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)

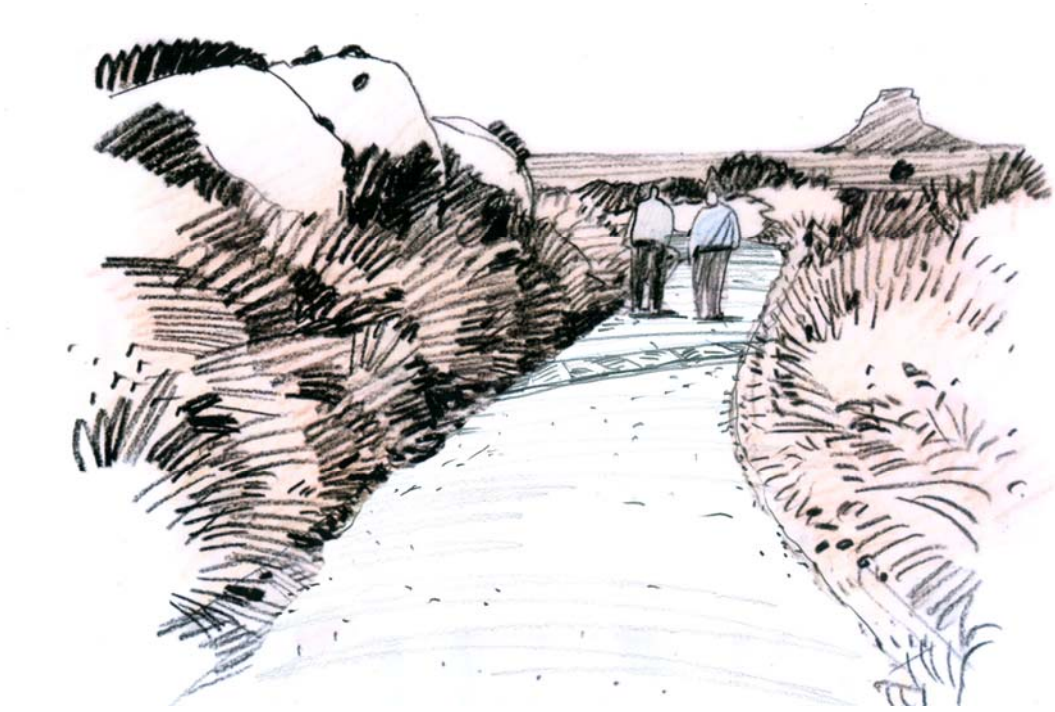


Figure 4 - 4. Oregon Trail stabilization through raising trail elevation, improved surfacing and water bars, with drainage channels located away from trail. (MBD 2010)

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).

