

Chapter 4: Building / Landscape Analysis and Evaluation

Chapter 4: Analysis

Existing National Register Status

Minuteman Missile National Historic Site was created by the 106th Congress by passing Public Law 106-115 on November 29, 1999.¹ Documentation of the significance of the property was prepared in 2004 and accepted by the Keeper of the National Register May 5, 2005.

Statement of Significance

The Delta Flight Launch Complex, originally associated with Ellsworth Air Force Base, is the only remaining formerly operational intact example of the original Minuteman basing configuration, designed to implement the Cold War policy of massive retaliation. Minuteman Missile NHS is the only museum in the United States that contains both a Launch Control Facility and Launch Facility of the Minuteman II Missile system. There are other sites available to the public as museums including: Oscar-01 at Whiteman Air Force Base in Missouri that preserves a Launch Control Facility; Oscar-00 in eastern North Dakota that preserves a Minuteman III Launch Control Facility; and November-33, near Cooperstown, North Dakota, that preserves the topside of a Minuteman III facility in its 1997 condition.²

The Minuteman Missile NHS complex is nationally significant under Criterion A in the area of history as a representation of the United States' early Cold War policy of massive retaliation. The complex, originally designed as Minuteman Ib and updated to Minuteman II, physically represents policies and products of the Cold War. Technologically the complex is nationally significant under Criterion C: Engineering as an intact example of the Minuteman II system and for its ability to demonstrate major technological advancements in missile technology.³

¹ Public Law 106-115, 106th Congress, 16 U.S.C. 461 note.

² Mark Sundlov, site manager of the Ronald Reagan Minuteman Missile State Historic Site, email to Michael Hosking, resource manager, Minuteman Missile National Historic Site. It is not clear if the Launch Facility at November-33 was imploded or filled. All of the below ground portions of the site are inaccessible.

³ Slattery, Schill, and Squitieri, "Minuteman ICBM Launch Control Facility Delta-01 and Launch Facility Delta-09, Ellsworth Air Force Base" (National Register of Historic Places Nomination), Section 8 page 26.

Period of Significance

The period of significance spans from 1963 when the facility was turned over to Strategic Air Command (SAC) and activated as a Minuteman Missile site, through 1993 when the Delta-01 and Delta-09 facilities were deactivated.

Historic District Boundary Description

The Delta Flight Launch Complex is a discontinuous historic district including two sites, Launch Control Facility Delta-01 and Launch Facility Delta-09. The boundary of Delta-01 includes 6.4 acres within the northeast quarter of the northeast quarter of Section 16, Township 2 South, Range 18 East including legal tracts FD-100, FD-103, FD-104 and FD-100E-1. The boundary of Delta-09 includes 90 acres within the northeast quarter of Section 26, Township 1 South, Range 16 East, including the south half of the northeast quarter of the northeast quarter, the southeast quarter of the northeast quarter, the east half of the east half of the southwest quarter of the northeast quarter, the southeast quarter of the southeast quarter of the northwest quarter of the northeast quarter, the northeast quarter of the northeast quarter of the southeast quarter, the east half of the northwest quarter of the northeast quarter of the southeast quarter, and the northwest quarter of the northwest quarter of the northeast quarter of the southeast quarter. The Delta Flight Launch Complex encompasses a total of approximately 96.4 acres. The boundaries of Delta-01 and Delta-09 are delineated on the historic boundary maps illustrated in Figures 4-1 and 4-2.

The boundary of Launch Control Facility Delta-01 and Launch Facility Delta-09 encompasses the areas that were historically used by the Air Force to operate Delta-01 and Delta-09. The boundary at Delta-01 corresponds to the 6.4 acre parcel that was transferred from the Air Force to the National Park Service. The boundary at Delta-09 was delineated to encompass the 90 acres of the site historically used by the Air Force. Ten acres were in an exclusive use area and included the area within the security fence. The remaining 80 acres, in concurrent use, were under ownership of the United States Forest Service and operated by the Air Force under a Memorandum of Understanding. The concurrent use area includes the azimuth markers located approximately 1,000 feet to the northeast and northwest of the missile launcher, the HICS markers south of the security fence, and the cathodic protection rectifier on the south side of the access road.⁴

⁴ Slattery, Schill, and Squitieri, "Minuteman ICBM Launch Control Facility Delta-01 and Launch Facility Delta-09, Ellsworth Air Force Base" (National Register of Historic Places Nomination), Section 10 page 1.

Landscape Analysis Methodology

The analysis and evaluation of landscape integrity provided herein follows guidelines provided by the National Park Service and the *Secretary of the Interior's Standards*.⁵ Landscape characteristics are the tangible and intangible aspects that collectively make up the historic character of a property. The analysis of these characteristics summarizes qualities and features to help managers understand the essence of the historic landscape that should be protected and possibly enhanced. The Minuteman Missile historic landscape analysis focuses on certain landscape characteristics including spatial organization, land use, circulation, topography, views, vegetation, buildings and structures, and small-scale features.

⁵ Page, Gilbert, and Dolan, *A Guide to Culutral Landscape Reports: Contents, Process, and Techniques*, 1998; Birnbaum and Peters, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*; and McClelland, Keller, Keller, and Melnick, *National Register Bulletin 30: Guidelines for Evaluating and Documenting Rural Historic Landscapes*.

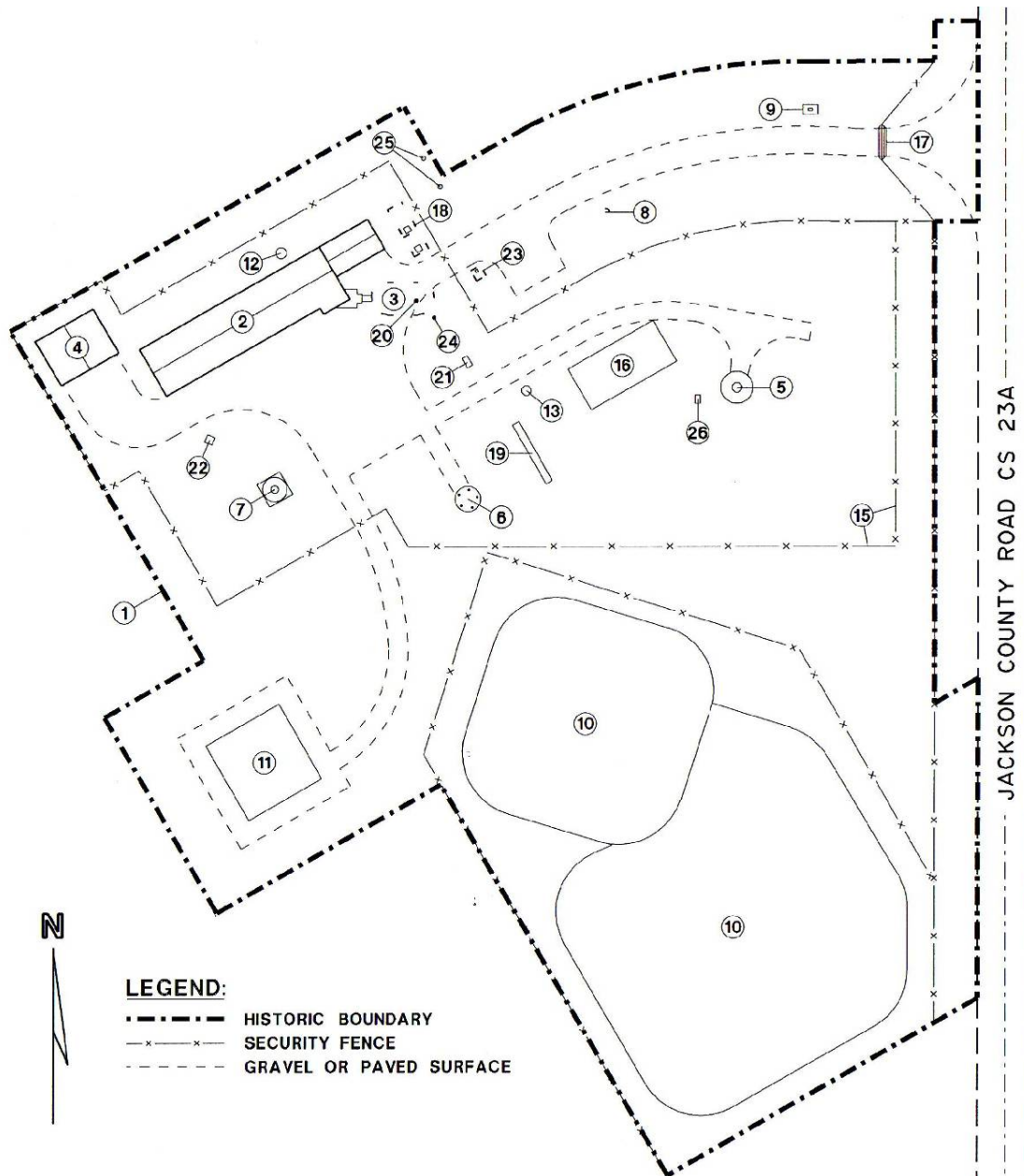


Figure 4- 1: Delta-01 Historic Boundary (source: National Park Service, Modified by Mead & Hunt, Inc., National Register Nomination for Minuteman Missile Launch Control Facility Delta-01 and Launch Facility Delta-09, Ellsworth Air Force Base)

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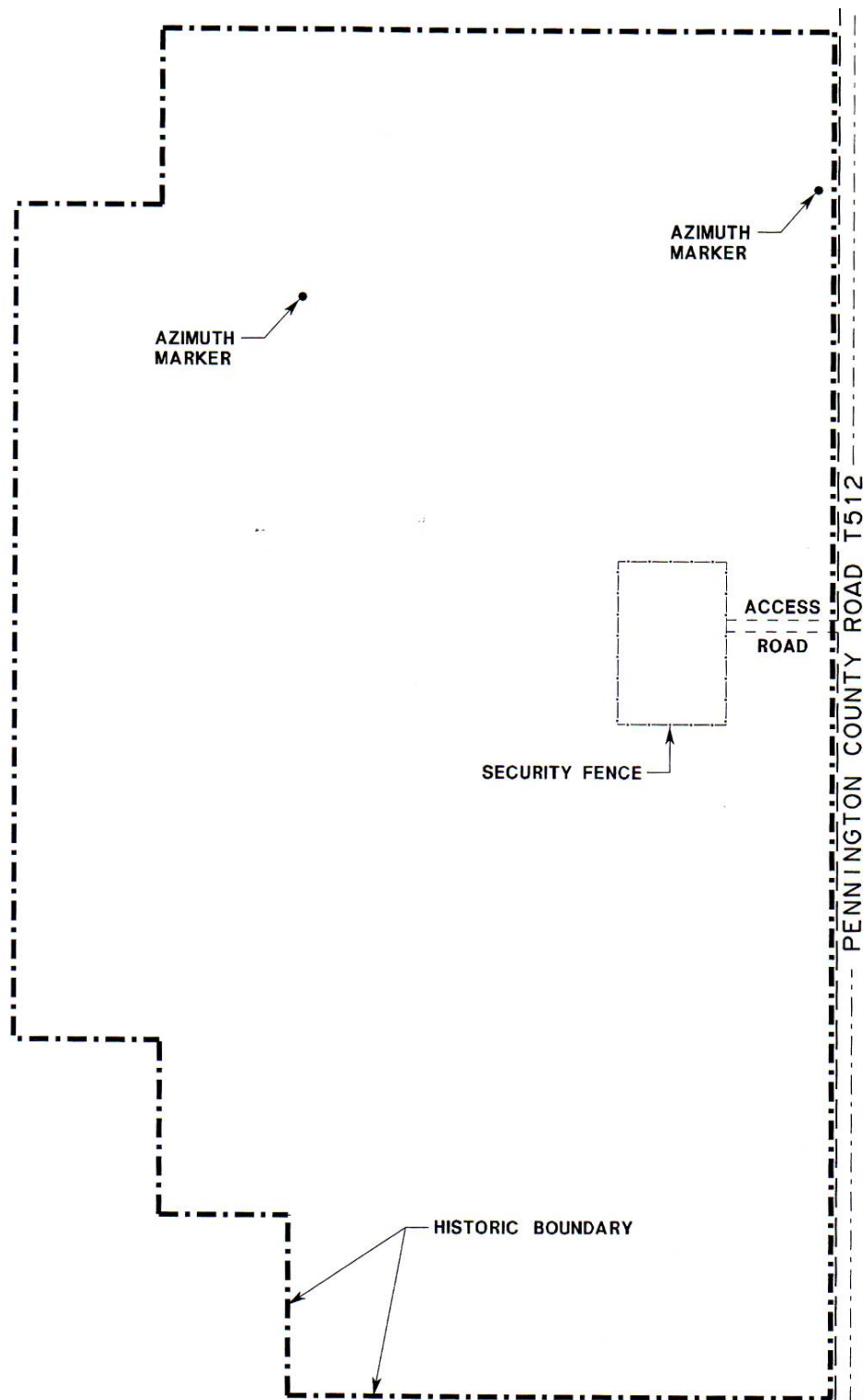


Figure 4- 2: Delta-09 Historic Boundary (source: National Park Service, Modified by Mead & Hunt, Inc., National Register Nomination for Minuteman Missile Launch Control Facility Delta-01 and Launch Facility Delta-09, Ellsworth Air Force Base)

Landscape Analysis, Delta-01

Spatial Organization Landscape Analysis, Delta-01

The arrangement of buildings, structures, and landscape features at Delta-01 remains intact, reflecting the functional layout of the site by the Air Force. Comparison of historic images to the current conditions reveals that the overall patterns have not changed (compare Figures 4-3 and 4-4 of historic conditions to Figures 4-5, 4-6 of existing conditions).

