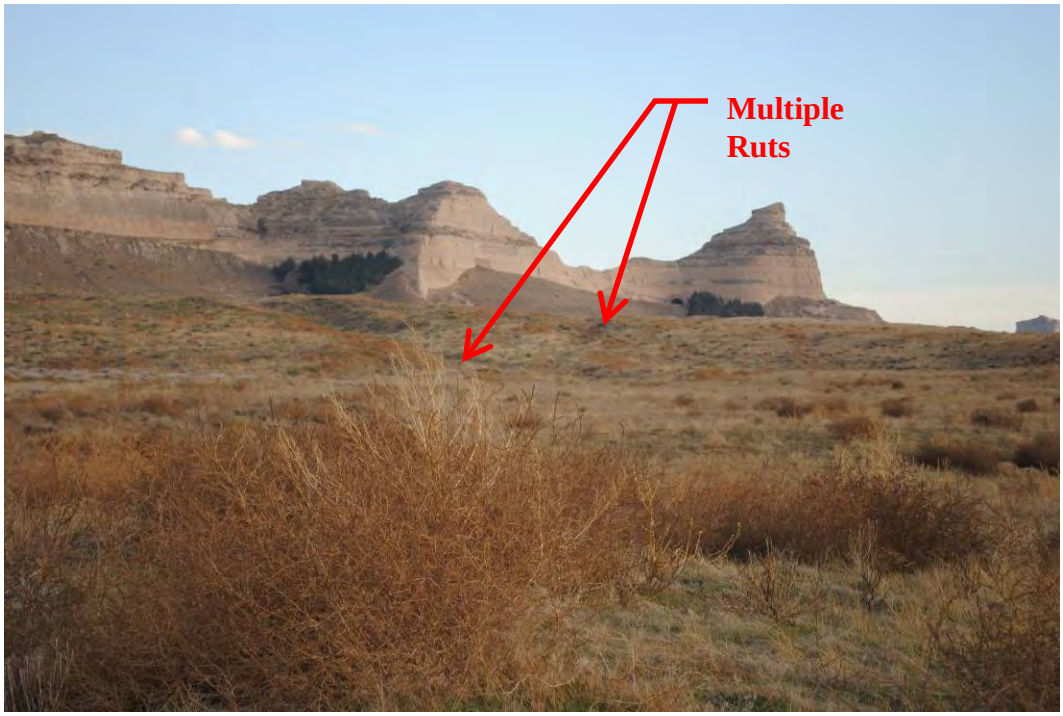
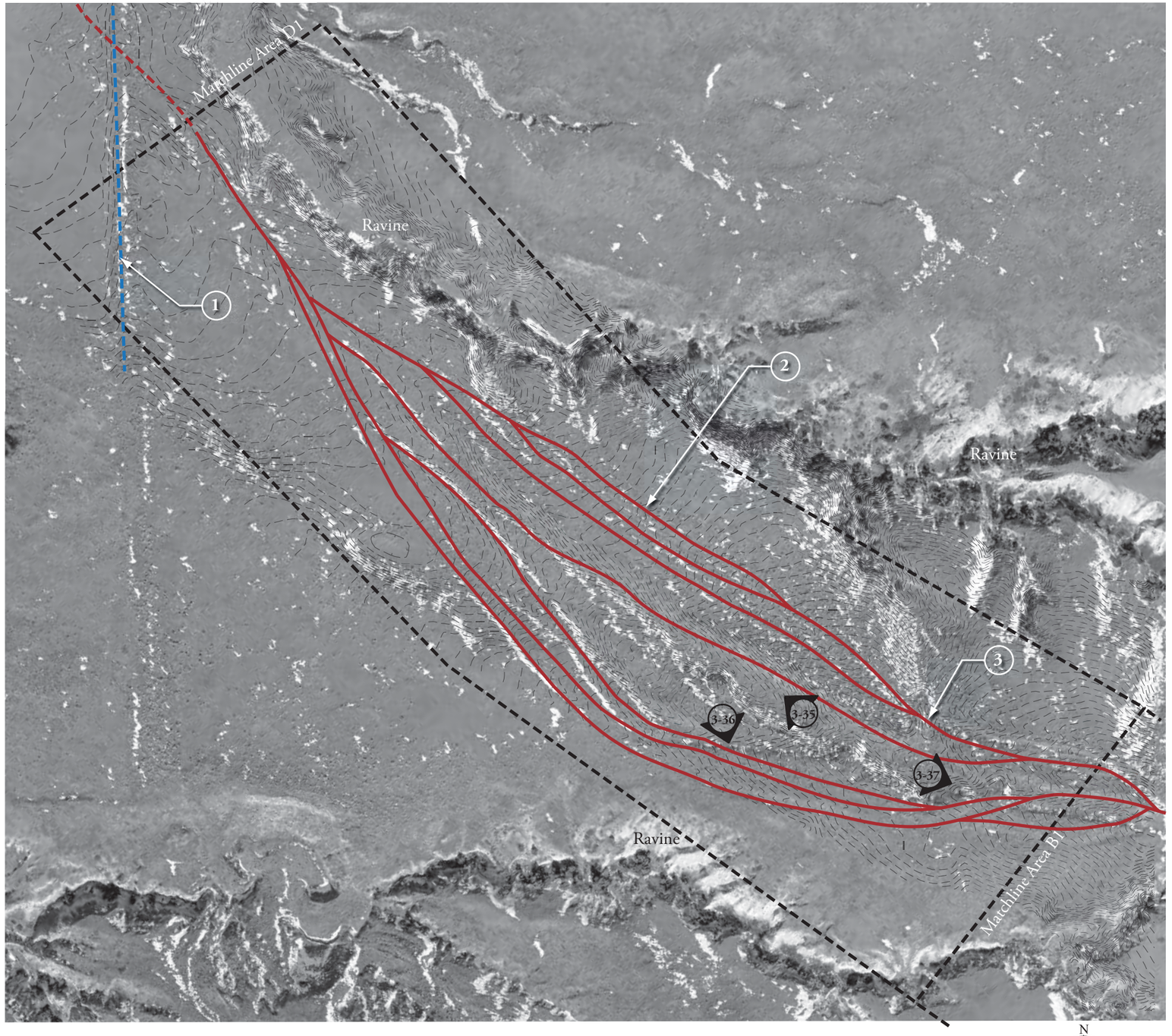


Figure 3 - 37. Trail ruts at the knoll (west end) of Character Area B2 (2009) (MBD DSC_0114.JPG)

591 **Table 3: Character Area B2 - Small Scale Features**
592

Feature	*Figure #*	*Description*	*Condition*	*Contributing/Non-contributing*
Boy Scout Trail Marker	3-24	Wood post with emblems indicating trail location of Oregon Trail/California Trail/Pony Express	Good	non-contributing compatible *outside period of significance*

593



Trail Classification

Class 1 -
Unaltered Original Trail

Class 2 -
Used Original Trail

Class 3 -
Verified Original Trail

Class 4 -
Impacted Original Trail

Class 5 -
Approximate Original Trail

Legend

1. Remnant Fenceline Topography - From Prior Agricultural Practices Post Oregon Trail
2. Multiple Trail Ruts Through Flat Topography - Class 1 (Unaltered Original Trail)
3. Multiple Trail Ruts Through Ridge - Class 1 (Unaltered Original Trail)

3-1 Photo Reference Figure #

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FIGURE 3 - 38

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT

DRAWING TITLE
CHARACTER AREA B2 - EXISTING CONDITIONS

NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

Character Area C

Character Area C is located to the east of Character Area A, near the visitor center. Emigrant trails are generally not visible in this area, due to the impacts of several phases of road construction, realignment and widening associated with the county road Old Oregon Trail.

Existing Condition

- The topography within this area is primarily flat with a few small depressions and ridges.
- Views to the east are open with little topography visible. Mitchell Pass, Scotts Bluff and South Bluff are visible to the west.
- County road Old Oregon Trail has covered significant sections emigrant trail resources in this character area. Indistinct trail rut resources are located both north and south of the county road county road Old Oregon Trail and others have been covered by road construction.
- Two locations of unidentified ruts/tracks are located within this area.
- A bike trail extends east from the visitor center parking lot, generally parallel to and north of the county road.
- The only contemporary improvements have been the addition of the compatible wooden trail markers.
- The eastern red cedar plantings occur along portions of the unidentified ruts and are non-contributing, compatible.

Analysis

Trail Rut Resource

- The majority of the emigrant trail ruts in Character Area C are Class 5 (approximate original trail). The location of the emigrant trail in these sections is only known approximately from historic maps and photographs and is not visible. If the resources are extant under the road (further investigation is needed) they would contribute to the significance of the historic landscape.

Visitor Experience

- Visitors enter the Monument from the east via the walking/biking trail in this area.

- Visitors who visit this area have an opportunity to experience the approach of Mitchell Pass and the views Scotts Bluff and South Bluff in much the same way emigrants did.
- There is little visual evidence of emigrant trail ruts in this area thus hindering visitor understanding of how settlers reached Mitchell Pass.

Figure 3 - 39. Unidentified ruts with eastern red cedar plantings in Character Area C (2009) (MBD DSC_0050.JPG)

Figure 3 - 40. Unidentified ruts with Scotts Bluff and South Bluff (in background) in Character Area C (2009) (MBD DSC_0046.JPG)

Figure 3 - 41. North side of county road Old Oregon Trail looking west in Character Area C (2009) (MBD DSC_0058.JPG)

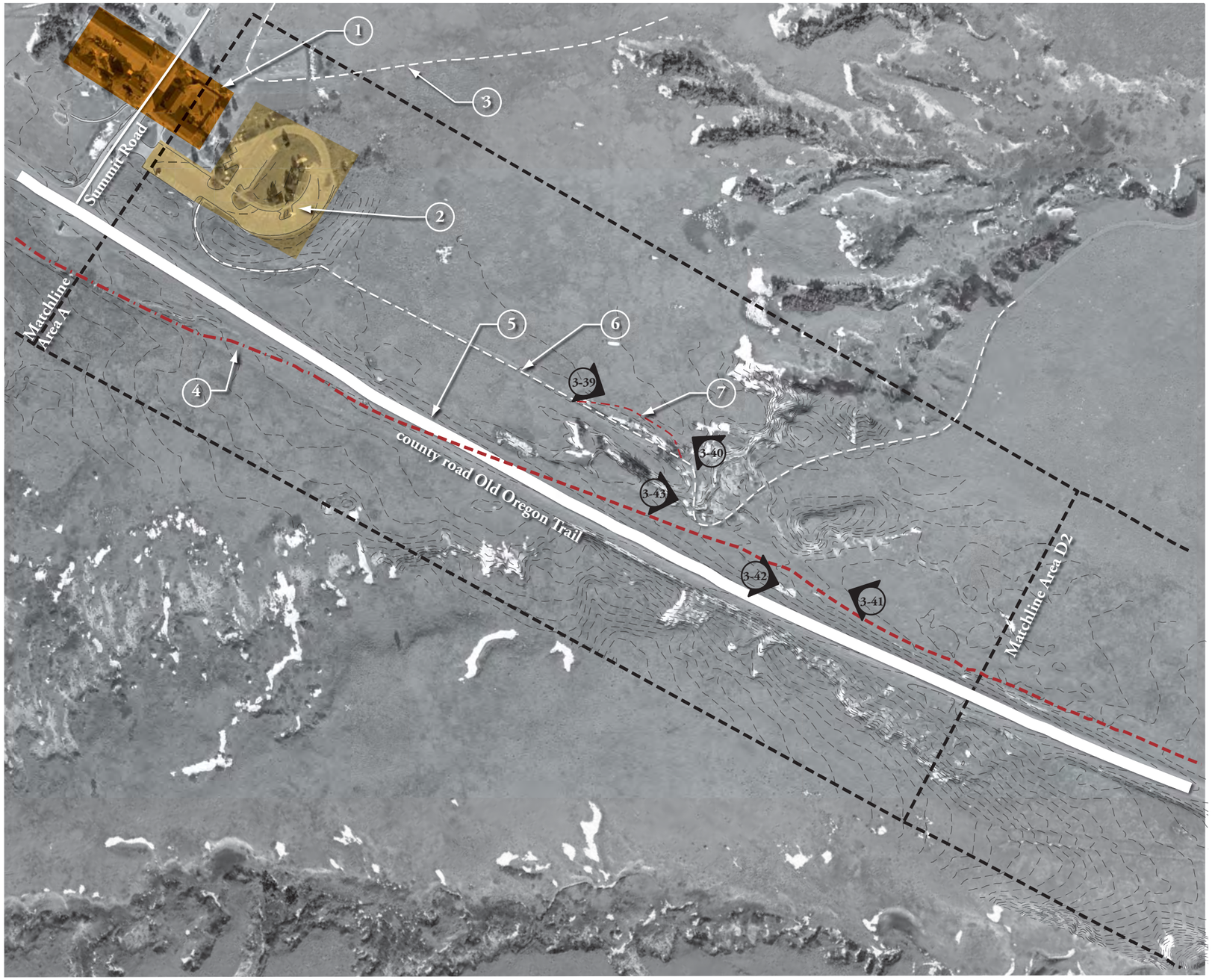
Figure 3 - 42. North side of county road Old Oregon Trail looking east in Character Area C (2009) (MBD DSC_0061.JPG)

Figure 3 - 43. Asphalt bike trail in Character Area C looking east (2009) (MBD DSC_0061.JPG)

651 **Table 4: Character Area C - Small Scale Features**
652

Feature	*Figure #*	*Description*	*Condition*	*Contributing/Non-contributing*
Boy Scout Trail Marker	3-24	Wood post with emblems indicating trail location of Oregon Trail/California Trail/Pony Express	Good	non-contributing compatible *outside period of significance*
Asphalt Trail	3-43	Asphalt bike trail	Good	non-contributing compatible *location does not detract from the historic landscape*

653



Trail Classification

Class 1 -
Unaltered Original Trail

Class 2 -
Used Original Trail

Class 3 -
Verified Original Trail

Class 4 -
Impacted Original Trail

Class 5 -
Approximate Original Trail

Legend

1. Visitor Center/ Administration Offices/ Maintenance Shop/ Employee Residence
2. Parking
3. Saddle Rock Trail
4. Trail Ruts Location - Class 5 (Approximate Original Trail)
5. Trail Ruts Location - Class 5 (Under Road) (Approximate Original Trail
6. Bike Trail
7. Unidentified Ruts/Tracks

3-1 Photo Reference Figure #

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FIGURE 3 - 44

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT

DRAWING TITLE
CHARACTER AREA C - EXISTING CONDITIONS

NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

Character Area D1

Character Area D1 is located northwest of Character Area B2, at the northwestern edge of the monument. This area is typified by braided and vegetated trail rut resources that are visually indistinct and difficult to discern in the field. The trail rut resources in a portion of this area have been obliterated by past agricultural practices. The area is rarely used by visitors and there are no walking trails or visitor amenities.

Existing Condition

- The trail topography within this area is mostly flat. Ridges flank both sides of the trail corridor.
- The views and vistas of Scotts Bluff, South Bluff and beyond are prevalent throughout the character area.
- Multiple trail ruts are indistinct and only intermittently visible on the west end of the character area.
- The topography includes a bermed slope along the southwest portion of the Character Area where a fence was previously installed (the fence has been removed) to define an agricultural field prior to NPS acquiring the land.

Analysis

Trail Rut Resource

- The emigrant trail ruts in Character Area D1 are approximately 60% Class 3 (verified original trail) and are contributing.
- Approximately 40% of the emigrant trail ruts in this area are Class 5 (approximate original trail) and are non-contributing.
    - The trail rut resources in the Class 5 area were obliterated by private agricultural practices prior to land acquisition by the monument.
- The trail is more difficult to discern than trails in Character Areas A, B and C due to: vegetation encroachment; sedimentation; the braided character of the trail ruts; non-use; and agricultural practices.
- The multiple trails in this area provide an example of how emigrant wagons spread out in flatter topography on the west side of Mitchell Pass.
- The trail ruts in this area are more difficult to visibly discern than in Character Areas A and B1 due to vegetation encroachment, the braided nature of the trails and non-

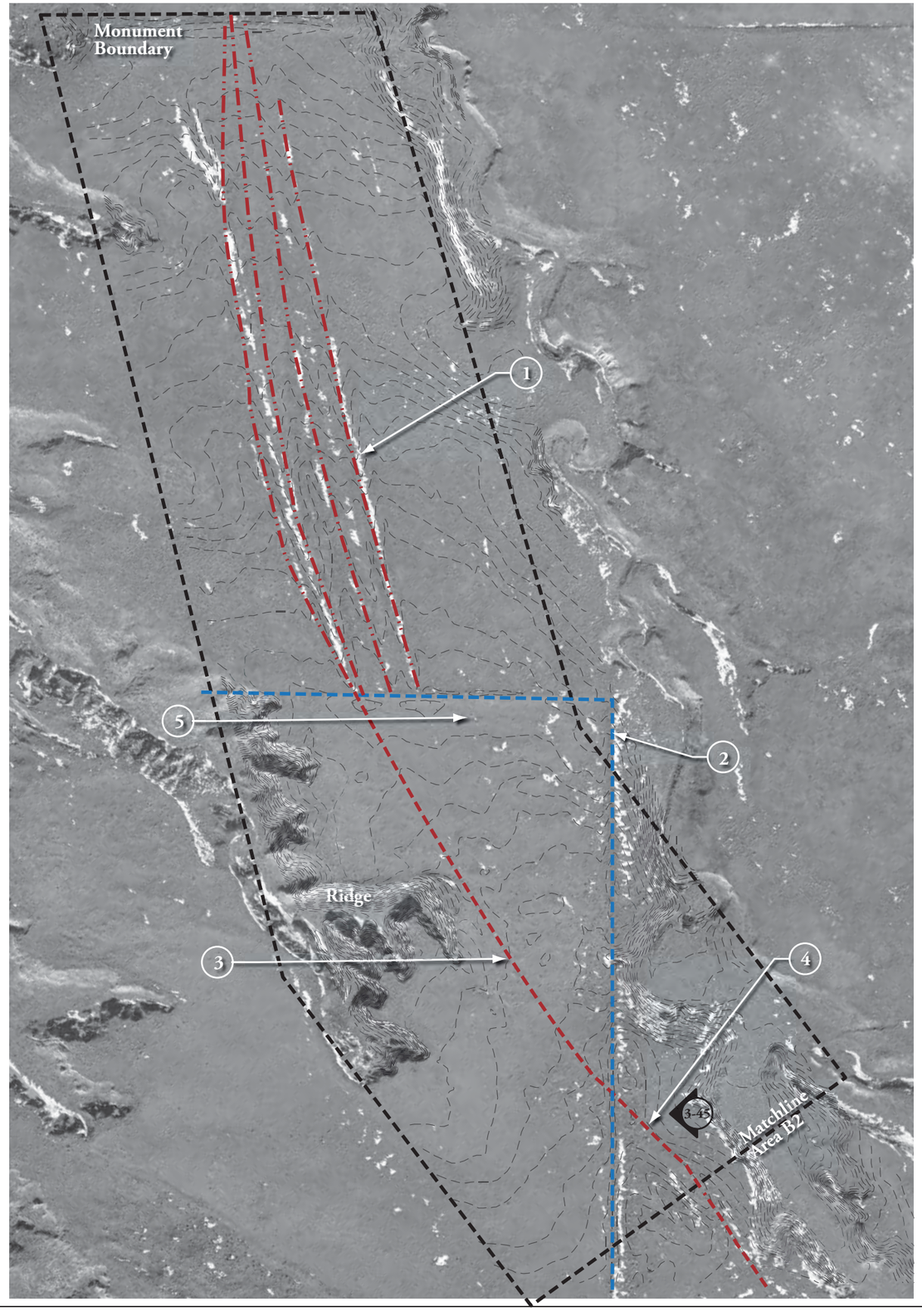
use. While the growth of vegetation (grasses) helps stabilize soils and reduce erosion, it also reduces the visibility of trail ruts, primarily in the flatter sections.