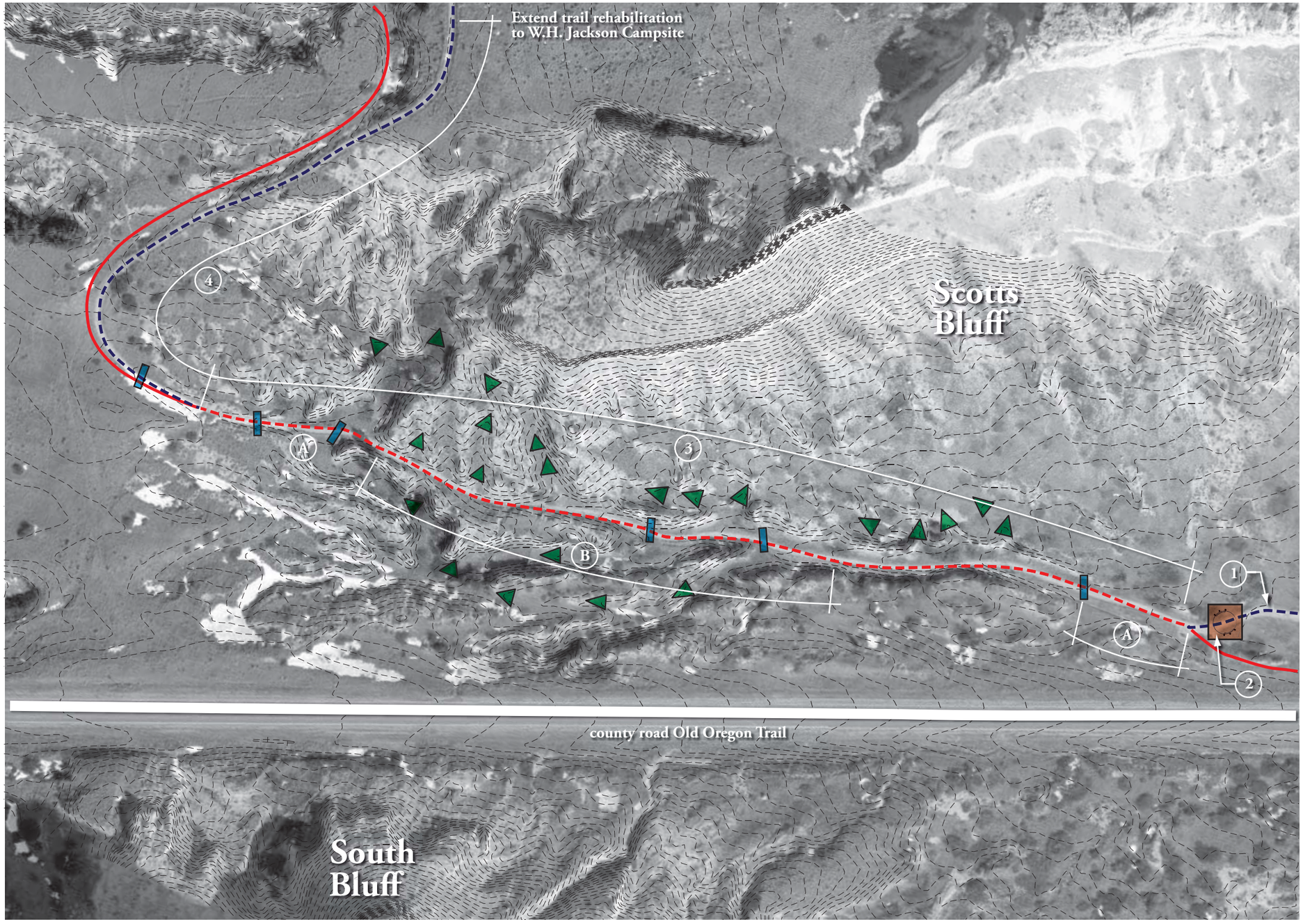
Character Area D2

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.