Only minor changes have occurred since the period of operation. These comprise the addition of elements on the site by the National Park Service, including a concrete pad, transformer, and generator at the northeast corner of the Launch Control Facility Support Building and a short electrical fence that runs from the same location to the cattle guard at the entrance drive (see Figure 3-19). In addition, an interpretive wayside has been added near the parking area on the outside of the security fence (see Figure 3-20), and a portable toilet has been placed at the southeastern corner of the heated vehicle storage building (see Figure 3-16).



Figure 4- 3: Oblique aerial view of Delta-01 and the surrounding area facing northwest during the period of significance, no date (source: Library of Congress, Prints and Photographs Division, Historic American Engineering Record, Reproduction Number HAER SD-50-A-2)

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Figure 4- 4: Oblique aerial view of Delta-01 facing west during the period of significance, no date (source: Library of Congress, Prints and Photographs Division, Historic American Engineering Record, Reproduction Number HAER SD-50-A-1)

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Figure 4- 5: View of Delta-01 facing north, northeast, June 2009 (source: QEA 3154)



Figure 4- 6: View of Delta-01 facing west, June 2009 (source: QEA 3695)

Land Use Landscape Analysis, Delta-01

Within the security fence at Delta-01, land use has changed from an active Launch Control Facility to an interpretive site. The property no longer houses missileers around the clock, and the activities associated with their presence at the site have halted. There is no longer a need to transport food and supplies into and out of the facility, or for the residents to maintain the facility and entertain themselves. Security needs at the site have changed as well. They are now related to protecting the historic resources, whereas historically a high level of military defense was in place. Although the historic land use is no longer present, the current use emphasizes an understanding of the historic activities through retention and interpretation of the historic features.

Land use beyond the security fence is unchanged since the period of significance. The majority of the surrounding property is utilized for ranch livestock grazing, and Interstate Highway 90 continues to provide a major transportation link that is visible to the south of the site.

The land immediately adjacent to the northern, western, and eastern boundaries of Delta-01 is privately owned, as are several large tracts that are within the historic views of the facility (see Figure 4-7). Since there are no land use controls that affect private property in the area, the use of these parcels may conceivably change at any time, potentially impacting the historic views from Delta-01. The only change in land use that has occurred since the period of significance is the addition of a cell tower immediately north of the site.

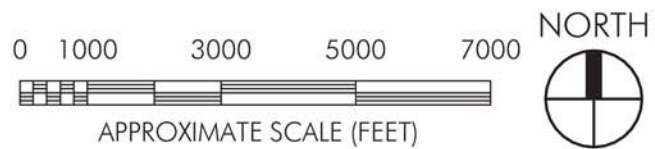
Next page: Figure 4- 7: Delta-01 Views and Ownership.

MINUTEMAN MISSILE

NATIONAL HISTORIC SITE

JACKSON COUNTY, SOUTH DAKOTA

DELTA-01 EXISTING OWNERSHIP & VIEWS



MAP KEY

- Privately Owned Land
- Delta-01 Foreground Views
- Delta-01 Background Views
- Approximate Location of Delta-01

SOURCES

USGS MAP
QE|A FIELD INVESTIGATIONS, JUNE 2009

The remainder of the landscape within view of Delta-01 is publicly owned as part of Buffalo Gap National Grassland. Since it is federally owned property, any proposed changes to land use would require consideration of the potential impacts that the alterations would have on Delta-01, thereby providing a high level of confidence that the historic land use will remain intact in the foreseeable future.

Circulation Landscape Analysis, Delta-01

Patterns of circulation on the site remain the same as they were during the period of significance. The locations and types of pavement of vehicular routes have not changed. Visitor parking is provided inside the fence for tours and outside the fence during open house events. Allowing parking inside the security fence creates potential impacts. The presence of vehicles within the fence could distract from the historic character of the site. Also, use of the historic area for parking could result in wear or damage to the historic resources.

Topography and Views Landscape Analysis, Delta-01

Topography at Delta-01 was altered for initial construction of the facility and subsequently for the addition of the helicopter landing pad and sewage lagoons. These alterations remain apparent as the historic topography of the site. Beyond the borders of Delta-01, there have been no known substantial alterations to topography since the activation of the facility in 1963.

Beyond the boundaries of Delta-01, the broader landscape slopes gradually down toward the south providing expansive views of the surrounding landscape (see Figures 4-7 through 4-10). The views reach the horizon several miles distant, revealing an open, undeveloped, grassland mostly devoid of trees, buildings or other vertical features. Exceptions include a “Wall Drug” billboard located to the southwest of the facility, and a cell tower perched on the high-point directly north of Delta-01. The billboard was present during the period of significance. The cell tower was constructed recently and is located in close proximity to the facility. Of particular concern is that the tower is within the view of the recreation/dining room window. Since the missileers spent large amounts of time in the room, and the view from the window is the main view from the common area, the view from this space is significant. The presence of the newly constructed cell tower within the view is impacting the historic view. It is not clear if this impact is ever perceived by visitors to the site, since the blinds in the room are kept drawn to protect the interior from the sun. The tower is very evident, looming over the building, and perceived by visitors who are outside discussing the overall site features.

Surrounding the site, the broad ground-plane is accentuated by the vast sky, which commands attention on both stormy and clear days. The views reach to a horizon defined by topographic features that rise above the surrounding landscape. The views at Delta-01

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are significant due to their ability to help visitors imagine the feelings of remoteness experienced by the missileers.

While the views at Delta-01 are generally unchanged since the period of significance, the privately owned land within the views presents a potential for changes that could impact the historic views. The areas of concern include those in Figure 4-7 where the privately owned land (gray) overlaps the historic views (two shades of purple).



Figure 4- 8: View of Delta-01 from I-90 facing northwest, note the cell tower in the right portion of the image, June 2009 (source: QEA)

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Figure 4- 9: View from Delta-01 facing south on an overcast day, June 2009 (source: QEA 3373)



Figure 4- 10: View from the horseshoe pits facing southeast on an overcast day, June 2009 (source: QEA 3396)



Figure 4- 11: “Wall Drug” Billboard visible from Delta-01, facing west, June 2009 (source: QEA 3348)

Vegetation Landscape Analysis, Delta-01

Vegetation at Delta-01 remains much the same as it was during the period of significance, with one exception. During the time that the facility was active, the U.S. Air Force kept a large portion of the area within the security fencing clear of all vegetation through applications of herbicides. Today herbaceous species are encroaching into the gravel bases surrounding some of the landscape features.

Buildings and Structures Analysis, Delta-01

From a landscape perspective, the buildings and structures at Delta-01 remain unchanged from their historic conditions. The Buildings and Structures Analysis section provides detailed information regarding the integrity of the buildings.

Small Scale Features Landscape Analysis, Delta-01

Delta-01 contains a number of small scale landscape features that contribute to the integrity of the historic site. Each feature is described and illustrated in Chapter 3: Existing Conditions and Affected Environment. The features are enumerated in Table 4-1 indicating whether they contribute to the integrity of the historic landscape, and an explanation of the rationale used to determine their status.

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Table 4-1: Delta-01 Landscape Small Scale Features

Small Scale Features	Contributing or Non-contributing	Rationale
Hardened high frequency transmit antenna (HS 104, IDLCS 100480)	<i>Contributing</i>	Part of the facility operations during the period of significance, constructed in 1963. Deactivated in the early 1970s.
Hardened high frequency receive antenna (HS 105, IDLCS 100481)	<i>Contributing</i>	Part of the facility operations during the period of significance, constructed in 1963. Deactivated circa 1987-1988.
Hardened ultra-high frequency antenna (HS 106, IDLCS 100483)	<i>Contributing</i>	Part of the facility operations during the period of significance, installed in 1976.
Survivable low frequency communication system antenna (HS 107, IDLCS 100484)	<i>Contributing</i>	Part of the facility operations during the period of significance, installed in 1968.
Cathodic protection rectifier (HS 110, IDLCS 100485)	<i>Contributing</i>	Part of the facility operations during the period of significance, installed in 1963.
Two sewage lagoons (HS 108, IDLCS 100486)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Helicopter pad (HS 109, IDLCS 100485)	<i>Contributing</i>	Part of the facility operations during the period of significance.
ICBM super-high frequency satellite terminal antenna (ISST) (HS 126, IDLCS 754345)	<i>Contributing</i>	Installed circa 1992, the antenna was installed when the missile sites were being deactivated in Ellsworth's 67 th Strategic Missile Squadron. This feature represents how the site was still evolving, even as it was being deactivated.
Television satellite dish (HS 121, IDLCS 398298)	<i>Contributing</i>	Part of the facility operations during the period of significance. Installed circa 1987-88.
HICS	<i>Contributing</i>	Part of the facility operations during the period of significance.
Security fencing (HS 113, IDLCS 287263)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Sewage lagoon fencing / Livestock fencing (HS 125, IDLCS 754342)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Cattle-guard (HS 129, IDLCS 754354)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Electric fence	<i>Non-contributing</i>	Erected by the National Park Service after the end of the period of significance.
Historic signage (HS 117, IDLCS 354856)	<i>Contributing</i>	Part of the facility operations during the period of significance.

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Small Scale Features (cont.)	Contributing or Non-contributing	Rationale
Protective bollards (HS 116, IDLCS 354857)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Access road and parking area (HS 119, IDLCS 390289)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Well and water tanks (HS 118, IDLCS 354851)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Flagpole (HS 120, IDLCS 398270)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Basketball goal (HS 112, IDLCS 287625)	<i>Contributing</i>	Installed for use by missileers during the period of significance.
Volleyball court (HS 115, IDLCS 287266)	<i>Contributing</i>	Installed for use by missileers during the period of significance.
Horseshoe court (HS 114, IDLCS 287261)	<i>Contributing</i>	Installed for use by missileers during the period of significance.
Code burner (HS 111, IDLCS 287264)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Interpretive wayside	<i>Non-contributing</i>	Installed by the NPS after the end of the period of significance.
Portable toilet	<i>Non-contributing</i>	Installed by the NPS after the end of the period of significance.
Concrete pad, transformer, and generator	<i>Non-contributing</i>	Installed by the NPS after the end of the period of significance.

Summary of Integrity Delta-01

During the time that Delta-01 served as an active Minuteman Missile installation, the facility changed very little related to its original configuration and construction. Most changes were limited to equipment upgrades in response to new technology and routine maintenance. Early changes at Delta-01 included the construction of a freestanding vehicle storage building in 1968 to replace the earlier garage in the wing of the support building. A helicopter pad and additional sewage lagoon were added to the facility in 1970.