- According to monument staff, Character Area D1 receives only occasional visitor use.

Visitor Experience

- It is unlikely most visitors would reach this character area during their visit to the monument.
- Visitors who visit this area have an opportunity to experience the views of Scotts Bluff and South Bluff to the east and the open landscape to the west.

Figure 3 - 45. Character Area D1 looking west (2009) (MBD DSC_0111.JPG)



Trail Classification

Class 1 -
Unaltered Original Trail

Class 2 -
Used Original Trail

Class 3 -
Verified Original Trail

Class 4 -
Impacted Original Trail

Class 5 -
Approximate Original Trail

Legend

1. Multiple Trail Ruts Through Flat Topography - Class 1 (Unaltered Original Trail)
2. Remnant Fenceline Topography
3. Trail Ruts Location - Class 5 (Approximate Original Trail)
4. Trail Ruts Location - Class 3 (Verified Original Trail)
5. Prior Agricultural Land within Remnant Fence Topography Post Oregon Trail

3-1 Photo Reference Figure #

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0 250' 500'

FIGURE 3 - 46

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT
DRAWING TITLE
CHARACTER AREA D1 - EXISTING CONDITIONS
NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

Character Area D2

Character Area D2 is located to the east of Character Area C, at the eastern edge of the monument. Trail rut resources are visible only intermittently in this area and it is not often frequented.

Existing Condition

- The trail topography within this area is mostly flat, except for one large ravine running in a southwest to northeast direction.
- The view of Mitchell Pass, Scotts Bluff and South Bluff are visible at the monument entry along county road Old Oregon Trail and from the Oregon Trail.
- County road Old Oregon Trail has covered significant sections emigrant trail resources in this character area.
- Trail rut resources are located both north and south of the county road Old Oregon Trail where the trail crosses the ravine.
- The contemporary improvements in this area are limited to compatible wooden trail markers and a wayside at the monument east boundary with an interpretive panel.

Analysis

Trail Rut Resource

- The majority of the emigrant trail ruts in Character Area C are primarily Class 5 (approximate original trail). The location of the emigrant trail in these sections is only known approximately from historic maps and photographs and is not visible. If the resources are extant under the road (further investigation is needed) they would contribute to the significance of the historic landscape.
- The sections of the trail that cross the ravine are Class 1 (unaltered original trail) and are easily discernable.
- Figure 3-47 shows an overhead electric line in the background. The presence of these lines in the area of the trail ruts diminishes the original views experienced by the emigrants as they approached Mitchell Pass from the east.
- Vegetation encroachment has occurred throughout the trail. Although the vegetation encroachment helps stabilize soils and reduce erosion, the vegetation in the flatter topography obscures the trail ruts; however, it does not diminish the overall trail experience.

Visitor Experience

- The most prominent features visible to visitors are the ruts through the ravine as seen in Figure 3-47 and Figure 3-48.
- Visitors who visit this area have an opportunity to experience the approach of Mitchell Pass and the views Scotts Bluff and South Bluff in much the same way emigrants did.
- This area receives little foot traffic and visitation is primarily limited to the interpretive wayside.

Figure 3 - 47. Ruts through ravine at the east end of Character Area D2 (2009) (MBD DSC_0062.JPG)

Figure 3 - 48. Character Area D2 looking west (2010) (MBD DSC_00161.JPG)
Below - Oregon Trail around ravine (c. 1941) (DSC_0210.jpg) (source: SCBL archives)

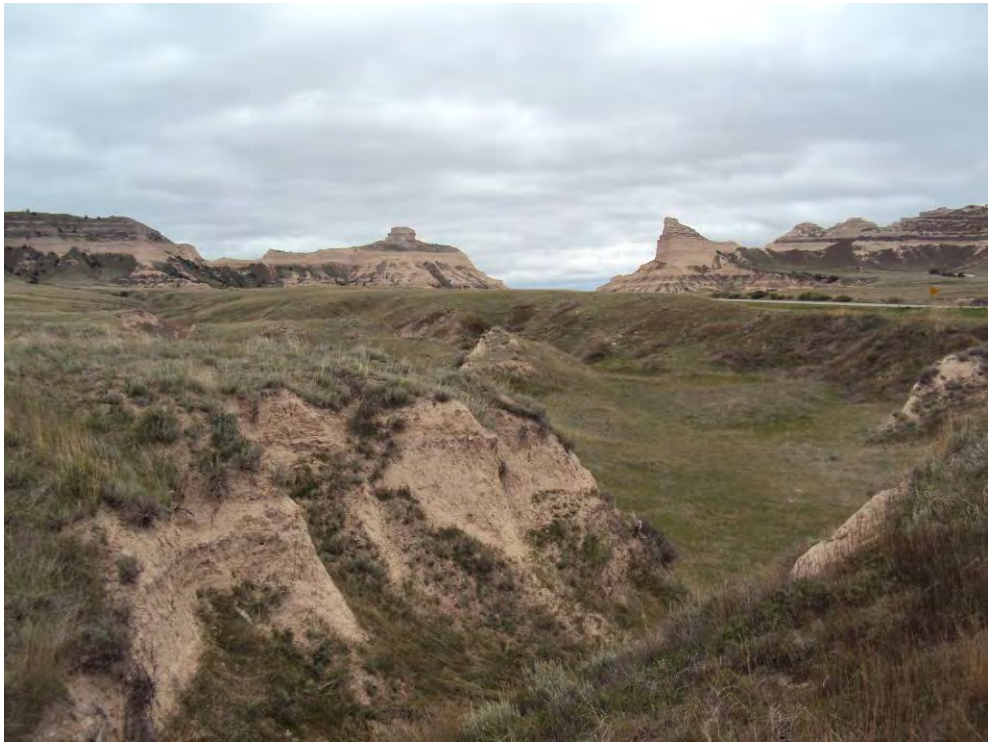


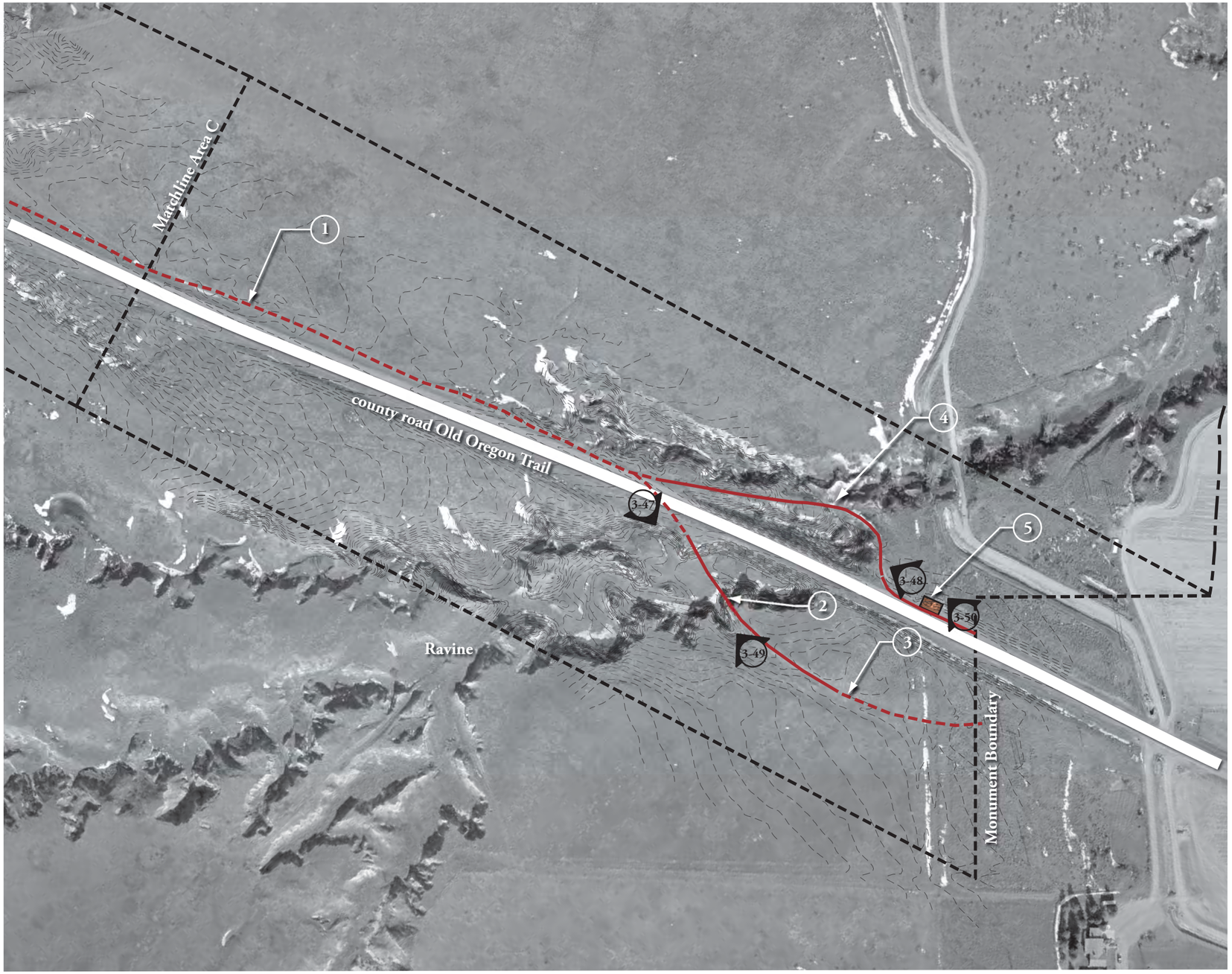
Figure 3 - 49. Character Area D2 *Above* – Oregon Trail ruts remnant – east monument boundary (2010) (MBD DSC00158.JPG); *Below* - Oregon Trail ruts and Mitchell Pass – east boundary (c. 1956) (DSC_0244.jpg) (source: SCBL archives)

759 **Table 5: Character Area D2 - Small Scale Features**
760

Feature	*Figure #*	*Description*	*Condition*	*Contributing/Non-contributing*
Boy Scout Trail Marker	3-24	Wood post with emblems indicating trail location of Oregon Trail/California Trail/Pony Express	Good	non-contributing compatible *outside period of significance*
Monument Entrance Sign	3-50	Stucco monument sign "Scotts Bluff National Monument" located at the east Monument boundary	Good	non-contributing compatible *outside period of significance*
Wayside with interpretive panel	n/a	A vehicular pull-off/wayside is located at the east monument boundary adjacent to the monument entrance sign. The wayside has a paved asphalt path that extends to a view of the bluffs and Mitchell Pass and includes an interpretive panel with information about the Oregon Trail.	Good	non-contributing compatible *outside period of significance*

761

762
763 **Figure 3 - 50.** Monument entrance sign at east entry in Character Area D2 (2009)
764 (MBD DSC_0064.JPG)



Trail Classification

Class 1 -
Unaltered Original Trail

Class 2 -
Used Original Trail

Class 3 -
Verified Original Trail

Class 4 -
Impacted Original Trail

Class 5 -
Approximate Original Trail

Legend

1. Trail Ruts Location - Class 5 (Approximate Original Trail)
2. Trail Ruts Location - Class 1 (Unaltered Original Trail)
3. Trail Ruts Location - Class 5 (Approximate Original Trail)
4. Trail Ruts Location - Class 1 (Unaltered Original Trail)
5. Scotts Bluff National Monument Entrance Sign

3-1 Photo Reference Figure #

N
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FIGURE 3 - 51

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT

DRAWING TITLE
CHARACTER AREA D2 - EXISTING CONDITIONS

NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

Chapter 4. Treatment Alternatives

a. Introduction

A general management philosophy of preservation has been identified as the primary treatment approach for the Oregon Trail ruts landscape at Scotts Bluff National Monument. Preservation maintains the existing integrity and character of a historic landscape by arresting or retarding deterioration caused by natural forces and normal use. It includes both maintenance and stabilization. Maintenance is a systematic activity mitigating wear and deterioration of a historic landscape by protecting its condition.[1] This approach has been chosen to enable the preservation of the trail ruts in areas where the ruts remain undisturbed and to allow for work to be done within the areas where the trail ruts have been degraded by contemporary use and natural forces.

This chapter describes three alternative treatments, Alternative No. 1, the No Action Alternative, and two Action Alternatives, Alternative No. 2 Visitor Trail (Existing Alignment – Preferred Alternative) and Alternative No. 3 Visitor Trail (Visitor Boardwalk). The No Action Alternative provides a baseline for evaluation of potential impacts from each treatment alternative and comparison of all treatment alternatives.

The proposed treatment alternatives were developed to address the purpose and need of the project, which is to provide a recommendation for future treatment based on researching the historic and current conditions of the emigrant trail resources. The proposed treatment alternatives recommend future use of the landscape in ways consistent with the monument's GMP and other relevant laws, regulations, policies, and guidance. These recommendations aim to protect and preserve the monument's natural and cultural resources.

The proposed treatment alternatives present potential NPS management actions and define the rationales for the actions in terms of resource protection and management, visitor and operational use, and other applicable factors. Also included in this chapter is a comparison of how well the alternatives meet project objectives and a summary comparison of the environmental effects of each of the alternatives.

The Current Management / No Action Alternative is presented first, followed by an overview of the action alternatives including a vision statement, goals, and objectives that are

[1] NPS 2006

shared by action alternatives. Next, treatment guidelines common to the action alternatives are presented. These are followed by descriptions of treatment-specific recommendations organized by character area.

b. Oregon Trail Ruts Current Management Approach (Alternative No. 1: No Action Treatment)

Under the No Action Alternative, the monument would continue to occasionally maintain the visitors trail and trail ruts to protect visitor safety and to mitigate excessive erosion. Actions to preserve the trail ruts would not be undertaken and nothing would be done to enhance visitor experience. The monument would continue the present level of management, operations, and maintenance.

c. Treatment Recommendations and Alternatives for the Oregon Trail Ruts

The Current Management /No Action Treatment Alternative described in the previous section reflects the current use of the landscape and provides a baseline for evaluating potential impacts related to each action treatment alternative. The treatment measures and treatment alternatives described in the next section provide proposals for changes to the current management of the landscapes. The two action treatment alternatives respond to a common vision statement, goals, and objectives.

Vision Statement for Action Treatment Alternatives

- Preserve, protect and maintain the trail rut resources to better provide an authentic visitor experience related to the emigrant trails within the monument.

Goals Common to Action Treatment Alternatives:

- Preserve and stabilize trail ruts and associated historic landscape resources
- Improve the ability of the historic landscape to convey and represent its history by preserving the historic resources and improving the visitor trail.
- Reduce impacts of stormwater runoff on specific portions of the trail rut resources.

- Provide a more stable visitor trail that is less impacted by natural storm events and reduces maintenance requirements.
- Provide improved interpretive opportunities for visitors to experience and understand the monument's emigrant trail resources by rehabilitating portions of the trail and preserving portions of the trail ruts.

Treatments Common to Action Alternatives:

1) Mapping and Documentation – emigrant trail ruts are a dynamic, vanishing cultural resource that without continual use will eventually fade into the natural landscape. Locating, documenting and mapping trails are important treatment actions for all emigrant trail rut resources. Over time the visible trail rut resources will become more difficult to discern in the field and the mapped locations of the trail ruts will become important documentation of the historic resources.

- Document and map trail locations using the standards of the Mapping Emigrant Trails (MET) manual. Provide mapping data that corresponds to the mapping procedures outlined in the MET. The MET manual outlines a method of notations, documentation and record keeping for emigrant trails. The intent of this work is to provide a uniform method of record keeping that is compatible with other trail mapping efforts in the western United States.
- Mark known emigrant trail resources in the field (see below) and record GPS coordinate data points and survey notes. This information should be integrated into the monument's GIS data and included in the archives.

2) Other Locating Methods – undertake non-invasive location methods to further document locations of the emigrant trails. These methods may include ground penetrating radar, magnetic gradient, standard metal detector surveys and vegetative studies. Combine survey work with GPS data collection. Undertake a magnetic gradient survey in Character Areas B1, B2 and D1 to better determine the locations of trail ruts.

3) Provide trail markers locating known emigrant trails using the Oregon-California Trails Association (OCTA) Trail Marker and Trail Marking Policies. Trail markers

should be permanent, low, unobtrusive markers. The purpose of markers is not to visibly locate the trail for monument users but to provide a permanent dated marking of known trail resources.

4) Limit disturbance to existing natural vegetation. Vegetation that has encroached into the trail ruts shall also remain.

5) Remove invasive species using best management practices as directed by the Northern Great Plains Exotic Plant Management Plan and Environmental Assessment, NPS (March 2005).

6) Reduce erosion and sediment deposition of emigrant trail resources by controlling stormwater runoff in highly erosive areas.

7) Locate and protect all known archeological investigations in any areas of the site where work is proposed. Use non-invasive locational methods such as ground-penetrating radar, magnetic gradient or conductivity surveys to document the extent of buried or non-visible cultural resources that may exist within or near the trail rut corridors. Complete archeological investigations for proposed projects in advance of any other work on the project, including demolition. Undertake archeological investigations and surveys for all projects regardless of size or extent of excavations.

d. Treatment Alternative No. 1: No Action

The No Action Alternative provides a baseline for evaluating changes and impacts associated with the two action alternatives. The Oregon Trail ruts landscape at Scotts Bluff National Monument would continue to be managed as they are currently and no new policies would be implemented.