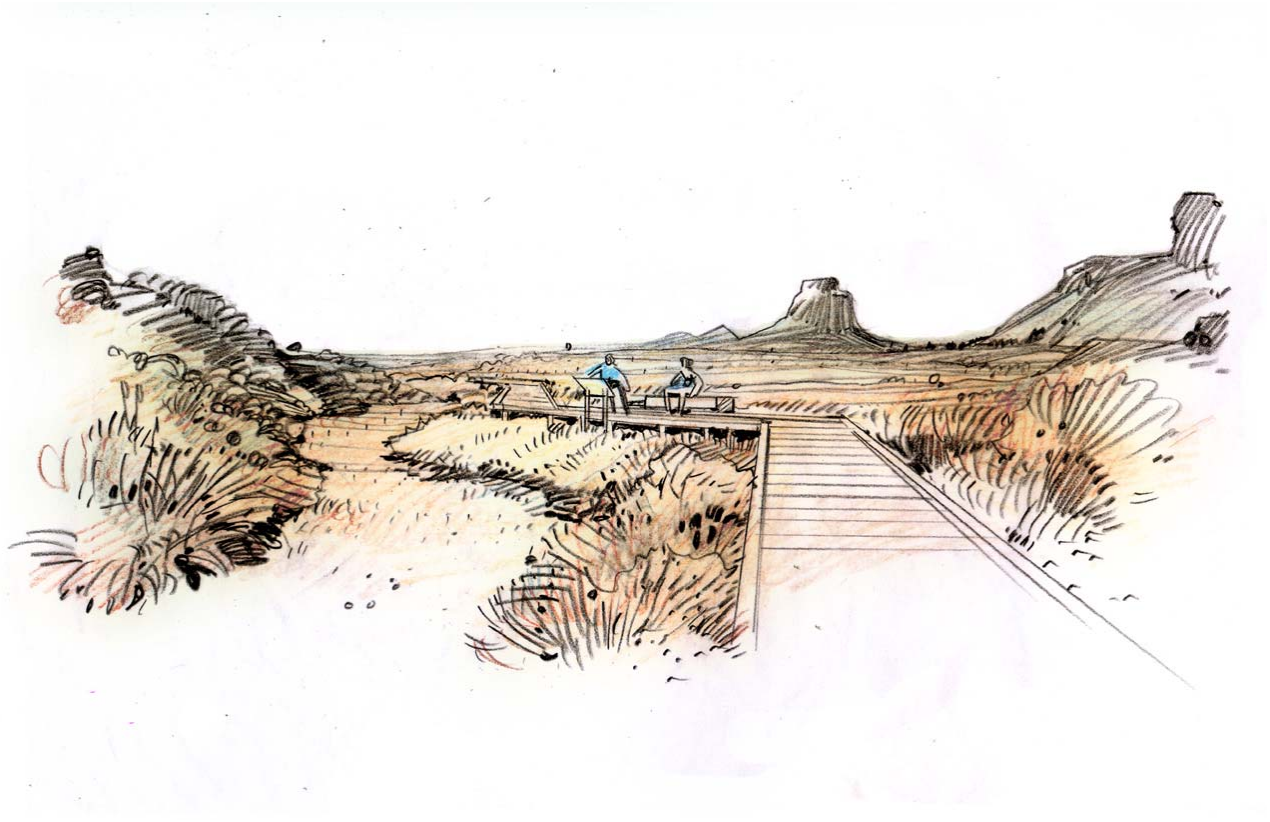


Figure 4 - 7. Boardwalk adjacent to trail resource with interpretive information and site furnishings (MBD c2010)

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).