Between 1971 and 1973, aspects of the facility were modified when Ellsworth replaced its arsenal of Minuteman Ib missiles with Minuteman II. The changes associated with this conversion were mainly contained within the missiles themselves and were not apparent on the landscape.

Delta-01 remains largely the same as it was when it was deactivated. Care has been taken to keep as much of the original materials on the site. Modifications made at Delta-01 related to its use interpretation as a historic site include installation of an interpretive wayside near the entrance gate in the security fence, and installation of a portable toilet. Deactivation activities and conversion of the site to a unit of the National Park Service did not diminish its ability to convey its historic use and appearance as a Minuteman Missile facility used by the Air Force from 1963 to 1993.

The Delta-01 site retains integrity of location, design, setting, feeling, association, materials and workmanship. The facility remains in its historic location and layout and the surrounding features continue to reflect their historic characteristics. The setting and feeling of the property are intact, as the facility retains the main contributing features from the period of significance and its remote surroundings continue to relay a feeling of isolation that was experienced by the missileers. The association of the property with an active Minuteman Missile program is no longer integral to the facility however, the interpretation of the historic activities helps to keep a strong connection with the historic operations. Although the removal of the other Minuteman Missile installments has impacted the integrity of the overall cold war landscape of the northern Great Plains, the interpretation of their former existence helps visitors to understand the broader context of the program. All of the primary historic buildings, structures, and landscape features remain and are in good condition, therefore integrity of materials and workmanship remains intact.

Landscape Analysis, Delta-09

Spatial Organization Landscape Analysis, Delta-09

The arrangement of the buildings and landscape features on the site at Delta-09 remains intact, reflecting the Air Force layout of the site. Only minor changes have occurred since the period of operation. These comprise the addition of elements on the site by the National Park Service including the glass viewing enclosure at the missile silo and a portable toilet structure inside the northwest corner of the security fence. Neither of these additions has notably altered the overall spatial organization of the property.



Figure 4- 12: Oblique aerial view of Delta-09 and the surrounding area facing southwest during the period of significance, no date (source: Library of Congress, Prints and Photographs Division, Historic American Engineering Record, Reproduction Number HAER SD-50-C-1)



Figure 4- 13: View of Delta-09 from Pennington County Road T512, facing west, June 2009 (source: QEA 3115)

Land Use Landscape Analysis, Delta-09

Within the security fence at Delta-09, land use has changed from an active missile Launch Facility to an interpretive site. The property no longer contains an active Minuteman Missile prepared to launch at any moment. There is no longer a need to maintain the facilities in preparation for launching a missile, eliminating the presence of maintenance workers, their vehicles, and their activities. Security needs at the site have changed as well. They are now related to protecting the historic resources, whereas historically security focused on military defense. The area surrounding the missile silo was a potential blast zone during the period of significance however, that did not affect the day to day appearance of the landscape.

Land use beyond the security fence appears to be unchanged since the period of significance. The majority of the surrounding property is utilized for ranch livestock grazing, and Interstate Highway 90 continues to provide a major transportation link that is visible to the north and northeast of the site.

A parcel of property immediately adjacent to the eastern boundary of Delta-09 is privately owned, as are several large tracts that are within the historic views of the facility. Since there are no land use controls that affect private property in the area, the use of these parcels may conceivably change at any time, potentially impacting the historic views from Delta-09. Figure 4-14 illustrates the views and privately owned land in the vicinity of Delta-09. Areas where the privately owned land overlaps foreground

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views from Delta-09 are those most vulnerable to impacts from potential changes in land use.

The remainder of the landscape within view of Delta-09 is publicly owned as part of Buffalo Gap National Grassland and Badlands National Park. Since it is federally owned property, any proposed changes to land use would require consideration of the potential impacts that the alterations would have on Delta-09, thereby providing a high level of confidence that the historic land use will remain intact in the foreseeable future.

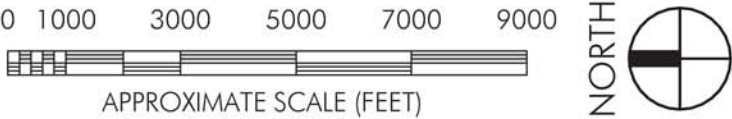
Next page: Figure 4- 14: Delta-09 Existing Views and Ownership

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NATIONAL HISTORIC SITE

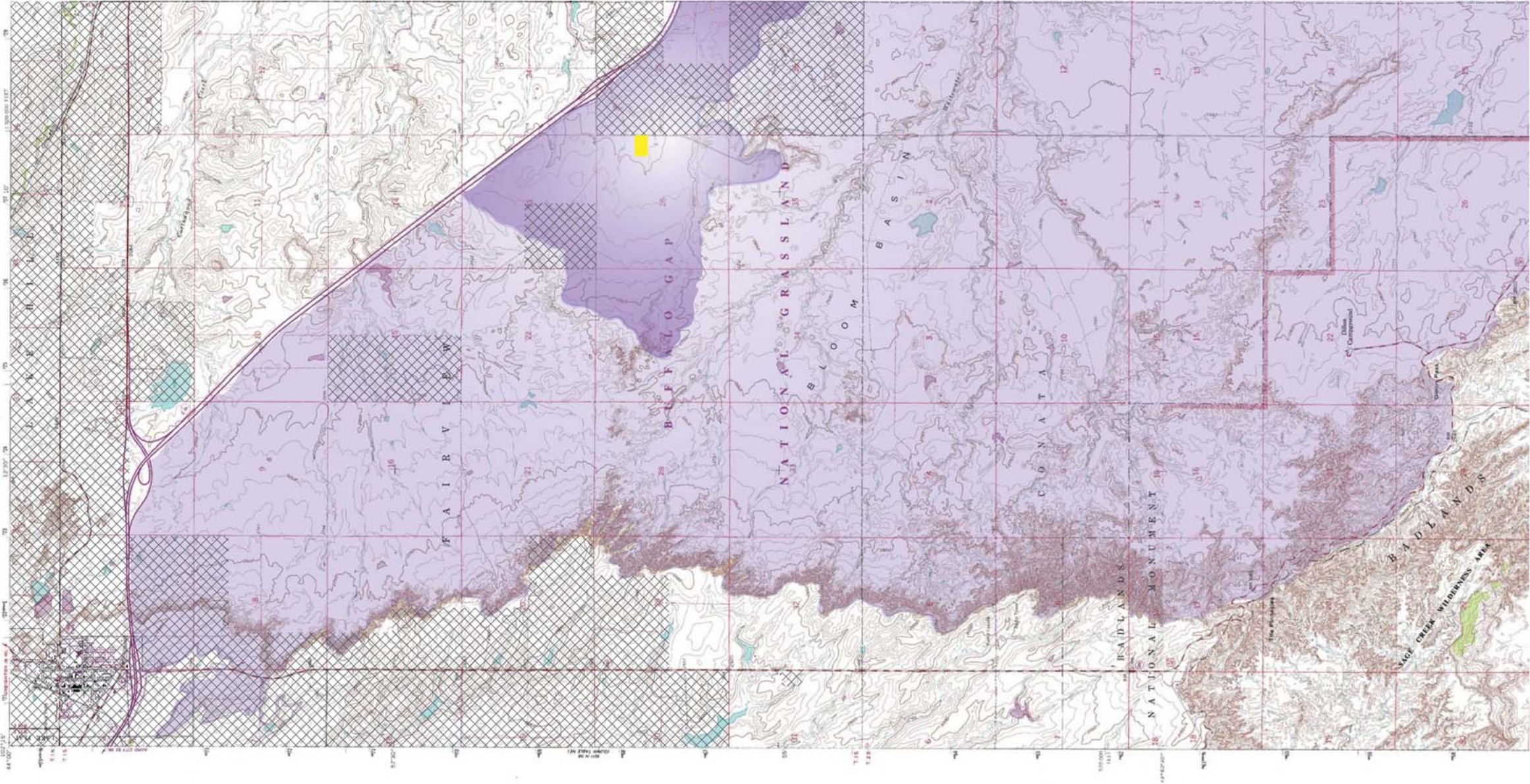
JACKSON COUNTY, SOUTH DAKOTA

DELTA-09 EXISTING VIEWS & OWNERSHIP



MAP KEY

- Privately Owned Land
- Delta-09 Foreground Views
- Delta-09 Background Views
- Approximate Location of Delta-09



SOURCES

USGS MAP
QEA FIELD INVESTIGATIONS, JUNE 2009

Circulation Landscape Analysis, Delta-09

Patterns of circulation on the site remain the same as they were during the period of significance. The locations and types of pavement of vehicular routes have not changed. Visitor parking is provided on the access drive outside the security fence, avoiding the potential impacts that could be associated with providing parking within the core of the Launch Facility where visitor vehicles could distract from the historic character of the site.

Topography and Views Landscape Analysis, Delta-09

Topography at Delta-09 was altered for the initial implementation of the facility on the site. The alterations remain apparent on the landscape retaining the historic topography of the site. Beyond the borders of Delta-09, there have been adjustments to the grades of the site access drive and a drainage ditch along the outside of the fence that occurred after the deactivation of the facility. No major alterations to the topography within view of the facility have occurred since the site was activated in 1963.

Beyond the boundaries of Delta-09, the broader landscape is relatively level, sloping gradually down from the north to the south. Views to the west, south and southeast present a grassland landscape that extends towards badland geological formations at the horizon (see Figures 4-15 through 4-17). To the north and northeast, a rolling ridge and I-90 provide boundaries for views from Delta-09 (see Figures 4-18 through 4-21).



Figure 4- 15: View to the east from Delta-09, June 2009 (source: QEA 3508)

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Figure 4- 16: View to the South from the access drive at Delta-09 on an overcast day, June 2009 (source: QEA 3498)



Figure 4- 17: View to the southeast from the access drive at Delta-09, June 2009 (source: QEA 3116)

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Figure 4- 18: View to the west including the northwest portion of Delta-09, and the grassland surrounding the site, the arrow indicates the portable toilet at Delta-09, June 2009 (source: QEA 3139)



Figure 4- 19: View to the east from inside the security fence at Delta-09, the highway is visible when on site, the arrow indicates a truck on the highway, June 2009 (source: QEA 3534)



Figure 4- 20: View to the northeast from Delta-09, the eastern azimuth marker is indicated by the arrow, and a truck can be seen on the highway on the horizon, June 2009 (source: QEA 3516)



Figure 4- 21: View to the northeast from the access drive at Delta-09, the orange line is the location of I-90, which can be seen from the site, June 2009 (source: QEA 3121)

Similar to Delta-01, the views surrounding Delta-09 present a vast grassland. At Delta-09 these views extend to badland geological formations to the west, south and southeast, providing visual reminders of the amazing natural landscape in the region. While the views at Delta-09 are generally unchanged since the period of significance, the privately owned land within the views presents a potential for changes that could impact the historic views. Figure 4-14 illustrates the views and privately owned land in the vicinity of Delta-09. Areas where the privately owned land overlaps foreground views from Delta-09 are most vulnerable to impacts from potential changes in land use.

Vegetation Landscape Analysis, Delta-09

Vegetation at Delta-09 remains essentially the same as it was during the period of significance, with one exception. During the time that the facility was active, the U.S. Air Force kept the entire area within the security fencing clear of all vegetation through applications of herbicides. Today herbaceous species are encroaching into the gravel in some areas.

Buildings and Structures Analysis, Delta-09

From a landscape perspective, the only significant change to the structures at Delta-09 is the addition of the viewing enclosure at the missile launcher. During the period of significance the peaked glass enclosure was not present. Also, the silo doors were closed the majority of the time and the missile could not be viewed. The addition of the viewing enclosure was made in order to enhance the interpretation of the facility and does not notably impact the integrity of the historic landscape. The Buildings and Structures Analysis section provides detailed information regarding the integrity of the buildings.

Small Scale Features Analysis, Delta-09

Delta-09 contains a number of small scale landscape features that contribute to the integrity of the historic site. Each feature is described and illustrated in Chapter 3: *Existing Conditions and Affected Environment*. The features are enumerated in Table 4-2 indicating whether they contribute to the integrity of the historic landscape, and an explanation of the rationale used to determine their status.