With this alternative the Oregon Trail ruts and associated landscape are secondary resources to the monument. Visitor use of the Summit Road to Scotts Bluff and the Museum and associated collection are emphasized as primary resources of the monument. This alternative emphasizes maintaining historic and non-historic existing features. The no-action alternative includes the following guidelines/actions:

- Retain existing conditions including contributing and non-contributing features.
- Preserve contributing historic resources.
- Maintain existing interpretive signs.
- Maintain non-historic drainage ditches and culverts along trail resource in Character Area A.
- Maintain existing interpretive wayside at W.H. Jackson campsite.
- Maintain asphalt trails.
- Maintain existing wayside and monument entrance sign in Character Area D2.
- Fill additional soil at trail in Character Area A as required due to erosion.

e. Treatment Alternative No. 2 (Preferred Alternative): Visitor Trail (Existing Alignment)

Alternative No. 2 provides for the preservation and stabilization of the emigrant trail resources within the monument's historic landscape. This alternative emphasizes preserving and documenting high quality trail rut resources in their current condition; repairing the visitor trail and stabilizing the trail rut resources where severe degradation has occurred; and providing visitor access in much the same configuration that exists today. Treatment recommendations are organized and presented by character area. The most extensive treatment recommendations occur within Character Area A, the primary area of visitor use.

Character Area A

This portion of the corridor is the most visited and contains visible, though degraded portions of the emigrant trail resources. Recommendations in this area are focused on reducing further impacts caused primarily by natural runoff and erosion. The recommendations are shown on Figure 4 - 6 and are generally as follows:

1) Slow stormwater runoff entering trail rut corridor – the greatest impact to the trail rut resource is erosion caused by stormwater runoff and the resultant deposition of sediment along the trail rut/trail corridor. There are several areas to the north and the south of the trail where adjacent stormwater run-off can be slowed prior to reaching the trail corridor through the use of runoff dissipaters or check dams. Dissipaters should be natural materials (e.g. coir logs, see figure 4 - 1, page 4 - 9) strategically placed on the surface in tributary drainages that lead to problem trail areas. These materials will not require excavation and can be placed unobtrusively so not to impact visitor experience. The intent of these materials is to slow the runoff in high volume storm events.

2) Reduce erosion potential of trail surface – the sections of the visitor trail that coincide with the historic trail rut alignment are typically formed of native soils compacted by foot traffic. Due to the soil type, this surface is highly susceptible to erosion. Rehabilitation of this surface by combining the native soil with a soil hardening agent or soil cement will reduce the loss of trail surface and the related deposition of sediment during storm events (See Figure 4 - 4).

3) Raise the visitor trail surface - specific sections of the trail rut corridor in Character Area A have seen accelerated erosion (scouring) due to the nature of the adjacent topography combined with the contemporary use as a visitor trail. This combination has resulted in scouring not related to historic trail use and has created an on-going erosion problem. In areas of significant scouring the surface of the trail should be raised to meet the level of the adjacent vegetated edge and non-eroded grade, so that stormwater runoff can be directed off of the trail. Fill soil shall be separated from existing grade/native soil by a geotextile fabric to physically mark the extent of fill material installed. Fill soil should be native material or clean, weed-free soil, free of archeological materials. Ensure compatibility with soil cement or soil hardener materials (See Figure 4 - 4).

4) Divert runoff from trail surface with water bars and drainage – in select locations runoff water should be diverted off the trail by installing water bars. Water bars should extend beyond the trail edge to ensure drainage is directed off of the trail corridor. Materials for water bars should be stone native to SCBL. See Figure 4 – 2 and 4 – 3 for water bar examples.

5) Develop an Interpretive Station – develop an accessible interpretive station at the current interpretive sign location in Character Area A. Concentrate information, seating and historic artifacts in this area.

6) Lower Trail (Visitor Center to Interpretive Station) - remove and replace the asphalt trail with hardened natural surface trail. Locate trail to improve visitor experience.

7) Upper Trail (existing asphalt/chip seal trail) - remove and replace asphalt trail with hardened natural surface trail in current location. Separate any fill soil from existing grade/native soil by a geotextile fabric to physically mark the extent of fill material installed.

8) W.H. Jackson Campsite – rehabilitate the interpretive wayside to accentuate the views of the adjacent trail resources, the historic view to the east of Mitchell Pass, and the views of the double cut in Character Area B. The wayside is a destination for visitors to SCBL and should provide informal seating on low walls of native stone materials and guide the visitor to an overall understanding of the emigrant experience and emigrant trail over Mitchell Pass (See Figure 4 - 5).

9) Tree Removal – in select areas of Character Area A remove individual eastern red cedar trees that may diminish important views along the emigrant trail. See Figure 3-2 for location of tree.

Figure 4 - 1. Coir log used as check dam / runoff dissipater (2010) (MBD Coir Log.JPG)

Figure 4 - 2. Stone Drainage Channel (2010) (MBD Stone Drainage Channel.JPG)

Figure 4 - 3. Stone Water Bar (2010) (MBD Stone Water Bar.JPG)

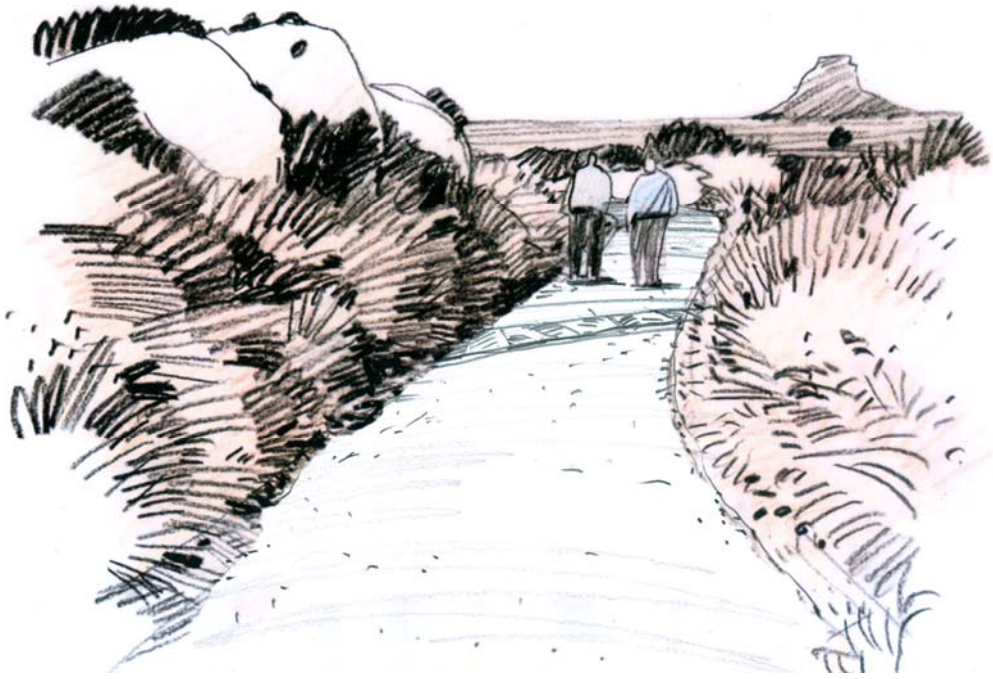


Figure 4 - 4. Oregon Trail stabilization through raising trail elevation, improved surfacing and water bars, with drainage channels located away from trail. (MBD 2010)

Figure 4 - 5. Rehabilitation at W.H. Jackson campsite (MBD 2010)

Character Area B1

Character Area B1 contains high quality trail rut resources that are generally visible and in good condition. Recommendations in this character area are primarily preservation related.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).
2) Mark trail rut resources (see Treatments Common to Action Alternatives).

Character Area B2

Character Area C1 contains braided trail rut resources that are visible and in good condition. Recommendations in this character area are preservation related.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).
2) Mark trail rut resources (see Treatments Common to Action Alternatives).

Character Area C

Most of the trail rut resources in Character Area C are not visible as they have been covered by road construction. Recommendations in this area are limited to further location and documentation.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).

Character Area D1

Character Area D1 contains braided trail rut resources that are indistinct and difficult to discern but are thought to be in good condition. The trail ruts in the northern portion of Character Area D1 have been obliterated by past agricultural activities. Recommendations in this character area are preservation related.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).
2) Mark trail rut resources (see Treatments Common to Action Alternatives).

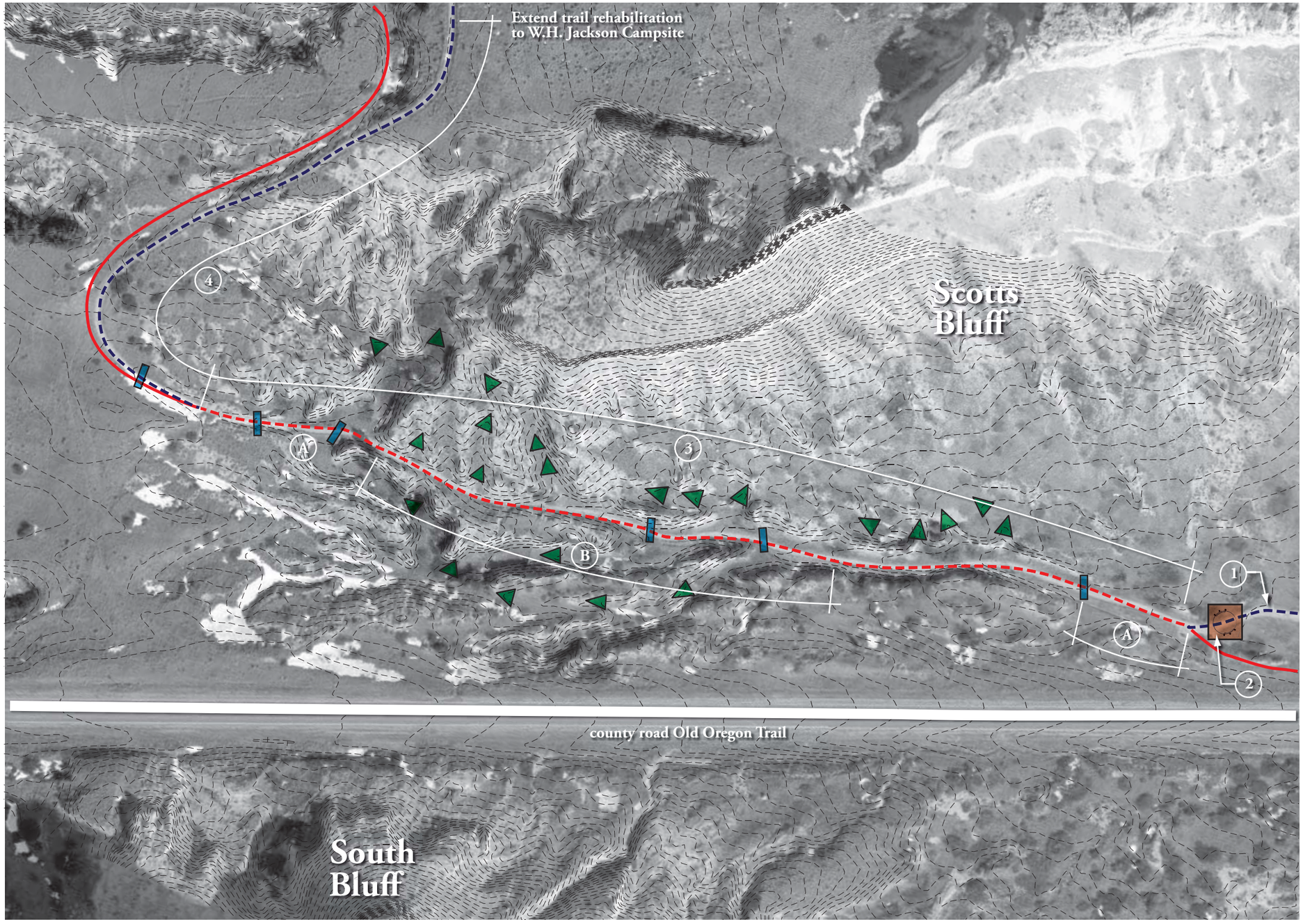
Character Area D2

The majority of trail rut resources in Character Area D1 have been covered by road construction. Recommendations in this area are limited to locating and documenting covered resources and marking the known resources at the ravine.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).

2) Direct archeological investigations to the ravine crossing, south of the county road.

3) Mark trail rut resources (see Treatments Common to Action Alternatives).



Legend

1. Rehabilitate Existing Visitor Trail
2. Visitor Interpretive Station
3. Rehabilitate Existing Trail (on Emigrant Trail), raise elevation; new surfacing; water bars; runoff dissipaters; and trail edge drainage
4. Rehabilitate Existing Visitor Trail in Current Location (adjacent to Emigrant Trail) with new surfacing

- Emigrant Trail
- Emigrant Trail/ Visitor Trail
- Visitor Trail
- Water Bar
- Runoff Dissipater
- A — Area of Sedimentation (remove soil)
- B — Area of Scouring (raise trail surface)

N E S W

0 100' 200'

FIGURE 4 - 6

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

(PREFERRED ALTERNATIVE)

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT

DRAWING TITLE
CHARACTER AREA A - ALTERNATIVE 2

NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

f. Treatment Alternative No. 3- Visitor Trail (Visitor Boardwalk)

Alternative No. 3 provides for the preservation and stabilization of the emigrant trail resources within the monument's historic landscape. This alternative emphasizes preserving and documenting high quality trail rut resources in their current condition; relocating the visitor trail in Character Area A ; and stabilizing the trail rut resources where degraded. Treatment recommendations are organized and presented by character areas. The most extensive treatment recommendations occur within Character Area A, the primary area of visitor use.

Character Area A

This portion of the corridor is the most visited and contains visible, though degraded portions of the emigrant trail resources. Recommendations in this area focus on both: reducing further impacts to trail resources; and relocating visitor access to a boardwalk adjacent to the trail ruts to provide a visitor perspective with a clear distinction between modern and historic trail resources. The recommendations are shown on Figure 4 - 9 and are generally as follows:

1) Slow stormwater runoff entering trail rut corridor – the greatest impact to the trail rut resource is erosion caused by stormwater runoff and the resultant deposition of sediment along the trail rut/trail corridor. There are several areas to the north and the south of the trail where adjacent stormwater run-off can be slowed prior to reaching the trail corridor through the use of runoff dissipaters or check dams. Dissipaters should be natural materials (e.g. coir logs) strategically placed on the surface in tributary drainages that lead to problem trail areas. These materials will not require excavation and can be placed unobtrusively so not to impact visitor experience. The intent of these materials is to slow the runoff in high volume storm events.
2) Relocate the visitor trail – a new boardwalk trail (See Figure 4 - 7) is proposed to move visitor access off of the emigrant trail resource along portions of the trail. This separates the visitor from the trail rut resources and provides a clear distinction between visitor trail and historic resources.

3) Reduce erosion potential of walking trail surface – in select areas where the visitor trail remains on the trail rut corridor accelerated erosion has produced a depressed trail configuration. In these areas the surface of the trail should be raised to meet the level of the adjacent vegetated edge. Replacement of this surface with a soil hardening agent or soil cement will reduce the loss of trail surface and soil deposition during storm events. Fill soil should be native material or clean, weed free import. Separate any fill soil from existing grade/native soil by a geotextile fabric to physically mark the extent of fill material installed.

4) Raise the elevation of the trail rut corridor – specific sections of the trail rut corridor in Character Area A have seen accelerated erosion (scouring) due to the nature of the adjacent topography combined with the contemporary use as a visitor trail. This has resulted in scouring in some sections and sediment deposition in others, not related to historic trail use. In these areas the surface elevation of the trail rut corridor should be raised to an elevation more consistent with sections of the trail that have not seen impact from contemporary use. This will return the trail rut corridor to a profile more consistent with other portions of the corridor and allow stormwater runoff to be shed from surface of the trail corridor. Separate any fill soil from existing grade/native soil by a geotextile fabric to physically mark the extent of fill material installed.

5) Divert runoff from trail surface with water bars and drainage – in select locations runoff water should be diverted off the trail by installing water bars. Water bars should extend beyond trail edge to ensure drainage is directed off of the trail corridor. Materials for water bars should be stone native to SCBL.

6) Develop an Interpretive Station – develop an accessible interpretive station at the current interpretive sign location. Concentrate information, seating and historic artifacts in this area.

7) Lower Trail (Visitor Center to Interpretive Station) - remove and replace asphalt trail with hardened natural surface trail. Locate trail to improve visitor experience.

8) Upper Trail (existing asphalt/chip seal trail) - remove and replace asphalt trail with hardened natural surface trail in current location. Separate any fill soil from existing

grade/native soil by a geotextile fabric to physically mark the extent of fill material installed.

9) W.H. Jackson Campsite - rehabilitate the interpretive wayside to accentuate the views of the adjacent trail resources, the views of the double cut in Character Area B. The wayside is a destination for visitors to SCBL and should provide informal seating on low walls of native stone materials and guide the visitor to an overall understanding of the emigrant experience and emigrant trail over Mitchell Pass (See Figure 4 - 8).

10) Tree Removal – in select areas of Character Area A remove individual eastern red cedar trees that may diminish important views along the emigrant trail. See Figure 3-2 for location of tree.