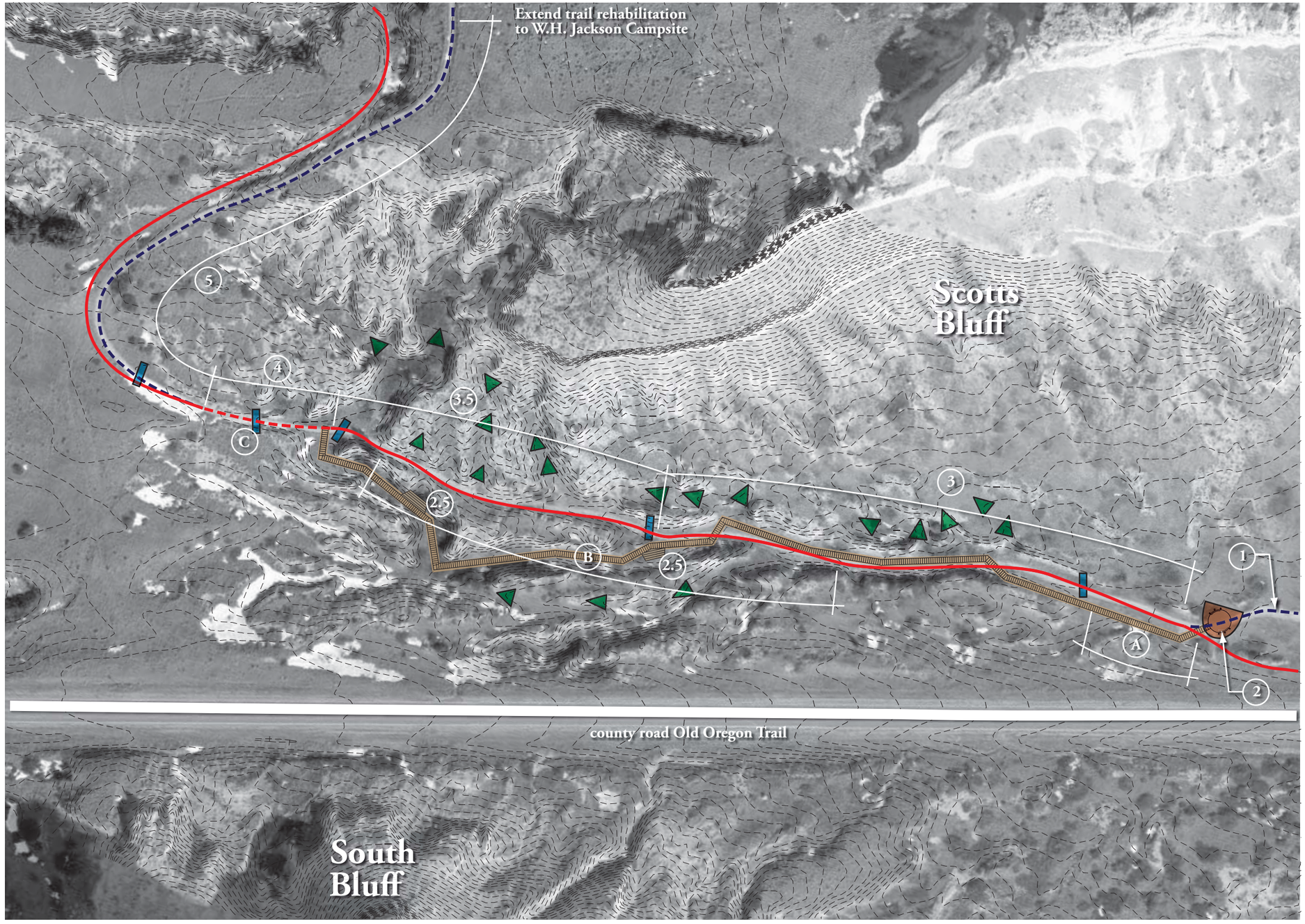
Character Area D2

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

N E W S

0 100' 200'

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.

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

830 **Conclusion.** Alternative 3 would have local short-term minor adverse effects on visitor
831 experience and recreation during construction and long-term beneficial effects because non-
832 contributing features in the historic landscape would be removed, waysides and interpretive
833 stations would be improved, and the visitors trail would be easier to walk on. Alternative 3
834 would have local, minor adverse cumulative effects and beneficial cumulative effects. There
835 would be no unacceptable impacts to visitor experience and recreation resources.
836

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

effects. There would be no unacceptable impacts to public health, safety, and monument operations.

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

Direct and Indirect Impacts of the Alternative. Replacing the existing visitor trail surfaces would improve visitor safety by providing a consistent hard surface that does not get muddy and that does not have loose material that could lead to falls. Monument operations would be improved because the drainage improvements, improved trail surface, and new waysides and interpretive signs would improve the quality and effectiveness of monument infrastructure. For these reasons, Alternative 2 would have long-term beneficial 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 in the No Action Alternative. 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. As a result, the effects of past, present, and reasonably foreseeable actions, in combination with the long-term beneficial effects Alternative 2, would result in minor adverse cumulative effects and beneficial cumulative effects.

Conclusion. Alternative 2 would have long-term beneficial effects on public health, safety, and monument operations because the existing unsafe visitors trail surface would be replaced with a safer surface and the quality and effectiveness of monument infrastructure would be improved. Alternative 2 would have local minor cumulative adverse effects and beneficial cumulative effects. There would be no unacceptable impacts to public health, safety, and monument operations.

Alternative 3 – Visitor Trail (Visitor Boardwalk)

Direct and Indirect Impacts of the Alternative. The direct and indirect effects of Alternative 3 are the same as those for Alternative 2 except that constructing the boardwalk would increase the amount and cost of maintenance and replacement over that for 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.