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Table 4-2: Delta-09 Small Scale Landscape Features

Small Scale Features	Contributing or Non-contributing	Rationale
Glass viewing enclosure	<i>Non-contributing</i>	Installed by NPS after the end of the period of significance.
Training model of missile	<i>Non-contributing</i>	Installed in the launch tube in 2001. Part of the NPS interpretive program at the site.
Improved Minuteman Physical Security System (IMPSS) antenna (HS 903, IDLCS 100489)	<i>Contributing</i>	Part of the facility operations during the period of significance. Installed 1989.
Hardened UHF antenna (HS 904, IDLCS 100491)	<i>Contributing</i>	Part of the facility operations during the period of significance. Installed circa1968.
Cathodic protection rectifier (HS 912, IDLCS 390310)	<i>Contributing</i>	Part of the facility operations during the period of significance. Installed circa1982-83.
Two azimuth markers (HS 905, IDLCS 100492)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Two HICS marker posts (HS 907, IDLCS 345796)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Security fence (HS 906, IDLCS 295903)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Light posts (HS 908, IDLCS 354853)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Bollard (HS 909, IDLCS 354859)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Helipad & Markers (HS 910, IDLCS 354855)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Access Road and Maneuvering Area (HS 911, IDLCS 390310)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Antenna piers (HS 913, IDLCS 400831)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Transporter erector pylons (HS 914, IDLCS 412538)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Launch facility warning signs (HS 915 IDLCS 754362)	<i>Contributing</i>	Part of the facility operations during the period of significance.
Culvert	<i>Non-contributing</i>	Installed by NPS after the end of the period of significance.
Drainage ditch	<i>Non-contributing (verify)</i>	Regraded and lined with dense gravel by the NPS after the end of the period of significance.
Portable toilet	<i>Non-contributing</i>	Installed by NPS after the end of the period of significance.

Summary of Integrity Delta-09

During the time that Delta-09 served as an active Minuteman Missile installation, the facility changed very little related to its original configuration and construction. Most changes were limited to equipment upgrades in response to new technology and routine maintenance. Between 1971 and 1973, aspects of the facility were modified when Ellsworth replaced its arsenal of Minuteman Ib missiles with Minuteman II. The changes associated with this conversion were mainly contained within the missiles themselves and were not apparent on the landscape. The same is true for the removal of the missile in 1991.

Slight modifications have been made to Delta-09 to prepare it for interpretation as a static display. The launcher closure has been permanently fixed in a partially open position and a glass viewing enclosure was installed over the opening in 2001. A training model of a Minuteman II missile was installed in the launch tube in 2001. The viewing enclosure and training missile are noncontributing features of the missile launcher. Deactivation activities and conversion of the site to a unit of the National Park Service did not diminish its ability to convey its historic use and appearance as a Minuteman Missile facility used by the Air Force from 1963 to 1993.

The Delta-09 site retains integrity of location, design, setting, feeling, association, materials and workmanship. The facility remains in its historic location and layout and the surrounding features continue to reflect their historic characteristics. The setting and feeling of the property are intact, as the facility retains the main contributing features from the period of significance and its remote surroundings continue to relay a feeling of isolation that was experienced by the missileers. The association of the property with an active Minuteman Missile program is no longer integral to the facility however, the interpretation of the historic activities helps to keep a strong connection with the historic operations. With the exception of the active missile at Delta-09, all of the historic buildings, structures, and landscape features are extant, therefore integrity of materials and workmanship remains intact. Although the removal of the other Minuteman Missile installments has impacted the integrity of the overall cold war landscape of the northern Great Plains, the interpretation of their former existence helps visitors to understand the broader context of the program.

Building Analysis, Delta-01

During the time that Delta-01 served as an active Minuteman Missile installation, frequent upgrades of building elements and systems occurred. As an active military installation periodic updates to kitchen, bathroom, and bedroom facilities were necessary. In addition, a freestanding vehicle storage building was constructed in 1968 to replace the earlier garage in the wing of the support building. The structures at Delta-01, including the support building and launch control center, continued to evolve throughout their occupation by the missile squadron.

Between 1971 and 1973, aspects of the facility were modified when Ellsworth replaced its arsenal of Minuteman Ib missiles with Minuteman II. The changes associated with this conversion were mainly contained within the missiles themselves and were not apparent on the landscape.

Delta-01 remains largely the same as it was when it was deactivated. Care has been taken to keep as much of the original materials on the site. Modifications made at Delta-01 related to its interpretation as a historic site include the laying of carpet over the existing flooring to be used by visitors and to protect the historic flooring underneath. Deactivation activities and conversion of the site to a unit of the National Park Service did not diminish its ability to convey its historic use and appearance as a Minuteman Missile facility used by the Air Force from 1963 to 1993. Aside from the temporary carpets, every architectural element and furnishing within the buildings are character defining features to the site.

The Delta-01 buildings retain integrity of location, design, setting, feeling, association, materials and workmanship. The buildings remain in their historic location and layout and continue to reflect their historic characteristics. The setting and feeling of the buildings are intact, as the facility retains the main character defining features from the period of significance as they were used by the missileers. The association of the property with an active Minuteman Missile program is no longer integral to the facility; however, the interpretation of the historic activities helps to keep a strong connection with the historic operations. All of the primary historic buildings and structures remain and are in good condition, therefore integrity of materials and workmanship remains intact.

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Table 4-3: Delta-01 Character Defining Building Features

Building Character Defining Features (EXTERIOR)	Contributing or Non-contributing	Rationale
One-story rectangular ranch-style building form and orientation	<i>Contributing</i>	Original building form as constructed in 1963.
One-story detached rectangular vehicle heated storage building form and orientation	<i>Contributing</i>	Original building form as constructed in 1968.
8" thick reinforced concrete foundation wall, painted brown and off-white	<i>Contributing</i>	Original foundation as constructed in 1963.
Pre-fabricated steel siding, wood-grained embossed, 8" exposure with corner trim and window surrounds, pre-finished tan color	<i>Contributing</i>	Installed to replace the original asbestos cement shingle siding in the mid 1980s.
Vinyl-clad wood one-over-one double hung windows and aluminum storm windows.	<i>Contributing</i>	Installed circa 1983.
Hollow metal doors and frames, with ¼" wire glass in doors with vision panels, and hardware; doors painted tan with dark brown frames.	<i>Contributing</i>	Installed circa 1976; hardware, in storage, was replaced by the NPS.
Concrete door stoops, painted white on sides, and concrete and metal door stops, painted dark brown	<i>Contributing</i>	Present during the period of significance.
Shallow sloped gable roof covered with timber-blend 2-tab asphalt shingles; dark brown aluminum K-style gutters, soffit and fascia panels, and trim strips, and tan aluminum downspouts with dark brown concrete splash blocks	<i>Contributing</i>	Originally installed circa 1983, replaced in-kind by the NPS in 2008.
All attached utilities, including: Pipes, brackets, vents, louvers and hoods, electrical conduit, wind vane, light fixtures, etc., with the exception of utilities associated with the installation of the fire suppression system in 1999/2000.	<i>Contributing</i>	All present and part of facility operations during the period of significance.

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Building Character Defining Features (INTERIOR)	Contributing or Non-contributing	Rationale
Building floor plan, including security/service area at the east, recreation/common areas in the center, and double-loaded bedroom corridor at the west end.	<i>Contributing</i>	Original building form as constructed in 1963 with modifications during the period of significance.
Historic flooring material types: concrete, marbled vinyl asbestos tile, marbled asphalt tile, circa 1980s patterned carpet.	<i>Contributing</i>	Originally installed during the period of significance; some materials (e.g. carpets) replaced in-kind by the NPS
Dark mauve carpet runners	<i>Non-Contributing</i>	Installed by the NPS to protect carpets from visitor use.
Historic wall and ceiling materials: drywall, vinyl wood-grained or ceramic tile wainscot, wood paneling, fabric-covered or tegular acoustic tile, rubber base molding; extant color scheme on all finishes	<i>Contributing</i>	Originally installed during the period of significance; some materials (e.g. drywall and paint) replaced in-kind by the NPS.
Solid core wood doors, painted or stained/varnished and some with vision glass panels; extant historic hardware; expanded metal gate painted white	<i>Contributing</i>	Originally installed during the period of significance.
Window treatments: tinted plastic roller shades, vinyl vertical blinds, vertical fabric curtains on retractable rods	<i>Contributing</i>	Originally installed during the period of significance.
Fixtures: Wood shelving, security counter and equipment, elevator equipment, shaft and cab, entertainment console, kitchen cabinets, countertops, and equipment, bathroom fixtures and accessories, bedroom furniture, etc.	<i>Contributing</i>	Originally installed during the period of significance.
Mechanical systems	<i>Contributing</i>	Originally installed during the period of significance.
Extant generator (abandoned)	<i>Contributing</i>	Originally installed during the period of significance.
Water treatment equipment (abandoned)	<i>Contributing</i>	Originally installed during the period of significance.

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Building Character Defining Features (LAUNCH CONTROL CENTER)	Contributing or Non-contributing	Rationale
Vestibule: concrete floor, walls, ceiling	<i>Contributing</i>	Originally constructed in 1963.
Decorative paintings in vestibule	<i>Contributing</i>	Present during the period of significance
Blast door and stop	<i>Contributing</i>	Originally constructed in 1963.
Launch control center structure: Concrete surface, steel interior liner, and associated equipment (shock isolators, water tank, utilities, etc).	<i>Contributing</i>	Originally constructed in 1963.
Launch control center interior finishes and fixtures: carpeted floors, solid and perforated metal acoustic panels with sound absorption fabric panels on ceilings and walls, latrine, modular bed, launch equipment, etc.	<i>Contributing</i>	Originally installed during the period of significance.

Building Analysis, Delta-09

During the time that Delta-09 served as an active Minuteman Missile installation, the facility changed very little related to its original configuration and construction. Most changes were limited to equipment upgrades and basic maintenance. Between 1971 and 1973, aspects of the facility were modified when Ellsworth replaced its arsenal of Minuteman Ib missiles with Minuteman II missiles. The changes associated with this conversion were mainly contained within the missiles themselves and were not apparent on the landscape. The same is true for the removal of the missile in 1991.

Slight modifications have been made to Delta-09. The launcher blast door was welded in a partially open position as compliance for the START treaty, and a glass viewing enclosure was installed over the opening in 2002 for interpretation purposes. A training model of a missile was installed in the launch tube in 2001. The viewing enclosure and training missile are noncontributing features of the missile launcher. Deactivation activities and conversion of the site to a unit of the National Park Service did not diminish its ability to convey its historic use and appearance as a Minuteman Missile facility used by the Air Force from 1963 to 1993.

The Delta-09 site retains integrity of location, design, setting, feeling, association, materials and workmanship. The silo and associated structures remain in their historic location and layout and continue to reflect their historic characteristics. The setting and feeling of the structures are intact, as the facility retains the main contributing features from the period of significance. The association of the property with an active

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Minuteman Missile program is no longer integral to the facility; however, the interpretation of the historic activities helps to keep a strong connection with the historic operations. With the exception of the active missile in the silo, all of the historic elements of the silo and structures are extant; therefore integrity of materials and workmanship remains intact.

Table 4-4: Delta-09 Character Defining Building Features

Character Defining Building Features	Contributing or Non-contributing	Rationale
Glass viewing enclosure	<i>Non-contributing</i>	Installed by the NPS after the end of the period of significance.
Training model of missile	<i>Non-contributing</i>	Installed in the launch tube in 2001. Part of the NPS interpretive program at the site.
Concrete retaining walls	<i>Contributing</i>	Originally constructed in 1963.
Concrete launch apron and concrete/steel launch closure	<i>Contributing</i>	Originally constructed in 1963.
Concrete and steel closure tracks	<i>Contributing</i>	Originally constructed in 1963.
Underground concrete launch facility support building (vault) and associated equipment	<i>Contributing</i>	Originally constructed in 1963.
Steel personnel access hatch and steel pylons	<i>Contributing</i>	Originally constructed in 1963.
Concrete launch facility silo	<i>Contributing</i>	Originally constructed in 1963.