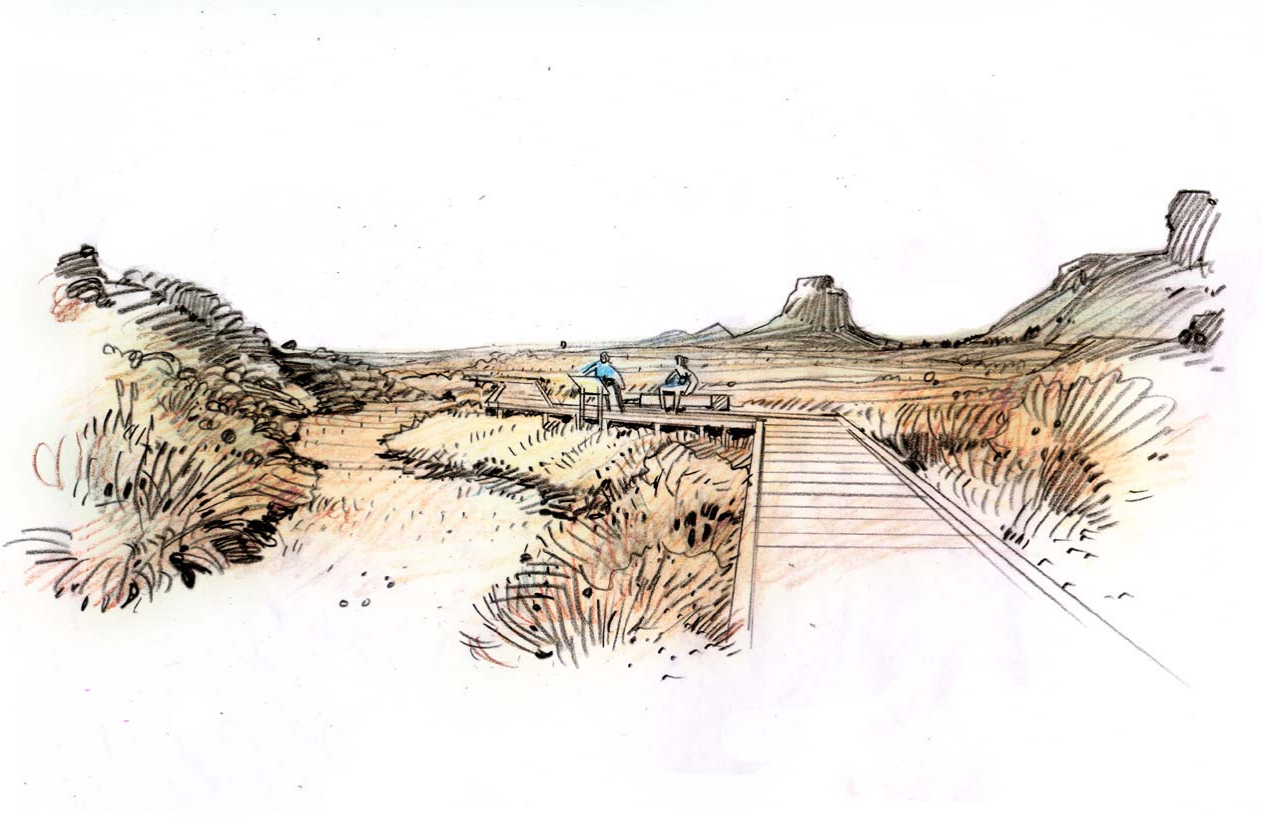


Figure 4 - 7. Boardwalk adjacent to trail resource with interpretive information and site furnishings (MBD c2010)

Figure 4 - 8. Rehabilitation at W.H. Jackson campsite (MBD c2010)

Character Area B1

Character Area B1 contains high quality, concentrated trail rut resources that are generally visible and in good condition. Recommendations in this character area are primarily preservation related.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).
2) Mark trail rut resources (see Treatments Common to Action Alternatives).

Character Area B2

Character Area C1 contains braided trail rut resources that are indistinct but in good condition. Recommendations in this character area are preservation related.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).
2) Mark trail rut resources (see Treatments Common to Action Alternatives).

Character Area C

Most of the trail rut resources in Character Area C are not visible as they have been covered by road construction. Recommendations in this area are limited to further location and documentation.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).

Character Area D1

The southern portion Character Area D1 contains braided trail rut resources that are indistinct and difficult to discern but are thought to be in good condition. The northern portion of Character Area D1 has been impacted by past agricultural activities and the trail rut resources have been obliterated by agricultural practices. Recommendations in this character area are preservation related.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).
2) Mark trail rut resources (see Treatments Common to Action Alternatives).

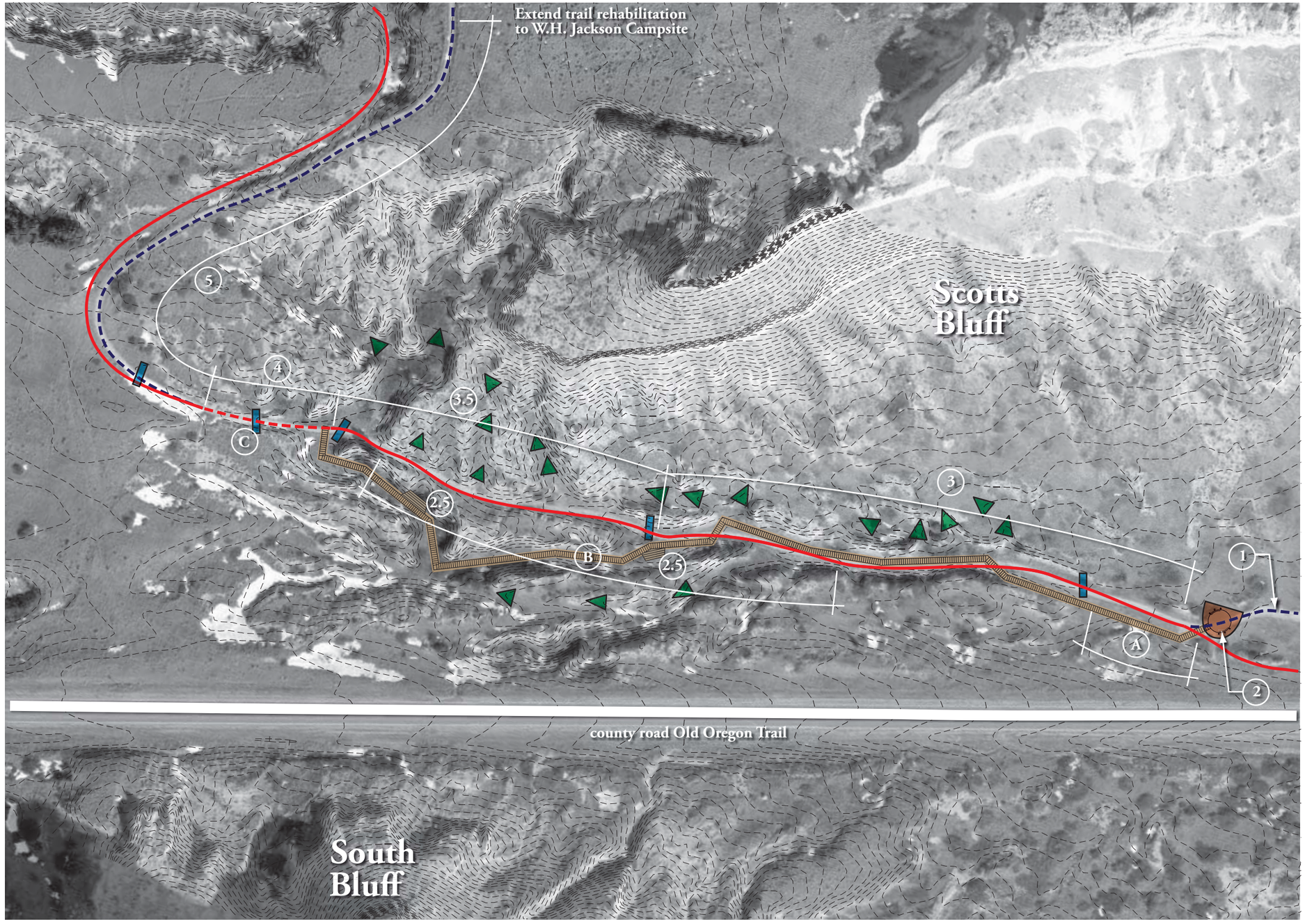
Character Area D2

The majority of trail rut resources in Character Area D2 have been covered by road construction. Recommendations in this area are limited to locating and documenting covered resources and marking the known resources at the ravine.

1) Further locate and document trail rut resources (see Treatments Common to Action Alternatives).

2) Direct archeological investigations to the ravine crossing, south of the county road.

3) Mark trail rut resources (see Treatments Common to Action Alternatives).



Legend

- (1) Rehabilitate Existing Visitor Trail
- (2) Visitor Interpretive Station
- (2.5) Interpretive Wayside on Boardwalk
- (3) Boardwalk Visitor Trail- Adjacent to Emigrant Trail Alignment
- (3.5) Boardwalk Visitor Trail - Rehabilitate Emigrant Trail - new surfacing; raise elevation; water bars; runoff dissipaters
- (4) Rehabilitate Existing Visitor Trail (on Emigrant Trail) -new surfacing; raise elevation; water bars; runoff dissipaters
- (5) Rehabilitate Existing Visitor Trail in Current Location (Adjacent to Emigrant Trail) with new surfacing
- Emigrant Trail
- Emigrant Trail/ Visitor Trail
- Emigrant Trail/ Boardwalk
- Boardwalk
- Visitor Trail
- Water Bar
- Runoff Dissipator
- (A) Area of Sedimentation (remove soil)
- (B) Area of Scouring (raise trail surface)
- (C) Area of Soil Hardening

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FIGURE 4 - 9

UNITED STATES
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE
SCOTTS BLUFF NATIONAL MONUMENT

TITLE OF PROJECT
OREGON TRAIL RUTS LANDSCAPE STUDY
ENVIRONMENTAL ASSESSMENT

DRAWING TITLE
CHARACTER AREA A - ALTERNATIVE 3

NAME OF PARK
SCOTTS BLUFF NATIONAL MONUMENT

REGION	COUNTY	STATE
MIDWEST	SCOTTS BLUFF	NEBRASKA

g. Alternatives Summary and Comparison

A summary and comparison of the alternatives and the degree to which each alternative fulfills the needs and objectives of the proposed project is summarized in Table 4.1. Treatment elements described as common to both action alternatives 2 and 3 are not included.

Table 4.1. Alternatives Summary and Comparison

Alternative 1 No Action Alternative	Alternative 2 (Preferred Alternative) Visitor Trail (Existing Alignment)	Alternative 3 Visitor Trail (Visitor Boardwalk)
General Treatment Approach		
Under the No Action Alternative, the NPS would not implement measures to rehabilitate the Oregon Trail ruts or visitors trail in coincident areas. Routine operation and maintenance would continue, but resource damage, safety concerns, and unsatisfactory visitor experience would persist.	This alternative emphasizes preserving and documenting high quality trail rut resources in their current condition; rehabilitating visitor trail and trail rut resources where severe degradation has occurred; and providing visitor access in much the same configuration that exists today.	This alternative emphasizes preserving and documenting high quality trail rut resources in their current condition; rehabilitating visitor trail and trail rut resources where severe degradation has occurred; and providing visitor access via a boardwalk paralleling a portion of the trail rut resources, differing from that which exists today.
Character Area A This portion of the corridor is the most visited and contains visible, though degraded portions of the emigrant trail resources		

Alternative 1 No Action Alternative	Alternative 2 (Preferred Alternative) Visitor Trail (Existing Alignment)	Alternative 3 Visitor Trail (Visitor Boardwalk)
No change.	Recommendations in this area are focused on reducing further impacts caused primarily by natural runoff and erosion. 1. Slow stormwater runoff entering trail rut corridor. 2. Reduce erosion potential of trail surface. 3. Raise the visitor trail surface. 4. Divert runoff from trail surface with water bars and drainage. 5. Develop an Interpretive Station. 6. Lower Trail (Visitor Center to Interpretive Station) - remove and replace asphalt trail with hardened natural surface trail. Locate trail to improve visitor experience. 7. Upper Trail (existing asphalt/chip seal trail) - remove and replace asphalt trail with hardened natural surface trail 8. Rehabilitate the W.H. Jackson Campsite interpretive wayside to accentuate the views of the adjacent trail resources and provide seating and additional interpretive opportunities 9. Provide accessible opportunities to the Oregon Trail 10. Remove individual eastern red cedar trees in character area A that may diminish important views.	Recommendations in this area are two fold, focusing on reducing further impacts to trail resources and relocating visitor access to a boardwalk trail adjacent to the resource to provide an 'off resource' perspective. The treatment elements in this alternative are the same as those for treatment alternative 1, with the exception that a new boardwalk trail is proposed to move visitor access off of the emigrant trail resource along portions of the trail. This would provide an 'off resource' perspective similar to the existing trail that leads to the W. H. Jackson campsite and provide a more accessible and maintainable route.

Alternative 1 No Action Alternative	Alternative 2 (Preferred Alternative) Visitor Trail (Existing Alignment)	Alternative 3 Visitor Trail (Visitor Boardwalk)
Character Area B1 This area contains high quality, concentrated trail rut resources that are generally visible and in good condition		
No change.	Recommendations in this character area are primarily preservation related. 1. Remove non-contributing/non-compatible features associated with the trail ruts. 2. Provide archeological investigations within the location of the double cut and the trail through sloped topography.	The treatment elements are the same as those for Alternative 2.
Character Area B2 Character Area B2 contains braided trail rut resources that are indistinct but in good condition.		
No change.	Recommendations in this character area are preservation related. 1. Remove non-contributing/non-compatible features associated with the trail ruts.	The treatment elements in this alternative are the same as those in Alternative 2, with the exception that removing non-contributing /non-compatible features associated with the trail ruts is not included.
Character Area C Most of the trail rut resources in Character Area C are not visible as they have been covered by road construction.		
No change.	Recommended treatment elements in this area include only those common to all treatment areas in both treatment alternatives.	This alternative is the same as Alternative 2.

Alternative 1 No Action Alternative	Alternative 2 (Preferred Alternative) Visitor Trail (Existing Alignment)	Alternative 3 Visitor Trail (Visitor Boardwalk)
Character Area D1 The southern portion Character Area D1 contains braided trail rut resources that are indistinct and difficult to discern but are in good condition. The trail ruts in the northern portion of Character Area D1 have been obliterated by past agricultural activities.		
No change.	Recommendations in this character area are preservation related. 1. Remove non-contributing/non-compatible features associated with the trail ruts.	This alternative is the same as Alternative 2.
Character Area D2 The majority of trail rut resources in Character Area D2 have been covered by road construction.		
No change	Recommendations in this character area are preservation related. 1. Direct archeological investigations to the ravine crossing south county road.	This alternative is the same as Alternative 2.
Extent to Which Each Alternative Meets Project Objectives		
1. Preserve and stabilize trail rut and associated historic landscape resources		
Continued levels of maintenance and operations would not preserve or stabilize the trail ruts, so this alternative does not meet this goal.	The trail ruts in Character Area A, which are most susceptible to erosion, would be stabilized, so this alternative meets this goal.	The trail ruts in Character Area A, which are most susceptible to erosion, would be stabilized, so this alternative meets this goal.
2. Provide expanded opportunities for visitors to experience the monument's emigrant trail resources in context with their historical significance		

Alternative 1 No Action Alternative	Alternative 2 (Preferred Alternative) Visitor Trail (Existing Alignment)	Alternative 3 Visitor Trail (Visitor Boardwalk)
There would be no changes in the way visitors experience the trail ruts, so this alternative does not meet this goal.	Improving interpretation at the existing wayside and at the W. H. Jackson site and removing non-contributing elements in character areas B1, B2, and D1 would meet this goal.	Improving interpretation at the existing wayside and at the W. H. Jackson site and removing non-contributing elements in character areas B1 and D1 would meet this goal, but slightly less so than Treatment alternative 1.
3. Improve the ability of the landscape to convey and represent its significant history in a clear and authentic manner		
There would be no improvements, so this alternative does not meet this goal.	Non-contributing elements would be removed in character areas B1, B2, and D1, which meets this goal.	Non-contributing elements would be removed in character areas B, and D1, which meets this goal, but not to the same degree as Treatment alternative 1.
4. Reduce impact on resources from natural and maintenance related causes		
Continued levels of maintenance and operations would not reduce impacts, so this alternative does not meet the goal.	Directing surface water away from the trail and stabilizing the trail in Character Area A meets this goal.	Directing surface water away from the trail and stabilizing the trail in Character Area A meets this goal.

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h. Impact Summary

A summary of potential environmental effects for the alternatives is presented in Table 4.2.

Table 4.2. Impact Summary Table

Impact Topic	Alternative 1 No Action Alternative	Alternative 2 (Preferred Alternative) Visitor Trail (Existing Alignment)	Alternative 3 Visitor Trail (Visitor Boardwalk)
Soil	Because excessive erosion would not be addressed, the No Action Alternative would have local minor long-term adverse effects on soils.	Up to 0.5 acre of soil resources would be disturbed during trail rehabilitation, but in the long term, erosion would be reduced by the project. The effect on soils resources would be local, short-term, minor, and adverse during trail rehabilitation. Planned use of temporary erosion-control Best Management Practices (BMPs) would reduce the potential for short-term erosion and soil loss during construction. Long term effects would be beneficial.	The effects of Alternative 3 are the same as those for Alternative 2, except that up to 0.61 acre of soil resources would be disturbed.
Vegetation	The No Action Alternative would have no effect on vegetation.	Up to 0.5 acre of vegetation would be temporarily impacted under this alternative, but would be revegetated with native species. Weed establishment in areas of disturbed soil is also possible, but would be minimized with weed-control BMPs. but reduced erosion would be beneficial for vegetation. Alternative 2 would have	The effects of Alternative 3 are the same as those for Alternative 2, except that up to 0.61 acres of vegetation would be affected.

Impact Topic	Alternative 1 No Action Alternative	Alternative 2 (Preferred Alternative) Visitor Trail (Existing Alignment)	Alternative 3 Visitor Trail (Visitor Boardwalk)
		local short-term minor adverse effects on vegetation, but would provide local long-term beneficial effects.	
Visitor Experience and Recreational Resources	There would be no change in the fundamental nature and quality of the visitor experience or recreation resources within Scotts Bluff under the No Action Alternative, but the presence of noncontributing features in the historic landscape would have local long-term negligible adverse effects.	Construction activities under Alternative 2 would have local short-term minor adverse effects on visitor experience and recreation. The more authentic experience following implementation of the alternative would have local long-term beneficial effects.	The effects of Alternative 3 are the same as those under Alternative 2.
Public Health, Safety, and Monument Operations	Because the visitor trail surface would not be stabilized, the risk of injuries would remain the same, which would have a local long-term minor adverse effect on public health and safety. There would be no effect on monument operations.	The visitor trail would be stabilized, reducing the risk of injury and improving monument operations, which would provide a local long-term beneficial effect on public health, safety, and monument operations.	Stabilizing the visitor trail and constructing the boardwalk would improve visitor safety, but the boardwalk would increase maintenance costs. Alternative 3 would have local long-term beneficial effects on public safety and local long-term moderate adverse effects on monument operations.
Cultural Resources	Because the trail rut resource would continue to erode, the effects of the No Action Alternative on the historic landscape would be local, minor, long-term, and adverse. The No Action Alternative would have no effect on historic buildings or archeological resources.	Rehabilitating the trail rut resources under Alternative 2 would have local long-term beneficial effects on the historic landscape and no effect on historic buildings or archeological sites.	Rehabilitating the trail rut resources under Alternative 3 would stabilize the ruts, but the visitor boardwalk would be a new noncontributing feature in the historic landscape. Alternative 3 have local long-term beneficial effects and local long-term minor adverse effects on the historic landscape. With preconstruction surveys and

Impact Topic	Alternative 1 No Action Alternative	Alternative 2 (Preferred Alternative) Visitor Trail (Existing Alignment)	Alternative 3 Visitor Trail (Visitor Boardwalk)
			monitoring for archeological resources, Alternative 3 would have no effect on historic structures or archeological resources.