Chapter 5: Management Philosophy and Management Issues

Chapter 5: Management Philosophy and Issues

Cultural Landscape and Structures Management Philosophy

The publication, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, provides professional standards and guidance for treatments to cultural landscapes and structures listed in or eligible for the National Register of Historic Places. The document defines four types of treatment for historic landscapes and structures, including preservation, restoration, reconstruction, and rehabilitation.¹ Each of the philosophies is described herein and discussed in relation to the historic landscape at Minuteman Missile National Historic Site.

Preservation and rehabilitation have been identified as appropriate management philosophies for the cultural landscapes and structures at Delta-01 and Delta-09. *Chapter 6, Treatment Alternatives*, describes two approaches for managing the historic landscapes at Minuteman Missile. One of the alternatives (Treatment Alternative 1) applies preservation as an overall treatment philosophy for the cultural landscapes and structures at Delta-01 and Delta-09. The second treatment alternative (Treatment Alternative 2) uses an overall management philosophy of rehabilitation. A historic core has been defined for each site (see Figures 5-1 and 5-2). The historic core is the area within the historic boundary that includes the greatest concentration of historic resources. Within the historic boundary at each site, preservation is the management philosophy applied to the buildings and landscapes for both treatment alternatives.

¹ Birnbaum, Charles A. and Christine Capella Peters, 1996. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. Washington DC: Department of the Interior, National Park Service, 3-5.

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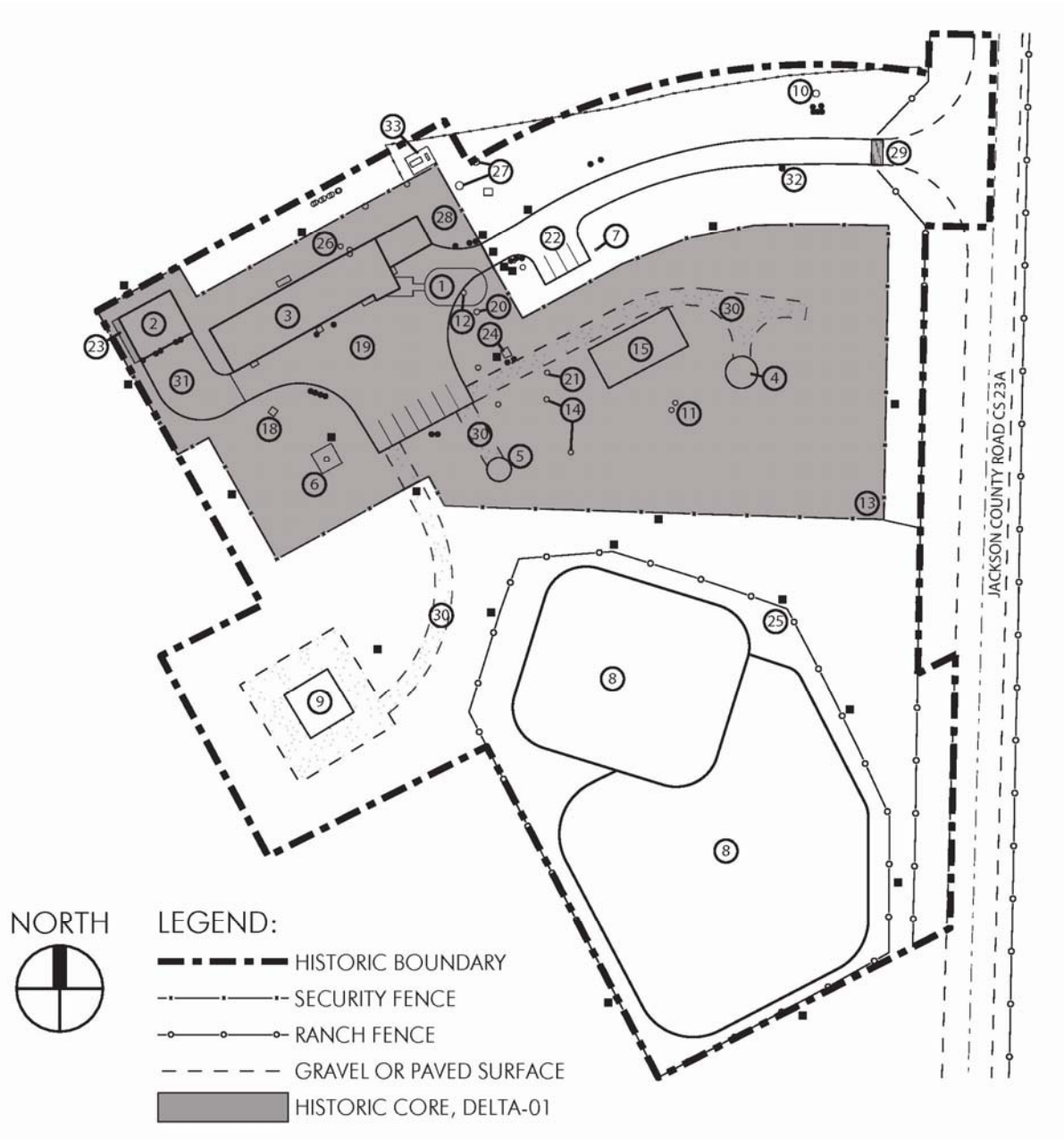


Figure 5- 1: Delta-01 Historic Core (source: National Mead & Hunt, Inc., modified by Quinn Evans | Architects, 2009)

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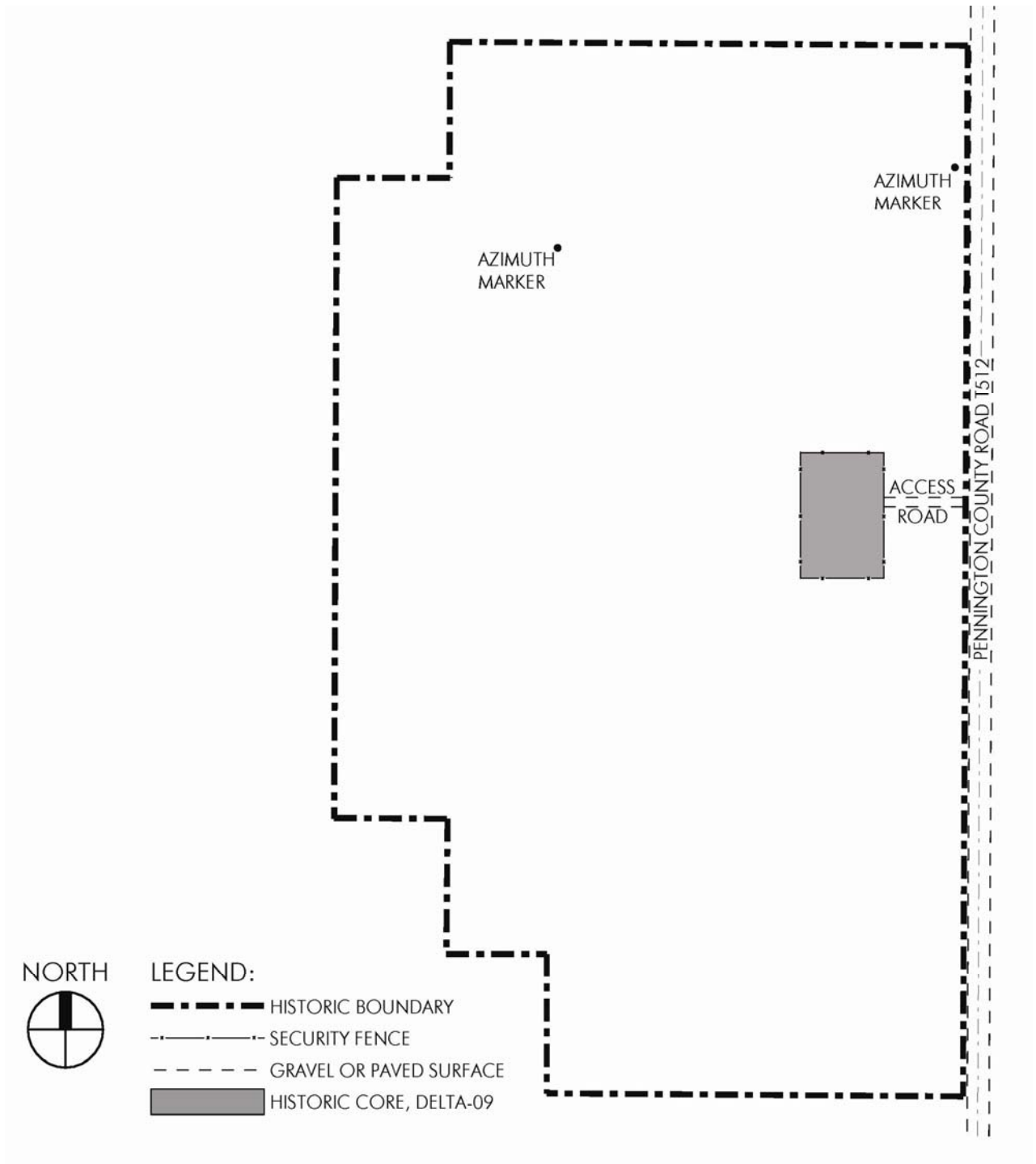


Figure 5- 2: Delta-09 Historic Core (source: Mead & Hunt, Inc., modified by Quinn Evans Architects, 2010)

Preservation

The preservation of historic landscapes and structures involves applying measures to sustain the *existing* form, integrity, and materials of a historic property. This approach focuses upon stabilizing and protecting extant historic resources, rather than replacing missing elements. It is appropriate when a historic property is essentially intact and does not require extensive repair or replacement and when continuing or new use does not require additions or alterations. Depiction at one particular period of time is generally not appropriate with a landscape preservation philosophy, as this would often require the removal of resources that relate to other significant time periods.²

Preservation has been selected as the most appropriate management approach for the landscapes within the historic cores of Delta-01 and Delta-09. The historic core of each site is defined by the area within the security fence. The Preferred Alternative applies a preservation philosophy to the areas within the historic cores, and a rehabilitation philosophy to the landscapes outside the historic cores, in order to provide necessary accommodations for visitors.

Preservation is also the most appropriate management approach for the historic buildings and structures at Delta-01 and Delta-09. These resources have, with minor exceptions, been preserved exactly as they were when the Ellsworth Air Force Base Minuteman Missile wing was decommissioned in 1993. Those minor exceptions included the removal of some classified equipment, installation of a fire suppression system, the substitution of a training model of a missile for the active ICBM in the silo, and the installation of a viewing enclosure over the missile silo. The intention for the buildings and structures at Delta-01 and Delta-09 is to preserve them in as authentic a condition as possible so that visitors can experience the buildings as they were during their active use. Any alterations or additions necessary to their interpretive and operational functions should have minimal impact on the historic resources. Preservation is an appropriate treatment for the buildings and structures because of the very high integrity of the sites and their intended interpretive use.

Restoration

Restoration is the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period in time. This includes reconstruction of missing features from the restoration period, and removal of features from all other periods. The approach can be considered only when the property's significance during a particular period of time outweighs the loss of extant elements from other historical periods; and when there is substantial physical and documentary evidence for the work; and when contemporary alterations and additions are not planned.³

² Ibid., 17-18.

³ Ibid., 89-90.

At Minuteman Missile restoration is not considered the most appropriate management philosophy. At Delta-09, the removal of the active missile and its replacement with a deactivated training model of a missile, the partial opening of the launcher closure, and the construction of the viewing enclosure are all changes that have been made to comply with the provisions of the START arms-reduction treaty and to accommodate the use of the property as an interpretive site. Restoration would require reversal of these changes, which would go against the terms of the START treaty, and would not be acceptable for the current use as a national historic site. Also, the need to provide additional parking and minimal comfort facilities for visitors in the future is not compatible with restoration as a management philosophy.

Reconstruction

Reconstruction is the act or process of using new construction to depict a non-surviving site, landscape, building, structure, or object as it appeared at a specific period of time in its historic location. The approach is appropriate only when the property's significance during a particular period of time outweighs the potential loss of extant features that characterize other historical periods. In addition, there must be substantial physical and documentary evidence for the work, and the work must be clearly identified as a contemporary re-creation.⁴

At Minuteman Missile National Historic Site, the significant features relate to one historic period and adequate documentary evidence exists to reconstruct the property accurately. However, the facility should never be reconstructed, as it is now a national historic site and no longer a military installation. Also, contemporary needs require some alterations to the landscape.

Rehabilitation

The act or process of rehabilitation allows repairs, alterations, and additions necessary to enable a compatible use for a property, as long as the portions or features which convey the historical, cultural, or architectural values are preserved. This approach is appropriate when depiction at one particular period of time is not appropriate; repair or replacement of deteriorated features is necessary; and alterations or additions are needed for a new use.⁵

Rehabilitation is an appropriate management philosophy for the cultural landscapes at Delta-01 and Delta-09. Both sites include historic cores where preservation is the most appropriate approach to landscape management. Beyond the historic cores, rehabilitation

⁴ Ibid., 127-129.

⁵ Ibid., 47-48.

of the landscape may be appropriate in order to provide facilities for visitors including parking, interpretive waysides, and comfort facilities. Treatment Alternative 2 utilizes this philosophy to provide a balance between preservation and visitor services.

Management Issues

Management concerns for the historic resources at Minuteman Missile National Historic Site are summarized in this section. At a broad scale, management issues are described that affect the entire park, as well as the areas between the two units of the park. At a more detailed level, management issues are described that relate to the resources at Delta-01 and Delta-09.

Management Issues Related to the Overall Park

- Resources related to the Minuteman program exist beyond the boundaries of Delta-01 and Delta-09. The park needs guidance on whether or not these resources should be interpreted as part of the Minuteman Missile story.
- The National Park Service needs guidance for developing an interpretive program that is compatible with the historic resources including an approach for installing interpretive media on the landscape at Delta-01 and Delta-09.

Management Issues Related to Delta-01

Spatial Organization (Delta-01)

- The integrity of the spatial organization of the historic landscape needs to be protected from incremental changes that could reduce integrity.

Land Use (Delta-01)

- The park needs a policy for addressing the use of the recreational area (basketball hoop, volleyball and horseshoe courts) by visitors.
- A clear distinction between the historic core and any areas developed for visitor use needs to be made. The cattle-guard and security fence provide visual indication of the historic core. New development for visitor use should be kept outside the security fence.

Circulation (Delta-01)

- Visitor vehicular circulation needs to be improved for personal vehicles, busses, recreational vehicles and a shuttle van.
- Visitor parking needs to be improved.

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- A universally accessible route needs to be provided for visitors on site.
- The road from the highway exit to the site contains large potholes and is not well maintained. The road and its maintenance need to be improved.

Topography and Views (Delta-01)

- Significant views to and from the site need to be protected from potential impacts.
- A portion of land within the significant views at the site is not owned by the National Park Service. Adjacent land that is privately owned is especially vulnerable to change that could impact the historic views. Adjacent land that is federally owned is less vulnerable to change, due to the requirement of Section 106 review, however, the lack of management agreements to protect these views allows for potential impacts.
- Puddling of water along the south elevation of the main building needs to be eliminated.

Vegetation (Delta-01)

- Within the historic core, the park needs an approach for addressing vegetation that is encroaching into the gravel areas surrounding landscape features.

Small Scale Features (Delta-01)

- The electric fence is not historic and could provide a hazard to visitors. The electric fence was added to the site to prevent livestock from damaging cars in the parking area. A livestock barrier that is safe and visually unobtrusive needs to be provided in place of the electric fence.

Buildings and Structures (Delta-01)

- The integrity of the historic building fabric needs to be protected from excessive wear and tear due to increased use by visitors.
- The park needs guidance on routine maintenance and replacement of deteriorated historic fabric, especially historic materials that are no longer readily available.

-

Management Issues Related to Delta-09

Spatial Organization (Delta-09)

- The integrity of the organization of the historic landscape needs to be protected from incremental changes.

Land Use (Delta-09)

- A clear distinction between the historic core and any areas developed for visitor use needs to be made. The fence provides a natural cue to visitors to indicate the historic core. New facilities should also avoid intruding between the azimuth markers and the fenced area.

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- The NPS needs guidance regarding whether or not to add a visitor contact station at the site.

Circulation (Delta-09)

- Visitor vehicular circulation needs to be improved (for personal vehicles, busses, recreational vehicles and a shuttle van).
- Visitor parking needs to be improved.
- A universally accessible route needs to be provided for visitors on site.

Topography and Views (Delta-09)

- Significant views need to be protected from potential impacts.
- A portion of land within the significant views at the site is not owned by the National Park Service. Adjacent land that is privately owned is especially vulnerable to change that could impact the historic views. Adjacent land that is federally owned is less vulnerable to change, due to the requirement of Section 106 review, however, the lack of management agreements to protect these views allows for potential impacts.
- Erosion at the south side of the historic core has caused deterioration and erosion control measures need to be applied.

Vegetation (Delta-09)

- Within the historic core, the park needs an approach for addressing vegetation that is encroaching into the gravel areas surrounding landscape features.
- Beyond the historic core, the park needs an approach for addressing vegetation to ensure that it continues to reflect its historic appearance.

Buildings and Structures (Delta-09)

- The integrity of the historic building fabric needs to be protected from excessive wear and tear due to increased use by visitors. Although visitors do not enter the structures at this site, their exploration of the exterior features is not monitored and therefore, could lead to impacts.
- The park needs guidance on routine maintenance and replacement of deteriorated historic fabric, especially historic materials that are no longer readily available.

Chapter 6: Treatment Alternatives

Chapter 6: Treatment Alternatives

Overview

Recommendations for the treatment of the historic landscapes and structures within Minuteman Missile National Historic Site are provided in this chapter. The *General Management Plan/ Environmental Impact Statement* (GMP/EIS) for Minuteman Missile National Historic Site provides clear direction for future management of the park, including buildings and sites. The GMP/EIS thoroughly evaluated four treatment alternatives that included use of the buildings and sites associated with the park. The preferred alternative from the GMP/EIS provides specific guidance for the programming of the buildings and landscapes at Delta-01 and Delta-09, and serves as a foundation for the HSR/CLR/EA. Possibilities for treatment of the buildings and landscapes were scrutinized according to the GMP/EIS preferred alternative. This led to the elimination of HSR/CLR/EA alternatives that did not completely meet the GMP/EIS requirements and the ultimate evaluation of only one viable action alternative as part of the HSR/CLR/EA.

Recommendations for Delta-01 and Delta-09 were developed with careful consideration of how the two sites relate to each other, and include proposals for enhancing visitors' understanding of how the two sites functioned together. To simplify their presentation, the recommendations for the resources related to Delta-01 and Delta-09 are provided separately.

Two alternative treatments are presented for the buildings and historic landscapes at Delta-01 and Delta-09. The treatment alternatives include the current management (no action alternative) and the preferred action alternative. The current management / no action alternative reflects the current use of the landscape and provides a baseline for evaluation of potential impacts from the preferred action. The current management / no action alternative is presented first, followed by an overview of the goals and objectives for the preferred action alternative.

Following the descriptions of the treatment alternatives, a quantified summary of the extent to which the alternatives meet the project objectives is provided. Next, a summation of the environmental impacts associated with each alternative is presented in the section titled "Environmentally Preferable Alternative." A condensed presentation of the detailed analysis of potential impacts provided in **Chapter 7: Treatment Impacts/Environmental Consequences** is provided next. Using the Council on Environmental Quality's (CEQ) interpretation, and the treatment alternatives impact analysis provided in **Chapter 7** of this **HSR/CLR/EA**, the environmentally preferable alternative has been determined to be the preferred alternative. A list of mitigation

measures is provided to minimize any adverse effects that would occur due the implementation of the preferred alternative.

Current Treatment (No Action Alternative)

The historic landscapes and structures at Minuteman Missile National Historic Site would continue to be managed as they are currently and no new course of action would be implemented. The no-action alternative provides a baseline for evaluating changes and impacts associated with the two action alternatives.

With the current management approach, the primary historic resources, including landscapes and structures, would be preserved and interpreted. The lack of improved visitor circulation, parking, and comfort facilities, would result in impacts related to visitor use. Possible examples include overflow parking along the access roads, leading to erosion and visual impacts, use of the historic core at both sites as turn-around areas or parking for large vehicles, and impacts to visitor experience due to the lack of comfort facilities.

Delta-01, Current Treatment

Delta-01 Spatial Organization Current Treatment

- Incremental changes are made to accommodate needs at the site. These have included the placement of portable toilets, use of the paved area inside the fence for visitor parking, and the addition of an electrical fence on the north side of the access road.

Delta-01 Land Use Current Treatment

- There is no plan for addressing use of the recreational areas by visitors.

Delta-01 Circulation Current Treatment

- Vehicular circulation does not provide an adequate turn-around outside the security fence for large vehicles. Visitors who stop at the Visitor Center are informed of this situation, but not all are informed prior to reaching the site.
- Alternatives to using personal vehicles are not in place. Currently, visitors in oversized vehicles do not have a good option for visiting the site.
- Visitor parking will remain inadequate. The visitor parking area contains four spaces and is often full during tours and open house hours.
- Visitors with mobility impairments utilize the ramp and exterior door next to the elevator to access the building. This entrance does not include a landing at the door, and therefore does not provide a universally accessible entrance.

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- The road from the highway exit to the site contains large potholes and is not well maintained.

Delta-01 Topography and Views Current Treatment

- Provisions for scenic easements to protect significant views in areas that are privately owned are made in the General Management Plan. The park has initiated discussions with private property owners to establish protection for the views identified.
- There are no formal agreements in place to protect significant views that are within areas that are publically owned.

Delta-01 Vegetation Current Treatment

- No action is taken to eliminate vegetation from encroaching into the gravel areas surrounding landscape features.

Delta-01 Small Scale Features Current Treatment

- A small, unmarked electric fence is used to keep livestock from entering the area where visitors park.

Delta-01 Buildings and Structures Current Treatment

- The Launch Control Facility is in good condition due to the cyclical maintenance provided by the Air Force personnel from Ellsworth Air Force Base and the National Park Service. Normal maintenance to repair damaged elements would occur.

For visitors who cannot climb the ladder in the case of an emergency and therefore cannot tour the Launch Control Center, continue the taped video presentation in the day room.

Delta-09, Current Treatment

Delta-09 Spatial Organization Current Treatment

- Incremental changes are made to accommodate needs at the site (placement of portable toilets, parking, etc.).

Delta-09 Land Use Current Treatment

- No additional visitor facilities will be added. The portable toilet will remain as the sole visitor facility on site.

Delta-09 Circulation Current Treatment

- Vehicular circulation does not provide an adequate turn-around outside the security fence for large vehicles. Visitors who stop at the Visitor Center are informed of this situation, but not all are informed prior to reaching the site.

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- Alternatives to using personal vehicles are not in place. Currently, visitors in oversized vehicles do not have a good option for visiting the site.
- No clearly defined visitor parking area will be added.
- The site access drive is used for visitor parking, resulting in visitors getting blocked in when others arrive.
- There is no universally accessible route defined for visitors on site. The gravel surface is unconsolidated and too loose to accommodate wheelchairs.

Delta-09 Topography and Views Current Treatment

- There is no protection in place for significant views at the site that are within privately owned areas.
- There are no formal agreements in place to protect significant views that are within areas that are publically owned.

Delta-09 Vegetation Current Treatment

- Within the historic core, vegetation is encroaching into the gravel areas surrounding landscape features.

Delta-09 Buildings and Structures Current Treatment

- The Launch Facility is in good condition due to the cyclical maintenance provided by personnel from Ellsworth Air Force Base and the National Park Service. Normal maintenance to repair damaged elements would occur.

Preferred Alternative Goals

- Preserve the integrity of the cultural resources at Delta-01 and Delta-09.
- Improve the visitor experience at the park.
- Provide expanded facilities for visitors.
- Enhance interpretive opportunities related to the historic resources.

Delta-01, Preferred Alternative

Delta-01 Spatial Organization, Preferred Alternative:

- Develop a Landscape Preservation Maintenance Plan that addresses site needs including: maintenance of gravel surfaces, removal of vegetation, and monitoring and maintenance of landscape features.