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i. Environmentally Preferable Alternative

The CEQ defines the environmentally preferable alternative as "…the alternative that will promote the national environmental policy as expressed in the National Environmental Policy Act § 101." Section 101 states that, "…it is the continuing responsibility of the Federal Government to:

1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

2) Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

3) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

4) Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment, which supports diversity and variety of individual choice;

5) Achieve a balance between population and resource use, which will permit high standards of living and a wide sharing of life's amenities; and

6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources."

The identification of the "environmentally preferable alternative" was based on an analysis that balances factors such as physical impacts on various aspects of the environment, mitigation measures to deal with impacts, and other factors including the statutory mission of the NPS and the purposes for the project.

The No Action Alternative would preserve existing conditions, but it would not be considered the environmentally preferable alternative because not rehabilitating the Oregon Trail ruts in the character areas would not meet environmental goals in the same manner as the action alternatives. The No Action Alternative is not the environmentally preferable alternative for the following reasons: 1) by not addressing the soil erosion, safety issues, and potential cultural resource damage associated with existing conditions and management, it would not meet the stewardship responsibility for protecting monument resources and providing a safe environment (goals 1, 2, and 3) and 2) it would not improve protection of

environmental resources and the historic landscape (goal 4). Thus, the No Action Alternative does not fully meet the provisions of NEPA Section 101 goals.

While Alternative 3 would rehabilitate the Oregon Trail ruts, it would not be considered the environmentally preferable alternative because it would result in greater impacts on vegetation and monument operations than would Alternative 2. Alternative 3 is not the environmentally preferable alternative for the following reasons: 1) by constructing a boardwalk that would require removing existing vegetation and that would require greatly increased maintenance efforts and costs, it would not meet the stewardship responsibility for protecting monument resources and providing the widest range of beneficial uses of the environment without undesirable consequences (goals 1 and 3). Thus, Alternative 3 does not fully meet the provisions of NEPA Section 101 goals.

The NPS determined that the environmentally preferable alternative should implement the improvements described for Treatment Alternative, which is also the preferred alternative, because it surpasses the No Action Alternative and Treatment Alternative 3 in realizing the full range of national environmental policy goals, as stated in Section 101 of NEPA. Alternative No. 2 would provide the widest range of beneficial uses without degradation and would reduce risks to health and safety. Implementing Alternative 2 would best preserve the natural and cultural features in the monument because it implements improvements that provide long-term protection of environmental and cultural resources (goals 1, 2, 3, and 4).

Because it meets the purpose and need for the project and is the environmentally preferable alternative, Alternative 2 is recommended as the Preferred Treatment Alternative for this proposal.

j. Mitigation

Mitigation measures to minimize the degree and/or severity of adverse effects natural resources, cultural resources, and other values would apply to either of the treatment alternatives (Table 4.3). Many of these mitigation measures are considered best management practices (BMPs) that the NPS frequently uses for construction projects to control erosion, revegetate disturbed areas, control weeds, and minimize resource impacts.

Table 4.3 Mitigation Measures

Resource Area	Mitigation
General Construction Considerations	Construction zones would be identified with construction fence, silt fence, or some similar material prior to any construction activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications, and workers would be instructed to avoid conducting activities beyond the construction zone. Disturbances would be limited to specifically designated construction limits. No machinery, vehicles, or equipment would access areas outside the construction limits. Construction equipment staging would occur within existing areas of disturbance. Off-site equipment and vehicle parking would be limited to designated staging areas. Contractors would be required to properly maintain construction equipment to minimize noise (i.e., mufflers and brakes). Construction vehicle engines would not be allowed to idle for extended periods. Material and equipment hauling would comply with all legal load restrictions. Load restrictions on monument roads are identical to state load restrictions with such additional regulations as may be imposed by the Monument Superintendent. Water sprinkling would be used as needed to reduce fugitive dust in work zones. Water would be obtained from the monument water supply. All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project work limits upon project completion.

Resource Area	Mitigation
Vegetation	All disturbed ground would be reclaimed using appropriate BMPs and use of native plants. Until the soil is stable and vegetation is established, erosion-control measures would be implemented to minimize erosion and prevent sediment from reaching streams. Temporary barriers would be provided to protect existing trees, plants, and root zones. Trees or other plants would not be removed, injured, or destroyed without prior approval. To prevent the introduction of, and minimize the spread of, nonnative vegetation and noxious weeds, the following measures would be implemented during construction: • The construction area would be pretreated for exotic vegetation prior to any ground disturbance. Pretreatment could include mechanical, biological, and/or chemical treatments. • Soil disturbance would be minimized. • All construction equipment would be pressure washed and/or steam cleaned before entering the monument to ensure that all equipment, machinery, rocks, gravel, and other materials are cleaned and weed free. • All haul trucks bringing fill materials from outside the monument would be covered to prevent seed transport. • Vehicle and equipment parking would be limited to within construction limits or approved staging areas and these sites would be treated for exotic species if necessary. • Staging areas outside the monument would be surveyed for noxious weeds and treated appropriately prior to use. • All fill, rock, and additional topsoil would be obtained from stockpiles from previous projects or excess material from this project, if possible; and if not possible, then weed-free fill, rock, or additional topsoil would be obtained from sources outside the monument. NPS personnel would certify that the source is weed free. • Hay bales would be prohibited from use in erosion control because of the likelihood of introducing exotic plants. If straw is used, it must be weed free from a monument-approved source. • Monitoring and follow-up treatment of exotic vegetation would occur after project activities are completed.

Resource Area	Mitigation
Soils and Water Quality	Erosion-control BMPs for drainage and sediment control would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas. These BMPs may include, but are not limited to, silt fencing, filter fabric, temporary sediment ponds, check dams of pea gravel-filled burlap bags or other material, and/or immediate mulching of exposed areas to minimize sedimentation and turbidity impacts as a result of construction activities. Silt fencing fabric would be inspected daily during project work and weekly after project completion, until removed. Accumulated sediments would be removed when the fabric is estimated to be approximately 75 percent full. Silt removal would be accomplished in such a way as to avoid introduction into any flowing water bodies. A two-stage method of soil removal would be used wherever possible. This involves scraping and stockpiling the surface soil, followed by excavation of subsoil material and storage in a separate pile. When the trench is covered, the subsurface material would be used first, and then the surface soil would be used to cover the area. Regular site inspections would be conducted to ensure that erosion-control measures are properly installed and functioning effectively. The operation of ground-disturbing equipment would be temporarily suspended during large precipitation events to reduce the production of sediment that may be transported to streams. A stormwater pollution prevention plan would be developed and approved by monument staff. A National Pollutant Discharge Elimination System Construction Storm Water General Permit from the Nebraska Department of Environmental Quality would be needed in the unlikely event construction disturbs over one acre of land. All equipment would be maintained in a clean and well-functioning state to avoid or minimize contamination from fluids and fuels. Prior to starting work each day, all machinery would be inspected for leaks (e.g., fuel, oil, and hydraulic fluid) and all necessary repairs would be made before work begins. A hazardous spill plan would be required from the contractor prior to the start of construction stating what actions would be taken in the case of a spill and preventive measures to be implemented. Hazardous spill clean-up materials would be on-site at all times. This measure is designed to avoid/minimize the introduction of chemical contaminants associated with machinery (e.g., fuel, oil, and hydraulic fluid) used in project implementation.
Wildlife	No construction activities would occur at night. The construction contractor would be required to keep all garbage and food waste contained and removed daily from the work site to avoid attracting wildlife into the construction zone. Construction workers would be instructed to remove food scraps and not feed or approach wildlife.

Resource Area	Mitigation
Visitor Experience and Recreation Resources	Visitors would be informed in advance of construction activities via a number of outlets including the monument website, newspaper, visitor center, and other outlets as needed. Construction would not occur on weekends or holidays and would be limited to the hours between 8 a.m. and 5 p.m. To the extent possible, the visitor trail would remain open, but when the trail would be closed, signage and barriers will be used to inform visitors of the closure. To minimize the potential impact to monument visitors, variation on construction timing may be considered, such as conducting a majority of the work in shoulder seasons. Temporary interpretive panels would be provided during the construction period to inform and educate visitors regarding the project and its importance to the overall historic landscape of the monument.
Public Health, Safety, and Monument Operations	The visitors trail would be closed during construction activities on or in close proximity to the trail. Orange barricade fencing would be used to limit visitor access to construction areas. Staging and access areas would be located to avoid creating conflicts with on-going monument operations and visitor access.
Cultural Resources	Cultural resources in the vicinity of the project area would be identified and delineated for avoidance prior to project work. An NPS approved archeologist would be on site during construction to advise or take appropriate actions should any archeological resources be uncovered during construction. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed. Should any archeological resources be uncovered during construction, work would be halted in the area and the Midwest Archeological Center, SHPO, and appropriate Native American tribes would be contacted for further consultation. The NPS would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors and subcontractors also would be instructed on procedures to follow in case previously unknown archeological resources are uncovered during construction.

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k. Impacts from Treatment Alternatives/Environmental Consequences

This section provides a description of the resources potentially impacted by the alternatives and the likely environmental consequences as required by 40 CFR 1502.14. It is organized by impact topics that were derived from internal monument and external public scoping. Impacts are evaluated based on type, context, duration, intensity, and whether they are direct, indirect, or cumulative. The No Action Alternative and each action treatment alternative are discussed within each resource topic area. NPS policy also requires an evaluation of potential impairment of monument resources and the potential for generating unacceptable levels of impact.

General Methods

This section contains the environmental impacts, including direct and indirect effects, and their significance for each alternative. The analysis is based on the assumption that the mitigation measures identified in the "Mitigation" section of this report would be implemented as described for each alternative. Overall, the NPS based these impact analyses and conclusions on the review of existing literature and monument studies, information provided by experts within the monument, other agencies, professional judgment and monument staff insights, and public input.

The following terms are used in the discussion of environmental consequences to assess the impact intensity threshold and the nature of impacts associated with each alternative:

Type: Impacts can be beneficial or adverse.

Context: Context is the setting within which an impact would occur, such as local (in the project area), monument-wide (in SCBL), or regional (in Scotts Bluff County, Nebraska and nearby).

Impact Intensity: Impact intensity is defined individually for each impact topic. There may be no impact, or impacts may be negligible, minor, moderate, or major. Impact intensity is not used when describing beneficial effects.

Duration: Duration of impact is analyzed independently for each resource because impact duration is dependent on the resource being analyzed. Depending on the resource, impacts may last for the construction period, a single year or growing season, or longer. For purposes of this analysis, impact duration is described as short-term or long-term. Because of the 10

to year time frame within which they occur, the duration of cumulative effects of past, present, and reasonably foreseeable actions are always long term.

Direct and Indirect Impacts: Effects can be direct, indirect, or cumulative. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable. Direct and indirect impacts are considered in this analysis, but are not specified in the narratives. Cumulative effects are discussed in a separate section.

Threshold for Impact Analysis: The duration and intensity of effects vary by resource. Therefore, the definitions for each impact topic are described separately. These definitions were formulated through the review of existing laws, policies, and guidelines; and with assistance from monument staff and Midwest Region Office NPS specialists. Impact intensity thresholds for negligible, minor, moderate, and major adverse effects are defined in a table for each resource topic.

Cumulative Effects

Cumulative impacts are defined 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 nonfederal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time. The CEQ regulations that implement NEPA require assessment of cumulative impacts in the decision-making process for federal projects.

Methods for Assessing Cumulative Effects

Cumulative impacts were determined by combining the impacts of the alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects in SCBL that might contribute to cumulative impacts. The geographic scope of the analysis includes actions in the project area as well as other actions in the monument where overlapping resource impacts are possible. The temporal scope includes projects within a range of approximately 10 years.

Once identified, past, present, and reasonably foreseeable actions were then assessed in conjunction with the impacts of the alternatives to determine if they would have any added adverse or beneficial effects on a particular natural resource, monument operation, or visitor use. The impact of reasonably foreseeable actions would vary for each of the resources. Cumulative effects are considered for each alternative and are presented in the environmental consequences discussion for each impact topic.

Past Actions

Past actions include activities that influenced and affected the current conditions of the environment near the project area. Past actions with the most apparent effects have occurred in Character Area A, which is the most heavily used character area, and include construction of the visitor facilities, using a segment of the trail ruts as part of the visitors trail, occasional maintenance addressing erosion by filling in the segment of visitors trail that coincides with the trail ruts approximately three times over the past 12 years, and installing ditches and culverts in the same area to reduce run off on the trail surface. Other past actions that have affected the character areas in general include past land uses such as grazing, fire management, and noxious weed management, which have affected the vegetation communities. Construction of the county road Old Oregon Trail in Character Area A, C and D2 and cultivation in Character Area D1 have fragmented the trail ruts.

Current and Future Actions

Monument staff identified several minor current and reasonably foreseeable actions. Noxious weed and fire management activities are ongoing and will continue in the future. There are currently no plans for large scale actions such as controlled burns or herbicide treatments, but monitoring and spot treatments will continue. There are no other ongoing or reasonably foreseeable actions that would potentially affect the resources identified as impact topics for this report.

Impairment of Scotts Bluff National Monument Resources or Values

In addition to determining the environmental consequences of the alternatives, NPS Management Policies 2006 and DO–12 require an analysis of potential effects of the

preferred alternative to determine if actions would impair monument resources or cause unacceptable impacts. The impairments determination is contained in Appendix B.

Impacts to Cultural Resources and Section 106 of the National Historic Preservation Act

For purposes of the NEPA process, cultural resources are considered under Section 106 of the National Historic Preservation Act (NHPA, 1966, as amended), and specifically its implementing regulations under 36 CFR Part 800. Section 106 requires federal agencies to consider the effects of an undertaking on historic properties and provides a process under which to implement Section 106. In this case, the NPS has determined that the proposed alternatives have the potential to adversely affect cultural resources and is using the LS/EA as an assessment of effects for compliance with Section 106.

In this LS/EA, impacts to cultural resources are described in terms of type, context, duration, and intensity, as described above, which is consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the NEPA. These impact analyses are intended, however, to comply with the requirements of both NEPA and Section 106 of the NHPA. In accordance with the Advisory Council on Historic Preservation's regulations implementing Section 106 of the NHPA (36 CFR Part 800, Protection of Historic Properties), impacts to archeological and cultural resources were identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that were either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect on affected cultural resources either listed in or eligible to be listed in the National Register; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

An adverse effect occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the National Register (e.g., diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by an alternative that would occur later in time, be farther removed in distance, or be cumulative (36 CFR Part 800.5, Assessment of Adverse Effects). A determination of no adverse effect means there is an effect, but the effect would not

diminish in any way the characteristics of the cultural resource that qualify it for inclusion in the National Register.

CEQ regulations and the National Park Service's Conservation Planning, Environmental Impact Analysis and Decision-making (Director's Order #12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact (e.g., reducing the intensity of an impact from major to moderate or minor). Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect, as defined by Section 106, is similarly reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse. The monument will coordinate with the SHPO to address mitigation measures for the alternative that is eventually selected.

A Section 106 summary is included in the impact analysis sections for cultural resources (historic structures, archeological resources, and the cultural landscapes) for each alternative. The Section 106 summary is intended to meet the requirements of Section 106 and is an assessment of the effect of the undertaking (implementation of the alternative) on cultural resources, based upon the criteria of effect and adverse effect found in the Advisory Council's regulations.

Soils

Impact Intensity Threshold

Available information on potentially impacted soils in the project area was compiled. Potential impacts from the alternatives were based on professional judgment and experience with similar actions. The threshold of change for the intensity of an impact on soils is defined in Table 4.4.

Table 4.4. Soil Impact and Intensity

Impact Intensity	Intensity Description
Negligible	The effects on soils would be below or at a very low level of detection. Any effects on productivity or erosion potential would be slight.
Minor	An action's effects on soils would be detectable. The effects would change a soil's profile in a relatively small area, but would not appreciably increase the potential for erosion of additional soil. If mitigation were needed to offset adverse effects, it would be relatively simple to implement and would likely be successful.
Moderate	An action would result in a change in quantity or alteration of the topsoil, overall biological productivity, or the potential for erosion to remove small quantities of soil. Changes to localized ecological processes would be limited. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.
Major	An action would result in a change in the potential for erosion to remove large quantities of soil or in alterations to topsoil and overall biological productivity in a relatively large area. Key ecological processes would be altered, and landscape-level changes would be expected. Mitigation measures to offset adverse effects would be necessary, extensive, and their success could not be guaranteed.

Short-term impact—recovers in less than 3 years
Long-term impact—takes more than 3 years to recover

Environmental Consequences

Alternative 1 – No Action

Direct and Indirect Impacts of the Alternative. No new disturbance to soil resources would occur because there would be no construction-related actions. Existing rates of erosion would continue, potentially resulting in local minor long-term adverse impacts.

Cumulative Impacts. Past actions, such as changes in vegetation; cultivation practices; grazing by nonnative animals; the construction of roads, recreation facilities, and other structures; and installing water bars, filling uneven areas, and use of part of the trail ruts by visitors have impacted soil resources from excavation, erosion, and a loss in soil productivity. Current and future actions such as weed and fire management would have beneficial effects on soils by encouraging native vegetation that protects soils from erosion Past, present, and

reasonably foreseeable future projects would have monument-wide moderate adverse and monument-wide beneficial cumulative effects on soil resources. Those effects, in combination with the local long-term minor adverse effects of the No Action Alternative, would result in monument-wide moderate adverse and beneficial cumulative effects.

Conclusion. The No Action Alternative would have local minor long-term adverse effects on soils. Cumulative effects would be local, moderate, and adverse, with some beneficial effects. There would be no unacceptable impacts to soils.

Alternative 2 (Preferred Alternative) – Visitor Trail (Existing Alignment)

Direct and Indirect Impacts of the Alternative. Most of the adverse impacts to soils from implementing Alternative 2 would occur in Character Area A and would result from activities such as ground clearing and excavation to install water bars and check dams; raising the surface of the trail ruts and replacing the visitor trail surface; and improving interpretive stations and waysides. Small areas of soil may also be disturbed by removing non-contributing / non-compatible features and marking the trail ruts in the other character areas. The majority of these impacts would be temporary.

Some of these activities, such as trail surface replacement, would occur within previously disturbed areas, but there would be up to 0.5 acre of new soil disturbance from Alternative 2. Soil material exposed during construction would be subject to erosion until stabilized or revegetated. The proposed stormwater management plan would reduce the potential for erosion and soil loss. Planned use of temporary erosion control BMPs would reduce the potential for short-term erosion and soil loss. Temporary impacts to soils during construction would be local, short-term, minor, and adverse.

Although there would be temporary adverse effects, the overall effects of the alternative would be long-term and beneficial. The beneficial effects would result from greatly reduced soil erosion and sediment transport following installation of permanent erosion control measures in Character Area A.

Cumulative Impacts. Past, present, and reasonably foreseeable future actions and their impacts described under alternative 1 would be the same as those under Alternative 2. Those impacts, in combination with the local long-term minor adverse effects and long-term

beneficial effects of Alternative 2, would result in local moderate adverse and beneficial cumulative effects.

Conclusion. Soil resources would be temporarily impacted during trail rehabilitation. The effect on soils resources would be local, short-term, minor, and adverse during trail rehabilitation. Alternative 2 would provide long-term beneficial effects following construction by reducing soil erosion. Alternative 2 would result in local moderate adverse and beneficial cumulative effects. There would be no unacceptable impacts to soils.

Alternative 3 – Visitor Trail (Visitor Boardwalk)

Direct and Indirect Impacts of the Alternative. Soil disturbing activities and impacts to soils from implementing Alternative 3 are the same as those for Alternative 2, but would also include soil disturbance from constructing the visitor trail boardwalk in Character A. Constructing the boardwalk would disturb up to 0.14 acre, for total disturbance of up to 0.61 acre. Adverse impacts to soils from Alternative 3 would be local, long-term, and minor. As with Alternative 2, there would also be long-term beneficial effects from rehabilitating the trail and greatly reducing erosion and sediment transport.

Cumulative Impacts. Past, present and reasonably foreseeable future actions and their impacts described under Alternative 1 would be the same as those under Alternative 2. Those impacts, in combination with the local long-term minor adverse effects and long-term beneficial effects of Alternative 3, would result in local long-term moderate adverse effects and beneficial cumulative effects.

Conclusion. Soil resources would be temporarily impacted during trail rehabilitation. Additionally, Alternative 3 would permanently affect soils under the boardwalk. The adverse effects on soils resources would be local, long-term, and minor following trail rehabilitation. Alternative 3 would provide long-term beneficial effects following construction by reducing soil erosion. Alternative 3, would result in local long-term moderate adverse effects and long-term beneficial cumulative effects. There would be no unacceptable impacts to soils.

665 **Vegetation**

666 *Impact Intensity Threshold*

667 Predictions about impacts were based on the expected disturbance to vegetation
668 communities, professional judgment, and experience with previous projects. The thresholds
669 of change for the intensity of an impact on vegetation are defined in Table 4.5.

670

671 **Table 4.5. Vegetation Impact and Intensity**

Impact Intensity	Intensity Description
Negligible	The impacts on vegetation (individuals or communities) would not be measurable. The abundance or distribution of individuals would not be affected or would be slightly affected. The effects would be on a small scale and no species of special concern would be affected. Ecological processes and biological productivity would not be affected.
Minor	The action would not necessarily decrease or increase the project area's overall biological productivity. The alternative would affect the abundance or distribution of individuals in a localized area, but would not affect the viability of local or regional populations or communities. Mitigation to offset adverse effects, including special measures to avoid affecting species of special concern, would be required and would be effective. Mitigation may be needed to offset adverse effects, would be relatively simple to implement, and would likely be successful.
Moderate	The action would result in effects on some individual native plants and would also affect a sizeable segment of the species' population over a relatively large area. Permanent impacts would occur to native vegetation, but in a relatively small area. Some special status species would also be affected. Mitigation measures would be necessary to offset adverse effects and would likely be successful.
Major	The action would have considerable effects on native plant populations, including special status species, and would affect a relatively large area within and outside the monument. Extensive mitigation measures to offset the adverse effects would be required; success of the mitigation measures would not be guaranteed.

672 Short-term impact—recovers in less than 1 year
673 Long-term impact—takes more than 1 year to recover
674

675 **Environmental Consequences**

676 ***Alternative 1 – No Action***

677 **Direct and Indirect Impacts of the Alternative.** There would be no ground
678 disturbance with the potential to adversely impact vegetation under the No Action
679 Alternative. The existing use and maintenance of the trail ruts would continue. The No
680 Action Alternative would not involve land-disturbing activities that would likely increase the

number and distribution of exotic or noxious weeds. The No Action Alternative would have no effect on vegetation.

Cumulative Impacts. Past actions, such as fire suppression; cultivation practices; grazing by nonnative animals; planting conifers to stabilize soil; and the construction of roads, recreation facilities, and other structures have resulted in the loss of vegetation and the introduction of invasive exotic plants. Current and future actions associated with noxious weed and fire management would have beneficial effects on vegetation by maintaining healthy native vegetation communities. Past, present, and reasonably foreseeable future projects would have local, moderate adverse and beneficial cumulative effects on vegetation resources. Because it would have no affect on vegetation resources, the No Action Alternative would not contribute to cumulative effects.

Conclusion. The No Action Alternative would have no new effects on vegetation from ground disturbance in the project area. Cumulative effects would be local, moderate, and adverse and beneficial. There would be no unacceptable impacts to vegetation.

Alternative 2 (Preferred Alternative) - Visitor Trail (Existing Alignment)

Direct and Indirect Impacts of the Alternative. Trail rehabilitation activities would occur mostly within previously disturbed areas or areas with no vegetation such as the trail ruts, visitors trail, and waysides. Installing the erosion control measures in Character Area A would affect approximately 0.5 acre of shrubland. In addition one eastern red cedar will be removed from the emigrant trail corridor to restore important views of the trail. Temporary impacts to vegetation would also occur around the edges of proposed improvements. Construction activities would be confined to the smallest area necessary to complete the work and all areas of disturbed vegetation would be restored with native vegetation following construction. Infestation and spread of invasive exotic plants is possible. Weeds frequently invade disturbed ground where they are easily established and out-compete native species if left unchecked. Implementing BMP weed control practices would minimize the potential for weed establishment and long-term impacts. Revegetation of disturbed areas is expected to take more than one year because of the low soil fertility and water holding capacity of soils. Alternative 2 would have local, long-term, minor, adverse effects on

vegetation. Rehabilitation actions that reduce erosion and promote soil stability would have long-term beneficial effects on vegetation.

Cumulative Impacts. Past, present and reasonably foreseeable future actions and their impacts described under alternative 1 would be the same as those under Alternative 1. Those impacts, in combination with the local short-term minor adverse effects and long-term beneficial effects of Alternative 2, would result in local moderate adverse and beneficial cumulative effects.

Conclusion. About 0.5 acre of vegetation resources would be temporarily impacted during trail rehabilitation. The adverse effects on vegetation resources would be local, long-term, and minor following trail rehabilitation. Alternative 2 would have local short-term minor adverse effects on vegetation, but would provide long-term beneficial effects following construction by reducing soil erosion. Alternative 2 would result in local moderate adverse cumulative effects and beneficial cumulative effects. There would be no unacceptable impacts to vegetation.

Alternative 3 – Visitor Trail (Visitor Boardwalk)

Direct and Indirect Impacts of the Alternative. Alternative 3 would have the same direct and indirect adverse and beneficial effects on vegetation resources as Alternative 2, except that there would be additional adverse effects from constructing the boardwalk in Character Area A. The boardwalk would permanently affect 0.14 acre of shrubland vegetation, for a total of 0.64 acre of vegetation. Alternative 3 would have local long-term minor adverse effects and long-term beneficial effects on vegetation resources.

Cumulative Impacts. Alternative 3 would have the same cumulative impacts as those for Alternative 2, which would be local, moderate, and adverse as well as beneficial.

Conclusion. There would be about 0.64 acre of impacts to vegetation resources. The adverse effects on vegetation resources would be local, long-term, and minor following trail rehabilitation. Alternative 3 would provide long-term beneficial effects following construction by reducing soil erosion. Alternative 3 would result in local moderate adverse cumulative effects and long-term beneficial cumulative effects. There would be no unacceptable impacts to vegetation.

741 **Visitor Experience and Recreation Resources**

742 *Impact Intensity Threshold*

743 NPS Management Policies 2006 state that the enjoyment of monument resources and
744 values by the people of the United States is part of the fundamental purpose of all
745 monuments and that the NPS is committed to providing appropriate high-quality
746 opportunities for visitors to enjoy the monuments. Part of the purpose of SCBL is to offer
747 opportunities for recreation, education, inspiration, and enjoyment. Consequently, one of the
748 monument's management goals is to ensure that visitors safely enjoy and are satisfied with
749 the availability, accessibility, diversity, and quality of monument facilities, services, and
750 appropriate recreational opportunities.

751 Impacts on the ability of visitors to experience a full range of monument resources was
752 analyzed by examining resources and objectives presented in the monument significance
753 statements, as derived from its enabling legislation. The potential for change in visitor
754 experience proposed by the alternatives was evaluated by identifying projected increases or
755 decreases in access and other visitor uses, and determining whether or how these projected
756 changes would affect the desired visitor experience, to what degree, and for how long. The
757 thresholds of change for the intensity of an impact to visitor experience and recreational
758 resources are described in Table 4.7.

759

760 **Table 4.7. Visitor Experience and Recreation Resources Impact and Intensity**

Impact Intensity	Intensity Description
Negligible	Changes in visitor experience and recreation resources would be below or at an imperceptible level of detection. The visitor would not likely be aware of the effects associated with the action.
Minor	Changes in visitor experience and recreation resources would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the action, but the effects would be slight.
Moderate	Changes in visitor experience and recreation resources would be readily apparent. The visitor would be aware of the effects associated with the action and would likely express an opinion about the changes.
Major	Changes in visitor experience and recreation resources would be readily apparent and severely adverse or exceptionally beneficial. The visitor would be aware of the effects associated with the action and would likely express a strong opinion about the changes.

761 Short-term impact—occurs only during project construction
762 Long-term impact—continues after project construction

Environmental Consequences

Alternative 1 – No Action

Direct and Indirect Impacts of the Alternative. There would be no change in the fundamental nature and quality of the visitor experience or recreation resources within Scotts Bluff under the No Action Alternative. Recreational activities would continue as before within the monument. Visitors would continue to use the existing trail and interpretive waysides in Character Area A. Non-contributing features would remain in the historic landscape, potentially compromising the interpretive goals of the monument, but in ways visitors would not be likely to notice. For these reasons, the No Action Alternative would have a local long-term negligible adverse effect on the quality of the visitor experience.

Cumulative Impacts. Past actions, such as road construction and changes in land use have affected visitor experience by not allowing visitors to experience the entirety of the Oregon Trail ruts through the monument and by creating conditions that do not accurately represent conditions present during the period of significance of the Oregon Trail. The trail rut fragmentation and difference between present and past conditions is subtle enough that the majority of visitors would not be aware of them. Past actions such as the construction of roads, recreation and visitor facilities, and other structures and the occasional maintenance have had long-term beneficial effects on visitor experience and recreational opportunities. Current and future actions associated with noxious weed and fire management would lead to native vegetation communities more like those present during use of the emigrant trail, which would provide visitors with a more authentic experience. Although visitor experiences would be improved, the beneficial effect would be negligible. Past, present, and reasonably foreseeable future projects would have local minor adverse effects on visitor experience and negligible beneficial effects. Those effects, in combination with the local short-term negligible adverse effects of the No Action Alternative, would result in local minor adverse cumulative effects and beneficial cumulative effects.

Conclusion. The No Action Alternative would have local long-term negligible adverse effects on visitor experience because of non-contributing features in the historic landscape and subtle changes in conditions in the monument. Cumulative effects of the No Action

Alternative would be local, minor and adverse and beneficial. There would be no unacceptable impacts to visitor experience and recreation resources.

Alternative 2(Preferred Alternative) – Visitor Trail (Existing Alignment)

Direct and Indirect Impacts of the Alternative. The visitor experience and access to recreation resources would be temporarily impacted by construction of the erosion control measures and waysides in Character Area A, when there may be temporary trail closures. Visitors would also see staging and access areas and may experience a temporary increase in construction traffic and noise near the project area. The effects on visitor experience and recreation during construction would be local, short-term, minor, and adverse.

Alternative 2 would result in long-term beneficial effects because of more accurate representation of the historic landscape, improved waysides and interpretive stations, and a more-easily negotiated visitor trail surface.

Cumulative Impacts. The past and reasonable foreseeable actions and their effects are the same as those for the No Action Alternative. Past, present, and reasonably foreseeable future projects would have local minor adverse cumulative effects on visitor experience and negligible beneficial effects. Those impacts, in combination with the local long-term beneficial effects of Alternative 2, would result in local minor adverse cumulative effects and beneficial cumulative effects.

Conclusion. Alternative 2 would have local short-term minor adverse effects on visitor experience and recreation during construction and long-term beneficial effects because non-contributing features in the historic landscape would be removed, waysides and interpretive stations would be improved, and the visitor trail would be easier to walk on. Alternative 2 would have local, minor adverse cumulative effects and beneficial cumulative effects. There would be no unacceptable impacts to visitor experience and recreation resources.

Alternative 3 – Visitor Trail (Visitor Boardwalk)

Direct and Indirect Impacts of the Alternative. The activities and effects of Alternative 3 would be similar to those of Alternative 2. There would be short-term local minor adverse impacts during construction and long-term beneficial effects to the visitor experience and recreational resources.

Cumulative Impacts. The past and reasonable foreseeable actions and their effects are the same as those for the No Action Alternative and Alternative 2. Past, present, and reasonably foreseeable future projects would have local minor adverse cumulative effects on visitor experience and long-term beneficial effects. Those impacts, in combination with the effects of Alternative 3, would result in local minor adverse cumulative effects and beneficial cumulative effects.

Conclusion. Alternative 3 would have local short-term minor adverse effects on visitor experience and recreation during construction and long-term beneficial effects because non-contributing features in the historic landscape would be removed, waysides and interpretive stations would be improved, and the visitors trail would be easier to walk on. Alternative 3 would have local, minor adverse cumulative effects and beneficial cumulative effects. There would be no unacceptable impacts to visitor experience and recreation resources.

Public Health, Safety, and Monument Operations

Impact Intensity Threshold

The NPS seeks to provide a safe and healthful environment for visitors and employees.[2] To that end, the NPS works to prevent "visitor injuries while preserving natural and cultural resources and providing an enjoyable experience consistent with the conservation of those resources" (DO-50C). Public health and safety refers to the ability of the NPS to provide a healthy and safe environment for visitors and monument staff, to protect human life, and to provide for injury-free visits and appropriate responses when accidents and injuries occur.

Monument operations, for the purposes of this LS/EA, refers to the quality and effectiveness of the infrastructure, and the ability of monument staff to maintain the infrastructure used in the operation of the monument to protect and preserve vital resources and provide for a high quality visitor experience. Facilities included in the analysis include the visitors trail at Mitchell Pass, waysides, and interpretive signage. The thresholds of change for the intensity of an impact to public health, safety, and monument operations use are described in Table 4.8.

Table 4.8. Public Health, Safety, and Monument Operations Impact and Intensity

Impact Intensity	Intensity Description
Negligible	The effects would be at low levels of detection and would not have appreciable effects on public health, safety, and monument operations.
Minor	The effects would be detectable and would be of a magnitude that would not have appreciable effects on public health, safety, and monument operations. If mitigation is needed to offset adverse effects, it would be simple and likely successful.
Moderate	The effects would be readily apparent and result in a change in public health, safety, and monument operations that would be noticeable to monument staff and the public. Mitigation measures would be necessary to offset adverse effects and would likely be successful.
Major	The effects would be readily apparent, would result in a substantial change in public health, safety, and monument operations in a manner noticeable to staff and the public, and would be markedly different from existing operations. Mitigation measures to offset adverse effects would be needed and extensive, and success could not be guaranteed.

Short-term impact—effects lasting for the duration of the treatment action
Long-term impact—effects continuing after the treatment action

[2] NPS 2006

Environmental Consequences

Alternative 1 – No Action

Direct and Indirect Impacts of the Alternative. There would be no change in the fundamental nature and quality of public health, safety, or monument operations within Scotts Bluff under the No Action Alternative. The visitors trail surface in Character Area A would remain as it is and similar levels of occasional maintenance would continue. The existing visitors trail surface would continue to contribute to occasional, minor injuries and so would have a local long-term minor adverse effect on public health and safety. There would be no change in monument operations. For these reasons, the No Action Alternative would have a local long-term minor adverse effect on public health and safety and no effect on monument operations.

Cumulative Impacts. Past actions, such as infrequently resurfacing the chip-sealed reach of visitors trail, only occasionally maintaining the earthen surface of the trail where the visitors trail and the trail ruts coincide, and leaving the coincident reach of trail with an earthen surface have had local minor effects on public health, safety, and monument operations. The adverse effects are caused by creating conditions that are unsafe for some visitors and by requiring occasional trail maintenance to repair erosion and remove sediment from the visitors trail. Past actions such as the construction of roads, recreation and visitor facilities, and other structures have had beneficial effects on public health, safety, and monument operations. Current and foreseeable actions associated with noxious weed and fire management would have beneficial effects by reducing the risk of fire damage to facilities. Past, present, and reasonably foreseeable future projects would have local minor adverse cumulative effects on public health, safety, and monument operations and beneficial cumulative effects. Those impacts, in combination with the local long-term minor adverse effects of the No Action Alternative, would result in local minor adverse cumulative effects and beneficial cumulative effects.