Delta-01 Land Use, Preferred Alternative:

- Do not allow visitors to utilize the basketball hoop, volleyball and horseshoe courts while waiting for tours.

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- Remove non-historic elements from within the historic boundary, including the portable toilet.
- Provide all visitor parking and interpretive waysides outside the historic boundary.

Delta-01 Circulation, Preferred Alternative:

- Acquire land to the east of the site (as indicated in the General Management Plan), on the eastern side of Jackson County Road CS 23A to use for a visitor parking area with fifteen car parking spaces and five spaces for recreational vehicles. Utilize topography to reduce the visibility of this development.
- At the new parking area, include adequate space for busses and recreational vehicles to turn around.
- Allow visitors with mobility impairments to park on the access road near the security gate (universally accessible parking).
- Provide a universally accessible route into the site and to the main building from the universally accessible parking area.
 - Visitors with mobility impairments may park at the designated parking area adjacent to the eastern side of the entrance gate. From that point, all exterior areas that are part of the ranger-led tour are paved with asphalt, providing an accessible surface.
 - To enter the launch control facility building, visitors with mobility impairments will utilize Door 9, the same door used by all visitors on the ranger led tour. The threshold to the door includes an approximately 5' square landing, raised approximately 6" above the ground surface. To provide access for visitors in wheelchairs, a removable wood sloped walk (approximately 5' wide and 10' long) may be placed along the southeast side of the building, extending to the southwest from the existing landing. The structure should be constructed in two to three pieces, so that it may be stored close to Door 9 and will be easy to install.
- Consider providing maintenance on the portion of Jackson County Road CS23A that provides access to the site from the highway.

Delta-01 Topography and Views, Preferred Alternative:

- Work with adjacent landowners to develop agreements to protect significant views identified in Figure 4-7.
- Consider purchasing scenic easements within the Historic Landscape Protection Area defined by the General Management Plan, to protect selected significant views.
- Improve drainage away from buildings. See building recommendations.

Delta-01 Vegetation, Preferred Alternative:

- In order to eliminate the encroachment of vegetation in gravel areas within the historic core, install asphalt pavement under the existing gravel surface

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and then cover the pavement with a minimum of six inches of gravel. The result will be a surface that looks like the historic surface, but does not require frequent use of herbicides or regular applications of gravel in order to maintain the bare look that was present during the period of significance.

- Alternatively, apply approved herbicide as needed to control weeds on the site and supplement the gravel in areas that are thin, adding enough so the gravel surface is at least six inches thick.

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Delta-01 Small Scale Features, Preferred Alternative:

Table 6-1: Delta-01 Small Scale Landscape Features, Preferred Alternative

Small Scale Features	Preferred Alternative
Hardened high frequency transmit antenna (HS 104, IDLCS 100480)	<i>Preserve</i>
Hardened high frequency receive antenna (HS 105, IDLCS 100481)	<i>Preserve</i>
Hardened ultra-high frequency antenna (HS 106, IDLCS 100483)	<i>Preserve</i>
Survivable low frequency communication system antenna (HS 107, IDLCS 100484)	<i>Preserve</i>
Cathodic protection rectifier (HS 110, IDLCS 100485)	<i>Preserve</i>
Two sewage lagoons (HS 108, IDLCS 100486)	<i>Preserve</i>
Helicopter pad (HS 109, IDLCS 100485)	<i>Preserve</i>
ICBM super-high frequency satellite terminal antenna (ISST) (HS 126, IDLCS 754345)	<i>Preserve</i>
Television satellite dish (HS 121, IDLCS 398298)	<i>Preserve</i>
HICS	<i>Preserve</i>
Security fencing (HS 113, IDLCS 287263)	<i>Preserve</i>
Sewage lagoon fencing / Livestock fencing (HS 125, IDLCS 754342)	<i>Preserve</i>
Cattle-guard (HS 129, IDLCS 754354)	<i>Preserve</i>
Electric fence	<i>Remove. Add livestock fencing that matches the fences around the sewage lagoons. If necessary, provide a gate at the rancher's easement.</i>
Historic signage (HS 117, IDLCS 354856)	<i>Preserve</i>
Protective bollards (HS 116, IDLCS 354857)	<i>Preserve</i>
Access road and parking area (HS 119, IDLCS 390289)	<i>Preserve</i>
Well and water tanks (HS 118, IDLCS 354851)	<i>Preserve</i>
Flagpole (HS 120, IDLCS 398270)	<i>Preserve</i>
Basketball goal (HS 112, IDLCS 287625)	<i>Preserve</i>
Volleyball court (HS 115, IDLCS 287266)	<i>Preserve</i>
Horseshoe court (HS 114, IDLCS 287261)	<i>Preserve</i>
Code burner (HS 111, IDLCS 287264)	<i>Preserve</i>
Interpretive wayside	<i>Maintain.</i>
Portable toilet	<i>Remove. Replace with small comfort station on the east side of County Road CS23A.</i>
Concrete pad, transfer switch, and generator	<i>Maintain.</i>

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Small Scale Features	Preferred Alternative
Ranch	<i>Work with property owner to preserve the character of the ranch and views of the ranch from Delta-01.</i>
Jackson County Road C23A	<i>Consider providing maintenance on the portion of Jackson County Road CS23A that provides access to the site from the highway.</i>

Delta-01 Buildings and Structures, Preferred Alternative:

Launch Control Support Building

The Launch Control Facility is in very good condition due to the cyclical maintenance provided by the Air Force personnel from Ellsworth Air Force Base and the National Park Service. With the exception of the cathodic protection system, the following treatment recommendations are maintenance in nature and can be incorporated into the on-going cyclical maintenance of the facilities as funding is available.

Launch Control Support Building Exterior:

- At the time the asphalt apron adjacent to the south foundation wall needs to be replaced, the grade should be adjusted to slope away from the building.
- Miscellaneous metal brackets from the old security system, abandoned wiring, and abandoned conduit should be removed from the metal siding and the anchorage holes repaired with an epoxy made for steel and painted to match the siding color.
- Repair the security light at door #13, south elevation.
- Remove the damaged and non-functioning speaker at door #13 and repair anchorage holes, south elevation.
- Replace extant louver back into the opening in the north wall of Equipment Room 106. Block the back of the louver if air is not required to be drawn into the room.
- All cracked and damaged vinyl glazing stops should be replaced on the exterior face of all windows.
- All damaged or missing metal door holders should be replaced with new to match the original one still extant.
- When routine maintenance requires painting of exterior finishes, refer to Appendix A: Paint Analysis, for paint type and color used during the final episode during the period of significance. All surfaces should be painted to match the final episode.

Launch Control Support Building Exterior Accessibility:

- Addressed under Site Circulation.

Launch Control Support Building Interior:

- Generator Room 105: Repair water damaged drywall at the roof ventilator duct.
- Women's Latrine 116A: The hole in the floor of the vinyl shower stall should be repaired with epoxy filler tinted to match the color of the stall.
- When routine maintenance requires painting of exterior finishes, refer to Appendix A: Paint Analysis, for paint type and color used during the final episode during the period of significance. All surfaces should be painted to match the final episode.

Launch Control Support Building Interior Accessibility:

- Do not alter doors to the latrines. These small rooms may be viewed from the doorway and do not require entry to provide an interpretive overview of their use.
- Implement a plan for escorting rangers to provide tours for visitors in wheelchairs.
- Implement a plan for escorting rangers to provide assistance to visitors in wheelchairs so that they may pass through the security office doors between the elevator lobby and the living quarters.
- In the event that a visitor using a wheelchair indicates that they are physically able to climb a thirty-one foot ladder in an emergency, and that they wish to visit the Launch Control Center, implement a plan for leading a smaller than usual group. Since a wheelchair user can share the elevator car with only two or three standing individuals, provide a plan that allows for a smaller group, including one ranger and two or three visitors (one in a wheelchair) to tour the facility.
- For visitors who cannot climb the ladder in the case of an emergency and therefore cannot tour the Launch Control Capsule, implement a plan to allow a live feed to a monitor mounted on the south wall of the entrance shaft vestibule. This will allow the above ground visitors to have a real-time experience with their group. This will entail having multiple cameras installed at various locations in the Launch Control Center vestibule and Launch Control Capsule connected to the monitor, via a wireless connection, or through connecting cables.

Launch Control Support Building Life Safety:

- Because the Launch Control Capsule is a former military installation, and was not originally contemplated as a facility to be occupied by the general public, it is not surprising that this facility does not comply with the life-safety requirements. To attempt to provide a means of egress to this component of the facility which complies with current IBC requirements will be an enormously expensive undertaking requiring significant excavation and alteration of the historic Launch Control Capsule. Moreover this change will necessarily require a significant intervention either in the support building above or on the adjacent site, which would irreversibly disrupt the historic

fabric of the site. This structure is a unique case of a special-use historic building that IBC simply does not contemplate.

- Given the limited public access into both the support building and the capsule, and the unusual and historic nature of this structure, we believe that the NPS can occupy this facility with reasonable safety, provided that additional precautionary measures are taken to minimize safety risks to persons visiting the capsule. Therefore, we suggest that NPS consider obtaining a variance to permit the use of the structure in its current configuration, while employing additional safety measures to help protect visitors, such as:
 1. Continue to limit public access to groups of six at a time, with an escort.
 2. Train all rangers on site in emergency procedures, to assist visitors in exiting the capsule in the event of an emergency.
 3. Provide emergency voice communications equipment as required by Section 411, and a two-way communications system to permit contact between the ranger escort in the capsule and NPS staff above ground.
 4. Maintain standby power, connected to the facility's generator, to permit operation of the elevator under emergency conditions.
 5. Develop and implement procedures to assist visitors, should it be necessary to evacuate the capsule by means of the emergency escape ladder.
 6. Identify emergency exit locations within the capsule, in accordance with Section 411.

Mechanical, Electrical, and Plumbing Systems

- No treatment recommendations required. If other systems such as geothermal for heating and cooling or a variable refrigerant flow heat pump system are to be considered, it would entail major remodeling of the existing building.

Launch Control Center

- No treatment recommendations required.

Vehicle Heated Storage Building

- Exterior: No treatment recommendations required.
- Interior: No treatment recommendations required.

Cathodic Protection System

A new engineered cathodic protection system should be installed. A new system, for the most part, can be installed outside of the fence line with minimal trenching in the historic core to re-establish the negative grounding grid to the extant underground structures.

Replacement of Materials

Preservation has been identified as the appropriate management philosophy for the historic structures at Delta-01. The mid-century modern materials, for the most part, are still readily available for maintenance issues or repair to damaged or deteriorated elements. For replacement of materials that will eventually fail over time, especially on the exterior of the structures, the two alternatives are to replace in-kind with identical features or to replace with contemporary materials that are as close as possible to the appearance, color, scale, texture, size and shape of the replaced elements. For those materials that are at the high end of being character defining features, replacement in-kind should be the preferred method of replacement. For those materials for which replication may be cost prohibitive, and are still readily available in the marketplace, the latter alternative should be the preferred method. In this case, representative samples of elements removed should be saved by marking, cataloging and archiving samples, so that future managers know what appearance to replicate when using replacement materials.

The following table identifies the character defining feature, the replacement philosophy, the rationale, and the time frame or priority of the treatment.