Conclusion. The No Action Alternative would have local long-term minor adverse effects on public health, safety, and monument operations because the unstable visitor trail surfaces are unsafe for some visitors and require on-going maintenance. The No Action Alternative would have local minor cumulative adverse effects and beneficial cumulative

887 effects. There would be no unacceptable impacts to public health, safety, and monument
888 operations.
889
890 ***Alternative 2 (Preferred Alternative) – Visitor Trail (Existing Alignment)***
891 **Direct and Indirect Impacts of the Alternative.** Replacing the existing visitor trail
892 surfaces would improve visitor safety by providing a consistent hard surface that does not
893 get muddy and that does not have loose material that could lead to falls. Monument
894 operations would be improved because the drainage improvements, improved trail surface,
895 and new waysides and interpretive signs would improve the quality and effectiveness of
896 monument infrastructure. For these reasons, Alternative 2 would have long-term beneficial
897 effects on public health, safety, and monument operations.
898 **Cumulative Impacts.** Past, present, and reasonably foreseeable future actions and their
899 effects on public health, safety, and monument operations are the same as those in the No
900 Action Alternative. Past, present, and reasonably foreseeable future projects would have
901 local minor adverse cumulative effects on public health, safety, and monument operations
902 and beneficial cumulative effects. As a result, the effects of past, present, and reasonably
903 foreseeable actions, in combination with the long-term beneficial effects Alternative 2,
904 would result in minor adverse cumulative effects and beneficial cumulative effects.
905 **Conclusion.** Alternative 2 would have long-term beneficial effects on public health,
906 safety, and monument operations because the existing unsafe visitors trail surface would be
907 replaced with a safer surface and the quality and effectiveness of monument infrastructure
908 would be improved. Alternative 2 would have local minor cumulative adverse effects and
909 beneficial cumulative effects. There would be no unacceptable impacts to public health,
910 safety, and monument operations.
911
912 ***Alternative 3 – Visitor Trail (Visitor Boardwalk)***
913 **Direct and Indirect Impacts of the Alternative.** The direct and indirect effects of
914 Alternative 3 are the same as those for Alternative 2 except that constructing the boardwalk
915 would increase the amount and cost of maintenance and replacement over that for
916 Alternative 2. For these reasons, Alternative 3 would have local long-term beneficial effects

and local long-term moderate adverse effects on public health, safety, and monument operations.

Cumulative Impacts. Past, present, and reasonably foreseeable future actions and their effects on public health, safety, and monument operations are the same as those for the No Action Alternative and Alternative 2. Past, present, and reasonably foreseeable future projects would have local minor adverse cumulative effects on public health, safety, and monument operations and beneficial cumulative effects. Those effects, in combination with the local long-term beneficial and the local long-term moderate adverse effects on public health, safety, and monument operations of Alternative 3, would result in moderate adverse cumulative effects and beneficial cumulative effects.

Conclusion. The effects Alternative 3 would have on public health, safety, and monument operations would be long-term and beneficial because of the more stable trail surface, but would also be local, long-term, moderate, and adverse because of increased maintenance needs and costs. Alternative 3 would have local moderate cumulative adverse effects and beneficial cumulative effects. There would be no unacceptable impacts to public health, safety, and monument operations.

Cultural Resources

Impact Intensity Threshold

Section 106 of the NHPA of 1966, as amended (16 U.S.C. 470, et seq.) and its implementing regulations under 36 CFR 800 require all federal agencies to consider effects of federal actions on cultural properties eligible for or listed in the NRHP. In order for a cultural property to be listed in the NRHP, it must be associated with an important historic event or person(s), embody distinctive characteristics or qualities of workmanship, or have yielded, or may be likely to yield, information important in prehistory or history. Each identified cultural resource is assessed for significance by applying criteria outlined under 36 CFR 60.4. Potential historic properties (those determined eligible for listing on the NRHP are then assessed for effects by applying criteria outlined under 36 CFR Part 800.5. For the purposes of this LS/EA, cultural properties include structures, buildings, cultural landscapes, and archeological sites within the area of potential effect (APE) of the project. The APE is defined as the character areas established for the landscape study. The thresholds of change for the intensity of an impact on cultural resources are defined in Table 4.9.

Table 4.9. Cultural Resources Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Impacts would be at the lowest level of detection with neither adverse nor beneficial consequences. The determination of effect for Section 106 would be no adverse effect.
Minor	Alteration of a cultural property would not diminish the overall integrity of the resource. The determination of effect for Section 106 would be no adverse effect. Monitoring may be required if a proposed activity occurs near an archeological site.
Moderate	Alteration of a cultural property would diminish the overall integrity of the resource. The determination of effect for Section 106 would be adverse effect. A programmatic agreement is executed among the NPS and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation, in accordance with 36 CFR 800.6(b). Measures identified in the programmatic agreement to minimize or mitigate adverse impacts reduce the intensity of the impact under NEPA from moderate to minor.
Major	Alteration of a cultural property would diminish the overall integrity of the resource. The determination of effect for Section 106 would be adverse effect. Measures to minimize or mitigate adverse impacts cannot be agreed on and the NPS and applicable state or tribal historic preservation officer and/or Advisory Council on Historic Preservation are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).

Short-term impact—following project completion, effects would remain less than one year
Long-term impact—following project completion, effects would remain more than one year

Environmental Consequences

Alternative 1 - No Action Alternative

Direct and Indirect Impacts of the Alternative. The trail rut resource would continue to erode under the No Action Alternative, which has the potential to affect its NRHP eligibility and its status as a contributing element to the overall historic landscape of SCBL. The No Action Alternative would have no effect on the historic structures, including the visitor center, or archeological sites in the APE. The effects of the No Action Alternative on cultural resources would be local, minor, long-term, and adverse.

Cumulative Impacts. Past actions such as agricultural practices and construction of roads and monument facilities have had affected the cultural landscape associated with the Oregon Trail. Roads have fragmented the trail rut resource and monument facilities, even though many are now historic properties themselves, have altered the cultural landscape from its historic conditions. Deterioration of the trail rut resource has been slowed and will continue to be slowed by past, current, and future maintenance activities. Although there are no known archeological site in the APE, ground disturbance associated with past, current, and future actions likely have and would likely have minor adverse effects on unidentified archeological sites. Ramps for accessibility, systems upgrades, and other modern measures used to meet current health and safety codes have added and will continue to add noncontributing and noncompatible features to historic buildings that at least slightly compromise the historic integrity of the buildings. Past, present, and reasonably foreseeable actions, in combination with the local long-term minor adverse impacts of the No Action Alternative, would result in local minor adverse cumulative impacts.

Conclusions. The No Action Alternative would have local long-term minor adverse effects on the historic landscape and no effect on historic buildings or archeological sites. Cumulative effects would be local, minor, and adverse. There would be no unacceptable impacts to cultural resources.

Alternative 2 (Preferred Alternative) – Visitor Trail (Existing Alignment)

Direct and Indirect Impacts of the Alternative. The trail rut resource would be rehabilitated under Alternative 2, which would reduce its deterioration and improve its longevity. The Oregon-California Trail NRHP eligibility and its status as a contributing

element to the overall historic landscape of SCBL would remain unchanged. Alternative 2 would have no effect on historic structures, including the visitor center, or known archeological sites in the APE.

Adverse effects on unknown archeological resources would be avoided by performing preconstruction surveys and monitoring during construction. If significant archeological resources are discovered during construction, all work in the immediate vicinity of the discovery would be halted until the resources are identified and documented, and an appropriate mitigation strategy developed in consultation with the SHPO and, if necessary, any associated tribes. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001) of 1990 would be followed. The NPS also would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites.

With the mitigation measures included in the alternative, the effects of Alternative 2 on historic landscapes would be local, long-term, and beneficial. There would be no effect on historic buildings or archeological resources.

Cumulative Impacts. Past, present, and reasonably foreseeable future actions and their effects on cultural resources are the same as those for the No Action Alternative. Together with the local long-term beneficial effects and possible local long-term minor adverse effects of Alternative 2, cumulative effects would be local, minor, and adverse and local and beneficial.

Conclusions. Rehabilitating the trail rut resources under Alternative 2 would have local long-term beneficial effects on the historic landscape and no effect on historic buildings or archeological resources. Alternative 2 would have local minor adverse cumulative effects and local beneficial cumulative effects. There would be no unacceptable impacts to cultural resources.

Section 106 Summary. After applying Advisory Council on Historic Preservation criteria of adverse effects (36 CFR Part 800.5, Assessment of Adverse Effects), the NPS concludes that implementing Alternative 2 would have no adverse effect on cultural resources.

Alternative 3 – Visitor Trail (Visitor Boardwalk)

Direct and Indirect Impacts of the Alternative. The effects on cultural resources and mitigation measures under Alternative 3 would be the same as those under Alternative 2, with the exception that the presence of the visitor boardwalk would add a noncontributing feature to the historic landscape. The presence of the boardwalk would have a local long-term minor adverse effect on the historic landscape. The direct and indirect effects of Alternative 3 on cultural resources would be local, long-term, and beneficial and local, long-term, minor, and adverse.

Cumulative Impacts. Past, present, and reasonably foreseeable future actions and their effects on cultural resources are the same as those for the No Action Alternative and Alternative 2. Together with the local long-term beneficial effects and local long-term minor adverse effects of Alternative 3, cumulative effects would be local, minor, and adverse and local and beneficial.

Conclusions. Rehabilitating the trail rut resources under Alternative 3 would have local long-term beneficial effects and local long-term minor adverse effects on the historic landscape and no effect on historic buildings or archeological sites. Alternative 2 would have local minor adverse cumulative effects and local beneficial cumulative effects. There would be no unacceptable impacts to cultural resources.

Section 106 Summary. After applying Advisory Council on Historic Preservation criteria of adverse effects (36 CFR Part 800.5, Assessment of Adverse Effects), the NPS concludes that implementing Alternative 3 would have no adverse effect on cultural resources.

Chapter 5. Project Phasing and Class C Cost Estimate

a. Project Phasing

This chapter provides project statements to accomplish the Recommended Treatment (Alternative 2: Preferred Alternative) for the Oregon Trail ruts landscape. Each project statement includes treatments grouped together that need to occur concurrently, however the order of the projects as they are presented does not imply a level of importance or suggest a sequence for implementation.

Project A: Trail Preservation (Character Area A)

- Slow storm water runoff entering the trail rut corridor.
  - Install runoff dissipaters or check dams to the north and south of the trail where adjacent storm water runoff can be slowed prior to reaching the trail corridor. Dissipaters should be natural materials (e.g. coir logs) strategically place on the surface in tributary drainages that lead to problem trail areas.
- Reduce erosion potential of trail surface.
  - Rehabilitate the trail surface by combining the native soil with a soil hardening agent or soil cement.
- Raise the visitor trail surface.
  - Raise the trail surface to meet the level of the adjacent vegetated edge and level of adjacent non-eroded grade where significant scouring has occurred. Fill soil should be native material or clean, weed free soil import, free of archeological materials. Ensure compatibility with soil cement or soil hardener materials. Separate existing grade from fill soil with geotextile fabric.
- Divert runoff from the trail surface with water bars.
  - Install water bars and drainage improvements where water should be diverted off the trail. Water bars should extend well beyond the trail edge to insure drainage is directed off of the trail corridor.
  - Materials for water bars should be natural stone native to SCBL.

Project B: Visitor Trail Site Work (Character Area A)

- Develop an Accessible Interpretive Wayside
  - Develop an accessible interpretive wayside at the current interpretive sign location.
  - Concentrate information, seating and historic artifacts in this area.
- Remove and replace the lower asphalt trail (Visitor Center to Interpretive Station).
  - Remove and replace the asphalt trail with a hardened natural surface trail.
  - Locate the trail to improve visitor experience.
- Remove and replace the upper asphalt trail (existing asphalt/chip seal trail).
  - Remove and replace the asphalt trail with a hardened natural surface trial in the current location. Separate existing grade from fill soil with geotextile fabric.

Project C: William Henry Jackson Campsite Rehabilitation

- Rehabilitate the interpretive wayside at the W.H. Jackson campsite.
  - Rehabilitate the wayside to provide informal seating on low walls of native stone materials.
  - Accentuate the view of the adjacent trail resources, the historic view to the east of Mitchell Pass, and the views of the double cut in Character Area B1.
  - Provide information to guide the visitor to an overall understanding of the emigrant experience and emigrant trail over Mitchell Pass.
- Complete archeological investigations in the proposed campsite area in advance of any work on the project including demolition. Use non-destructive methods such as ground-penetrating radar and magnetic gradient surveys, to document the extent of buried or non-visible cultural resources.

Project D: Trail Documentation

- Document and map trail locations using the standards of the Mapping Emigrant Trails (MET) manual by the Oregon-California Trails Association. Provide mapping data that corresponds to the mapping procedures outlined in the MET.
- Mark known emigrant trail resources in the field and record GPS coordinate data points and survey notes.
    - Integrate this information into the park GIS data.
- Provide trail markers locating known emigrant trails using the Oregon-California Trails Association (OCTA) Trail Marker and Trail Marking Policies.

Refer to the Class C Cost Estimate that follows this section.

66

Class C Construction Cost Estimate

Project: Oregon Trail Ruts Landscape Study/ Enironmental Assessment
Park: Scotts Bluff National Monument
PMIS: 36867

Basis of Estimate

Date of Estimate: 11/24/10

Estimated By: Mundus Bishop Design
333 W. Colfax, Suite 350
Denver, CO 80214
(303) 477-5244

Supporting Material: Oregon Trail Ruts Landscape Study/Environmental Assessment -100% Report (November 2010)
Monument Field Visit 11/09

Cost Data: Square Foot Cost Data.
Unit Prices based on 2010 Cost data

Mark-ups and Add-ons:
Published Location Factor: Nearest City - Alliance, Nebraska - Negative 14.5 percent
Project Remoteness: Scotts Bluff, Nebraska , site is 60 miles from nearest published commercial center.-7 Percent
Federal Wage Rate Factor: Included in Labor Cost - 7.5 Percent
Design Contingency: Preferred Treatment Alternative - 30 Percent
Taxes: Sales Tax included in Unit Costs - 5.5%
Standard General Conditions: Remote Location - 14 Percent
Government General Conditions: Remote Location - 8 Percent
Bonds and Permits: No permit costs. Bond - 2 Percent
Historic Preservation Factor: Not applicable.
Overhead: Small Job, Limited sub-contractors.
Profit: Small Size Project - 15 Percent
Contracting Method Adjustment: Procurement Method unknown - 15 Percent
Inflaton Escalation: Assume start of construction to be May 2012
6 Month Construction Period. Inflation Predictions Indicate 6.6 Percent per year.

Comments: Class C Construction Cost Estimate based on;
Preferred Treatment Alternative Plan - November 2010

Class C Construction Cost Estimate

Project: Oregon Trail Ruts Landscape Study Environmental Assessment
Park: Scotts Bluff National Monument
PMIS: 36867

Estimated By: Mundus Bishop
Date: 24-Nov-10

Reviewed By: Mundus Bishop
Date: 24-Nov-10

Estimate Based on 2010 Costs

Project A: Trail Preservation (Character Area A)

Item	Description	Quantity	Unit	Cost/Unit	Direct Cost	Total Net
	SITE WORK					
1	Slow storm water runoff (coir logs)	40	EA	$ 300.00	$ 12,000.00	$ 23,398.80
2	Reduce trail erosion (soil cement)	130	CY	$ 75.00	$ 9,750.00	$ 19,011.53
3	Raise visitor trail surface (soil import)	220	CY	$ 30.00	$ 6,600.00	$ 12,869.34
4	Divert runoff (water bars)	6	EA	$ 1,200.00	$ 7,200.00	$ 14,039.28
	Subtotal Project A				**$ 35,550.00**	**$ 69,318.95**

Project B: Visitor Trail Site Work (Character Area A)

Item	Description	Quantity	Unit	Cost/Unit	Direct Cost	Total Net
	SITE WORK					
1	Interpretive Wayside					
	Signs	4	EA	$ 1,000.00	$ 4,000.00	$ 7,799.60
	Seating (walls)	20	LF	$ 300.00	$ 6,000.00	$ 11,699.40
	Paving	380	SF	$ 10.00	$ 3,800.00	$ 7,409.62
	Relocated granite marker	1	LS	$ 1,500.00	$ 1,500.00	$ 2,924.85
2	Remove and replace lower asphalt trail					
	Demo and dispose	1	LS	$ 8,000.00	$ 8,000.00	$ 15,599.20
	Soil cement	70	CY	$ 75.00	$ 5,250.00	$ 10,236.98
	Import	70	CY	$ 30.00	$ 2,100.00	$ 4,094.79
	Seeding	7320	SF	$ 0.50	$ 3,660.00	$ 7,136.63
3	Remove and replace upper asphalt trail					
	Demo and dispose	1	LS	$ 6,500.00	$ 6,500.00	$ 12,674.35
	Soil cement	60	CY	$ 70.00	$ 4,200.00	$ 8,189.58
	Import	60	CY	$ 30.00	$ 1,800.00	$ 3,509.82
	Seeding	6480	SF	$ 0.50	$ 3,240.00	$ 6,317.68
4	Archeological Investigations (Ground Penetrating Radar)	1	LS	$ 7,000.00	$ 7,000.00	$ 13,649.30
5	Archeological Investigations (Magnetic Gradient Survey)	1	LS	$ 8,000.00	$ 8,000.00	$ 15,599.20
	Subtotal Project B				**$ 65,050.00**	**$ 126,841.00**

Project C: William Henry Jackson Campsite Rehabilitation

Item	Description	Quantity	Unit	Cost/Unit	Direct Cost	Total Net
	SITE WORK					
1	Interpretive Wayside					
	Walls	20	LF	$ 250.00	$ 5,000.00	$ 9,749.50
	Paving	380	SF	$ 10.00	$ 3,800.00	$ 7,409.62
	Signs	4	EA	$ 750.00	$ 3,000.00	$ 5,849.70
	Soil Cement	30	CY	$ 75.00	$ 2,250.00	$ 4,387.28
	Seeding	3500	SF	$ 0.50	$ 1,750.00	$ 3,412.33
2	Archeological Investigations (Ground Penetrating Radar)	1	LS	$ 4,000.00	$ 4,000.00	$ 7,799.60
3	Archeological Investigations (Magnetic Gradient Survey)	1	LS	$ 6,000.00	$ 6,000.00	$ 11,699.40
	Subtotal Project C				**$ 25,800.00**	**$ 50,307.42**

Class C Construction Cost Estimate

Project: Oregon Trail Ruts Landscape Study Environmental Assessment
Park: Scotts Bluff National Monument
PMIS: 36867

Estimated By: Mundus Bishop
Date: 24-Nov-10

Reviewed By: Mundus Bishop
Date: 24-Nov-10

Estimate Based on 2010 Costs

Project D: Trail Documentation

Item	Description	Quantity	Unit	Cost/Unit	Direct Cost	Total Net
	SITE WORK					
1	Document and Map Trail Location using MET Handbook & GPS coord					
	Character Area A	1	LS	$ 1,922.73	$ 1,922.73	$ 3,749.13
	Character Area B1	1	LS	$ 1,769.32	$ 1,769.32	$ 3,449.99
	Character Area B2	1	LS	$ 6,458.52	$ 6,458.52	$ 12,593.47
	Character Area C	1	LS	$ 1,135.23	$ 1,135.23	$ 2,213.58
	Character Area D1	1	LS	$ 3,380.11	$ 3,380.11	$ 6,590.88
	Character Area D2	1	LS	$ 1,692.61	$ 1,692.61	$ 3,300.43
2	Integrate GPS data with SCBL GIS data	1	LS	$ 10,000.00	$ 10,000.00	$ 19,499.00
3	Trail Soil Evaluation & Testing (all areas)	1	LS	$ 8,000.00	$ 8,000.00	$ 15,599.20
4	Trail Vegetation Study (all areas)	1	LS	$ 10,000.00	$ 10,000.00	$ 19,499.00
5	Trail Markers	64	EA	$ 500.00	$ 32,000.00	$ 62,396.80
6	Archeological Investigations	1	LS	$ 35,000.00	$ 35,000.00	$ 68,246.50
	Subtotal Project D				**$ 111,358.52**	**$ 217,137.98**
	Subtotal Direct Construction Costs				$ 237,758.52	$ 463,605.34
	Published Location Factor (Negative 14.5 Percent)				$ (34,474.99)	
	Remoteness Factor (7 Percent)				$ 16,643.10	
	Federal wage Rate Factor (7.5 Percent)				$ 17,831.89	
	Design Contingency (30 Percent)				$ 71,327.56	
	Total Direct Construction Costs				$ 309,086.08	
	Standard General Conditions (14 Percent)				$ 33,286.19	
	Government General Conditions (8 Percent)				$ 19,020.68	
	Bond (2 Percent)				$ 4,755.17	
	Historic Preservation Factor (N/A)				$ -	
	Subtotal NET Construction Cost				$ 366,148.13	
	Overhead (15 Percent)				$ 35,663.78	
	Profit (10 Percent)				$ 23,775.85	
	Estimated NET Construction Cost				$ 425,587.76	
	Procurement Method Unknown (15 Percent)				$ 35,663.78	
	Inflation Escalation (20 Months to Midpoint of Construction, July 2012 - 6.6 Percent)				$ 2,353.81	
	Total Estimated NET Cost of Construction				$ 463,605.34	

Chapter 6. Consultation and Coordination

a. Scoping/Consultation

Public scoping was initiated with an article in the Star-Herald on July 25, 2010 that described the proposed action and publicized a public open house meeting held on July 27, 2010 (Appendix A). The park also sent scoping letters describing the proposed action and requesting comments to interested individuals; organizations; state, county, and local governments; and federal agencies. American Indian tribes were also sent an information letter describing the project and asking for comments.

This EA was forwarded to the Nebraska State Historical Society for review and comment. The park would coordinate with the Nebraska State Historical Society in the development of mitigation measures for historic structures.

The USFWS will review this EA to determine if they concur with the park's findings of effect and whether additional conservation measures are needed to protect listed species.

Agencies and organizations contacted to assist in identifying issues and to review or comment on this EA include, but are not limited to, the following:

Federal Agencies

- U.S. Environmental Protection Agency Region 7
- U.S. Fish and Wildlife Service

Congressional Representatives

- Honorable Ben Nelson, U.S. Senate
- Honorable Mike Johanns, U.S. Senate
- Honorable Jeff Fortenberry, U.S. House of Representatives
- Honorable Lee Terry, U.S. House of Representatives
- Honorable Adrien Smith, U.S. House of Representatives

State Agencies

- Nebraska Game and Parks Commission
- Nebraska Department of Environmental Quality
- Nebraska State Historical Society

State Officials

- Governor Dave Heineman
- State Senator John Harms

Local and Regional Government Agencies and Officials

- Terrytown Mayor Ken Greenwalt
- Gering Mayor Susan Weideman
- Scotts Bluff Mayor Randy Meininger
- Scotts Bluff County Commissioners Michael Marker, Steve Stratton, Douglas Leafgreen, Ken Meyer, Mark Masterton

Newspapers

- Star-Herald

Indian Tribes

- Omaha Tribe of Nebraska
- Ponca Tribe of Nebraska
- Santee Sioux Nation
- Winnebago Tribe of Nebraska

b. Compliance with Federal and State Regulations

The NPS would comply with all applicable federal and state regulations when implementing the Preferred Alternative to construct the joint operations facility. Permitting and regulatory requirements for the Preferred Alternative are listed in Table 6 - 1.

Table 6- 1. Environmental Compliance Requirements

Agency	Statute, Regulation, or Order	Purpose	Project Application
Federal			
National Park Service	National Environmental Policy Act	Applies to federal actions that may significantly affect the quality of the environment.	Environmental review of the proposed action and decision to prepare a FONSI or EIS.
	National Historic Preservation Act, Section 106	Protection of historic and cultural resources.	The park is consulting with the office of the state historic preservation officer.
	Executive Order 11990, Protection of Wetlands	Requires avoidance of adverse wetland impacts, where practicable, and mitigation, if necessary.	No wetlands present.
	Executive Order 11988, Floodplain Management	Requires avoidance of adverse floodplain impacts, where practicable, and mitigation, if necessary.	No floodplains present.
	NPS Order No. 77-2 Floodplain Management	Protection of natural resources and floodplains.	No floodplains present.

Agency	Statute, Regulation, or Order	Purpose	Project Application
U.S. Army Corps of Engineers (Corps)	Clean Water Act – Section 404 Permit to discharge dredge and fill material	Authorizes placement of fill or dredge material in waters of the U.S. including wetlands.	No wetlands present.
U.S. Fish and Wildlife Service	Endangered Species Act	Protection of federally listed threatened or endangered species.	The park consulted with the USFWS as part of the NEPA process.
State of Nebraska			
Nebraska Department of Environmental Quality	Nebraska Construction Storm Water General Permit	Erosion control and protection of water quality.	A stormwater pollution prevention plan would be developed prior to grading and surface disturbances.
	Nebraska General Permit for construction dewatering	Water quality protection associated with discharge of intercepted ground water.	A permit application would be submitted if excavation activities would cause the interception and discharge of ground water.

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c. List of Preparers and Contributors

National Park Service, Scotts Bluff Historic Monument

- Ken Mabery, Superintendent
- Robert Manasek, Resource Management Specialist, Scotts Bluff National Monument

National Park Service, Midwest Regional Office

- Marla McEnaney, Historical Landscape Architect
- Nick Chevance, Regional Environmental Coordinator

State of Nebraska, Nebraska Department of Roads

- Craig Lind, Highway Engineer

Mundus Bishop

- Patrick Mundus, ASLA, Principal
- Robyn Bartling, ASLA, Historical Landscape Architect

ERO Resources Corporation

- Mary L. Powell, Project Manager
- Steve Butler, Ecologist
- Sean Larmore, Archeologist
- Dave Hesker, Graphic Designer
- Kay Wall, Technical Editor

Bibliography

A Civil War Biography, Robert Byington Mitchell, Civil War Interactive. Available at: http://www.civilwarinteractive.com/Biographies/BiosRobertByingtonMitchell.htm. Accessed Aug 10, 2010.

Cox, M.K. and W.L. Franklin. 1989. Terrestrial vertebrates of Scotts Bluff National Monument, Nebraska. *Great Basin Naturalist.* Vol. 49, No. 4: 597-613.

Cultural Diversity, TCD Economic Development, Twin Cities Development Association, last modified in 2003. Available at: http://www.tcdne.org/cultural.htm. Accessed Aug 10, 2010.

Department of Interpretive Planning. 2008. *Scotts Bluff National Monument Long-Range Interpretive Plan.* Omaha: National Parks Service.

Events in the West 1840-1850, PBS New Perspectives on the West, last modified in 2001. Available at: http://www.pbs.org/weta/thewest/events/1840_1850.htm. Accessed Aug 10, 2010.

Fort Mitchell, Nebraska, last modified on Jul 25, 2010, available at: http://en.wikipedia.org/wiki/Fort_Mitchell,_Nebraska. Accessed Aug 10, 2010.

Geologic Features, National Park Service, last modified on Aug 7, 2006. Available at: http://www.nps.gov/scbl/naturescience/geology.htm. Accessed Aug 10, 2010.

Graham, J. 2009. *Scotts Bluff National Monument geologic resources inventory report. Natural Resource Report NPS/NRPC/GRD/NRR—2009/085.* National Park Service, Denver, Colorado.

Hiram Scott, National Park Service, last modified on Jul 31, 2006. Available at: http://www.nps.gov/scbl/historyculture/hscott.htm. Accessed Aug 10, 2010.

Knudsen, Dean. *Scotts Bluff National Monument Landmark on the Overland Trails.* National Park Service.

Lind, Craig; Highway Engineer, Nebraska Department of Roads. March 2010. Correspondence regarding history of Nebraska State Highway 92.

May, D.W., Hill, M.G., Holven, A.C., Loebel, T.J., Rapson, D.J., Semken, H.A., Jr., and Theler, J.L., 2007, *Geoarchaeology of the Clary Ranch Paleoindian sites, western Nebraska*, in Raynolds, R.G., ed., *Roaming the Rocky Mountains and Environs*: *Geological Field Trips*: Geological Society of America Field Guide 10, p. 265–293, doi: 10.1130/2007.fl d010(14).

Natural Resource Conservation Service (NRCS). 1968. *Soil survey of Scotts Bluff County Nebraska*. United States Department of Agriculture

Natural Resource Conservation Service (NRCS). 2010. *Natural Resources Conservation Service, United States Department of Agriculture*. Web Soil Survey. Available at: websoilsurvey.nrcs.usda.gov. Accessed March 3, 2010.

Nebraska Game and Parks Commission. 2008. *Estimated Current Ranges of Threatened and Endangered Species: List of Species by County*. Prepared by Nebraska Natural Heritage Program Nebraska Game and Parks Commission.

Nebraska Game and Parks Commission. 2010. *Wildlife species guide: River otter*. Available at: http://www.ngpc.state.ne.us/wildlife/otters.asp. Accessed on March 2, 2010.

NPS. 1994. *Archeological Survey of Scotts Bluff National Monument*. By Dr. Caven Clark. Midwest Archeological Center, Lincoln, Nebraska.

NPS. 1996. *Cultural Landscapes Inventory: Scotts Bluff National Monument*. Omaha: National Parks Service.

NPS. 1998. *Scotts Bluff National Monument General Management Plan*. National Park Service, Midwest Support Office, Omaha, Nebraska.

NPS. 2000. *Scotts Bluff National Monument Fire Management Plan Environmental Assessment*.

NPS. 2005. *Northern Great Plains Exotic Plant Management Plan and Environmental Assessment*. Prepared by National Park Service Northern Great Plains Parks.

NPS. 2006. *Management Policies 2006*. Available at: http://www.nps.gov/policy/mp2006.pdf. Accessed March 2010.

Oregon-California Trails Association. 1994. *Mapping Emigrant Trails MET Manual*. Independence, Missouri: Office of National Historic Trails Preservation Oregon-California Trails Association.

The Transcontinental Railroad, Available at: http://tcrr.com/. Accessed Aug 2, 2010.

U.S. Department of the Interior, National Park Service. 1997. "*Guidelines for the Treatment of Historic Landscapes, The Secretary of the Interior's Standards for the Treatment of Historic Properties*." Washington, D.C.: National Park Service.

US Fish and Wildlife Service (USFWS). 2007. *Endangered, Threatened, Proposed, and Candidate Species, Nebraska Counties*. Fish and Wildlife Service Ecological Services, Nebraska Field Office, Grand Island, Nebraska.

USFWS. 2010. *National Wetland Inventory* website. Available at:
http://www.fws.gov/wetlands/Data/Mapper.html. Accessed March 2, 2010.

William Henry Jackson, National Park Service, last modified on Aug 9, 2006. Available at:
http://www.nps.gov/scbl/whj.html. Accessed Aug 10, 2010.

William Porter's Oregon Trail Diary 1848, Available at:
http://www.isu.edu/~trinmich/00.ar.porter.html. Accessed Aug 10, 2010.

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Appendix A. Scoping Notices

A July 25, 2010, article in the Gering, Nebraska Star Herald newspaper (see attached) publicized an open house on July 27, 2010 at which the proposed alternatives, including the preferred alternative, would be presented

Public comments provided during the July 27, 2010 public house were recorded and are summarized in the attached meeting summary.

starherald.com

News

Monument seeks to preserve Oregon Trail wagon ruts

By: KATIE BRADSHAW, Staff Reporter

Published: Sunday, July 25, 2010 12:33 AM CDT

Print Page

Just west of the Conestoga wagon in front of Scotts Bluff National Monument, the roadbed of wagon ruts from the Oregon Trail overland migration may still be seen by those who know where to look. The National Park Service is seeking input on a maintenance plan for the ruts. Photo by Katie Bradshaw

The line of three wagons in front of Scotts Bluff National Monument is obvious to most visitors. What may not be so obvious is the landscape feature just west of the wagons.

The many pioneer wagons that traveled single file through Mitchell Pass on the Oregon Trail eroded the rock they passed over. The deep roadbed impressed upon the landscape by the pioneers' westward migration can still be seen. According to the monument website, the feature is technically called a "swale," but many people refer to it as "wagon ruts."

The National Park Service is beginning a study of the ruts that will be used to guide their long-term maintenance and upkeep. Monument staff is soliciting public input on the planning process at an open house at the Gering Civic Center on Tuesday, July 27, from 6 to 8 p.m.

At the beginning of the open house, the project team will present an introduction to the trail ruts area and the objectives of the study. Much of the work will include locating the ruts using visual study, historic photographs and aerial photography; determining the trail ruts' physical condition; and identifying the best methods for protecting the ruts.

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The team will also explore opportunities for improving recreation in the area and new ways of making the ruts evident to visitors.

Monument superintendent Ken Mabery said that at some times of year the ruts are very visible because of the darker grass growing on the trail, but for the most part, the public doesn't recognize them.

The public can stop by any time during the two-hour open house to provide comment.

Mabery said that the public's ideas on how to protect and enjoy the ruts are needed to ensure that nothing gets overlooked.

"You never know where the next 'best idea' will come from," he said.

The monument has received funding specifically for the study, which will be completed by Mundus Bishop Design and ERO of Denver.

Mabery said that he would like to see the wagon ruts in Roubidoux Pass addressed as well, but the current study is focused on the monument.

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MEETING SUMMARY

Project:	Scotts Bluff National Monument	Project No:	0928
Date:	July 27, 2010	Subject:	Monument Meeting and Public Open House Oregon Trail Ruts Landscape
Present:	Ken Mabery – Superintendent (SCBL) Robert Manasek –Resource Management Specialist (SCBL) Marla McEnaney – National Park Service (NPS) – *via conference call* Mary Powell – ERO Resources Corporation (ERO) - *via conference call* Patrick Mundus – Mundus Bishop Design, Inc. (MBD) Robyn Bartling – Mundus Bishop Design, Inc. (MBD)		2 pages

Discussion:

A meeting with Monument and Regional staff was held to discuss next steps and the public open house.

1. Open House Public Notification – SCBL notified the public through an add on the front page of the local newspaper, which satisfies the scoping requirements for the project. This information will be included in the 95% Report.

2. Park Visitor survey – SCBL provides surveys to visitors of the monument. The feedback is general and is not specific to the Oregon Trail Ruts. No additional visitor survey information is available.

3. Maintenance – The following is additional maintenance discussed related to the Oregon Trail Ruts.

    - The culverts in Character Area A were installed in the 1990s
    - Cyclical maintenance includes filling in pot holes in pedestrian trail portions

4. Long Distance Trail/Vehicular Experience – SCBL would like to see the Oregon Trail Ruts highlighted where they would have crossed the Old Oregon Trail County Road.

    - It was discussed that including treatment related to the vehicular experience would be out of the scope of the project, but this information would be included in the management summary of the report.

5. Preferred Alternative – The preferred alternative based on the meeting with monument staff and the public open house is Alternative #2 Trail Rehabilitation (Existing Alignment). The following are other items to consider for the preferred alternative.

    - Consider more use by pedestrians.
    - Maintenance by use – wagon programmed use
    - Consider more interpretation to the west

6. Project Phasing – Recommendations for project phasing will be included in the 95% report with Class C Cost Estimates. Potential projects include:
    - Trail rehabilitation Character Area A
    - Visitor opportunities
    - Trail documentation

7. Public Open House – The public open house was held at Gering Civic Center on July 27, 2010, 6:00-8:00 PM. The following are those in attendance at the public open house. Comments sheets provided by those in attendance are attached to this meeting summary.

Name	Address	Telephone Number	E-mail Address
Todd Crawford	416 Valley View Drive. #600, Scotts Bluff, NE	308-633-6333	Todd.crawford@mail.house.gov
Loren Pospisil	PO Box 365 Bayard	308-586-2581	Howard.kg@gmail.com
Barb Netherland	230842 Highland Rd, Gering, NE	308-632-8186	bgneth@charter.net
Terry Steinacher	PO Box 304, Crawford, NE 69339	308-665-2918	Not provided
John Williams	515 West 23rd St, Scotts Bluff, NE	308-632-4972	Not provided
Jan Williams	515 West 23rd St, Scotts Bluff, NE	308-632-4972	Not provided

Attachments
(2) Comment sheets

end

MUNDUS BISHOP
LANDSCAPE ARCHITECTURE & PLANNING

Project Name: SCOTTS BLUFF - OREGON TRAIL RUTS Date: 7.27.10

Project Number:

Subject: PUBLIC MEETING 7.27.10

COMMENT SHEET

Where the existing public path is, the trail remnants are already compromised. Therefore I think you can be more flexible with solutions.

Trail remnants that have not been Compromised should be left alone. I heard some discussion about. I heard some discussion about highlighting them as altering them to make them more visible. I think that is a mistake. When you compare a 1940 picture with a 2010 picture one is tempted to want it back to "the way it was", forgetting that 1940 was NOT the way it was but rather 80 years AFTER the way it was. Be very very careful if you do this.

Back to the existing public path, the boardwalk idea ~~would~~ would be an anachorism and be a maintenance problem as well.

NAME (OPTIONAL) Loren Pospisil

ADDRESS (OPTIONAL) _____

333 WEST COLFAX AVE. SUITE 350 DENVER, CO 80204
P 303.477.5244 F 303.477.5346
mundusbishop.com

MUNDUS BISHOP
LANDSCAPE ARCHITECTURE & PLANNING

Project Name: SCOTTS BLUFF - OREGON TRAIL RUTS Date: 7·27·10

Project Number:

Subject: PUBLIC MEETING 7·27·10

COMMENT SHEET

Ruts that are products of erosion (swales) should be left as is.

Foot paths ~~used~~ should be maintained

If there are ruts showing definative two wagon wheel marks, should be preserved if possible

NAME (OPTIONAL) Teresa Howard

ADDRESS (OPTIONAL) _____

333 WEST COLFAX AVE. SUITE 350 DENVER, CO 80204
P 303.477.5244 F 303.477.5146
mundusbishop.com