Table 6-2: Delta-01 Replacement of Materials

Building Character Defining Features (EXTERIOR)	Replacement Philosophy	Rationale	Priority
One-story rectangular ranch-style building form and orientation	<i>Preserve</i>	No additions or modifications should be made to the overall building form or orientation	Lifetime of the resource
One-story detached rectangular vehicle heated storage building form and orientation	<i>Preserve</i>	No additions or modifications should be made to the overall building form or orientation	Lifetime of the resource
8" thick reinforced concrete foundation wall, painted brown and off-white	<i>Preserve</i>	Periodic maintenance by repainting exposed surfaces	Every 3 – 5 years

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Building Character Defining Features (EXTERIOR, continued)	Replacement Philosophy	Rationale	Priority
Pre-fabricated steel siding, wood-grained embossed, 8" exposure with corner trim and window surrounds, pre-finished tan color	<i>Replace with contemporary siding that is similar in appearance</i>	Custom reproduction of the current siding will be cost prohibitive due to the small amounts of material. Similar siding is readily available.	Replace in the next 5 – 10 years
Hollow metal doors and frames, with ¼" wire glass in doors with vision panels, and hardware; doors painted tan with dark brown frames.	<i>Replace with contemporary doors and hardware that is similar in appearance</i>	Custom reproduction of doors and hardware will be cost prohibitive. Similar doors and hardware are readily available.	Replace in the next 5 – 10 years
Concrete door stoops, painted white on sides, and concrete and metal door stops, painted dark brown	<i>Preserve</i> <i>Repair or replace concrete in-kind when necessary.</i> <i>Replace door stops in-kind.</i>	The metal door stops may still be available, but if they cannot be found, new ones should be made to match the two that remain.	Replace the door stops in the next 1- 5 years
Shallow sloped gable roof covered with timber-blend 2-tab asphalt shingles; dark brown aluminum K-style gutters, soffit and fascia panels, and trim strips, and tan aluminum downspouts with dark brown concrete splash blocks	<i>Repair in kind.</i> <i>Replace roof system; shingles, gutters, fascia and downspouts with contemporary materials that are similar in appearance.</i>	Custom reproduction of the roof system components would be cost prohibitive due to the small amounts of material. Similar materials are readily available.	Replace in 20-25 years
Vinyl-clad wood one-over-one double hung windows and aluminum storm windows.	<i>Replace with contemporary windows and storms that are similar in appearance</i>	Custom reproduction of windows and storms will be cost prohibitive. Similar windows and storms are readily available.	Replace in the next 5 – 10 years
All attached utilities, including: Pipes, brackets, vents, louvers and hoods, electrical conduit, wind vane, light fixtures, etc., with the exception of utilities associated with the installation of the fire suppression system in 1999/2000.	<i>Repair or replace all miscellaneous utility components with contemporary materials that are similar in appearance with the exception of the wind vane which should be replaced in-kind.</i>	Custom reproduction of the utility components would be cost prohibitive due to the small amounts of material. Similar materials are readily available.	Replace as needed or in conjunction with other material replacements

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Building Character Defining Features (INTERIOR)	Replacement Philosophy	Rationale	Priority
Building floor plan, including security/service area at the east, recreation/common areas in the center, and double-loaded bedroom corridor at the west end.	<i>Preserve</i>	No additions or modifications should be made to the overall building form or orientation.	Lifetime of the resource
Historic flooring material types: concrete, marbled vinyl asbestos tile, marbled asphalt tile, circa 1980s patterned carpet, ceramic tile.	<i>Preserve</i> <i>Repair or Replace in-kind when necessary</i>	The flooring materials and patterns are unique enough to require their reproduction.	Replace asphalt and VAT tile flooring, if needed in 5-10 years. Replace carpet flooring in 5-10 years. Replace ceramic tile, if needed, in 10-20 years.
Dark mauve carpet runners	<i>Replace with a contemporary carpet that is similar</i>	Non-contributing	Replace carpet in 5-10 years
Historic wall and ceiling materials: drywall, vinyl wood-grained or ceramic tile wainscot, wood paneling, fabric-covered or tegular acoustic tile, rubber base molding; extant color scheme on all finishes	<i>Preserve</i> <i>Repair in-kind.</i> <i>Replace with contemporary materials that are similar in appearance, when necessary</i>	Custom reproduction of the current interior finishes will be cost prohibitive due to the small amounts of material. Similar materials are readily available.	Repair as needed. Replace finishes, if needed, in 15-20 years Repaint every 4-8 years.
Solid core wood doors, painted or stained/varnished and some with vision glass panels; extant historic hardware; expanded metal gate painted white	<i>Preserve</i> <i>Replace all wood doors and hardware with contemporary doors and hardware that are similar in appearance, when necessary.</i> <i>Replace expanded metal gate in-kind, when necessary.</i>	Similar doors and hardware are readily available. The expanded metal may not be as easy to match.	Replace wood doors, if needed, in 15-20 years. Replace expanded metal gates, if needed, in 20-25 years.

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Building Character Defining Features (INTERIOR, continued)	Replacement Philosophy	Rationale	Priority
Window treatments: tinted plastic roller shades, vinyl vertical blinds, vertical fabric curtains on retractable rods	<i>Preserve</i> <i>Replace with contemporary materials that are similar in appearance, when necessary.</i>	The extant window treatments are relatively non-descript and similar treatments are readily available.	Replace, if needed, in 15-20 years.
Fixtures: Wood shelving, security counter and equipment, entertainment console, kitchen cabinets, countertops, and equipment, bathroom fixtures and accessories, bedroom furniture, etc.	<i>Preserve</i> <i>Replace in-kind, when necessary.</i>	The extant fixtures are unique enough that they should be replicated if they need to be replaced.	Replace, if needed, in 15-20 years.
Elevator equipment	<i>Replace with contemporary equipment</i>	This is a safety issue; the elevator equipment must be reliable to access the Launch Control Center	The life expectancy of the equipment is approximately 50 years which means it is approaching the end; however, recent inspections have indicated the equipment is in good condition Replace in 5-10 years.
Expanded metal elevator shaft and cab & ladder system	<i>Preserve</i> <i>Repair and replace in-kind, when necessary</i>	This is a significant feature in the building and should be replicated if it ever needs to be replaced	Replace, if needed, in 25-30 years.

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Building Character Defining Features (INTERIOR, continued)	Replacement Philosophy	Rationale	Priority
Mechanical system; boiler, fin tube cabinets, exposed fan coil units, etc.	<i>Replace in-kind where exposed in the Launch Control Facility interior rooms, replace with contemporary equipment in the utility rooms.</i> <i>Preserve abandoned equipment in place.</i>	It may be difficult to replace with new units that will look similar to what is extant. An alternative approach would be to change out the working interiors and keep the existing cabinets.	Replace in 10-15 years
Original generator	<i>Preserve</i>	Leave in place	Lifetime of the resource
Vestibule: concrete floor, walls, ceiling	<i>Preserve</i>	Original construction	Lifetime of the resource. Painted surfaces will need repainted every 4-8 years
Decorative paintings in vestibule	<i>Preserve</i>	Character defining features	Will need periodic conservation
Blast door and stop	<i>Preserve</i>	Character defining features	Lifetime of the resource
Launch control capsule structure: Concrete surface, steel interior liner, and associated equipment (shock isolators, water tank, utilities, etc).	<i>Preserve</i>	Character defining features	Lifetime of the resource. Shell will need to be painted every 4-8 years
Launch Control Capsule interior finishes and fixtures: carpeted floors, solid and perforated metal acoustic panels with sound absorption fabric panels on ceilings and walls, latrine, modular bed, launch equipment, etc.	<i>Preserve</i> <i>Replace in-kind for fabrics that will eventually deteriorate, when necessary.</i>	Character defining features	Carpet should be replaced in 5-10 years, other fabrics in 10-15 years

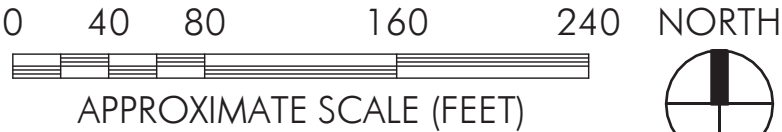
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Figure 6-1: Delta-01 Preferred Alternative

MINUTEMAN MISSILE
NATIONAL HISTORIC SITE
JACKSON COUNTY, SOUTH DAKOTA

HSR/CLR/EA
DRAFT JUNE 2010

DELTA-01 PREFERRED TREATMENT
ALTERNATIVE



MAP KEY

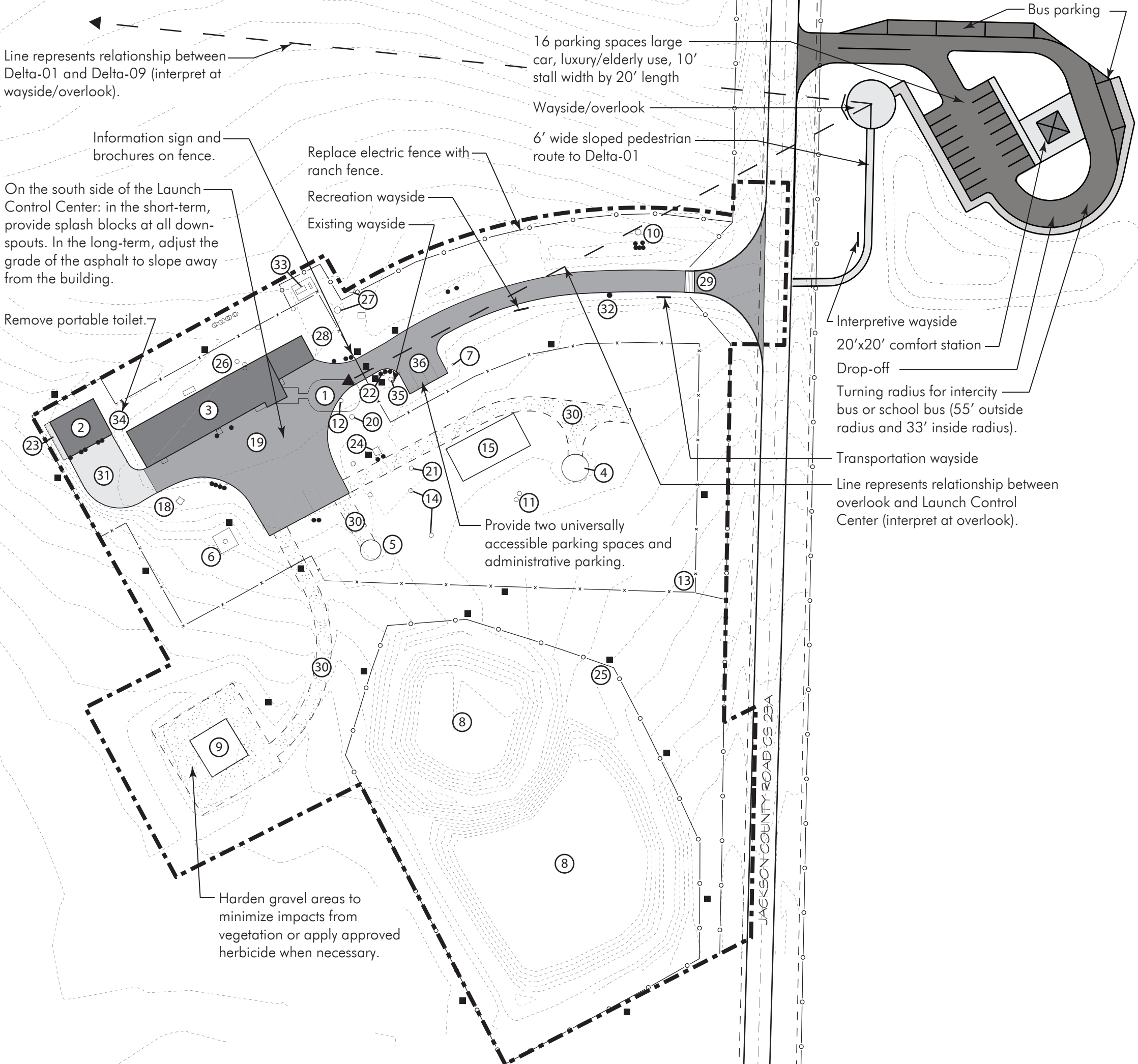
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|---------------------------------------|-------------------------------------|
| 1 Launch Control Center | Building |
| 2 Heated Vehicle Storage Building | Property Line/
Historic Boundary |
| 3 Launch Control Facility | Gravel Boundary |
| 4 Hardened HF Transmit Antenna | Security Fence |
| 5 Hardened HF Receive Antenna | Ranch Fence |
| 6 Hardened UHF Antenna | Contour Line |
| 7 SLFCS Antenna | Low Density
Gravel |
| 8 Sewage Lagoon | |
| 9 Helicopter Pad | |
| 10 Cathodic Protection Rectifier | |
| 11 Code Burner | |
| 12 Basketball Goal | |
| 13 Security Fencing | |
| 14 Horseshoe Court | |
| 15 Volleyball Court | |
| 16 Bollards | |
| 17 Warning Signs | |
| 18 Well & Water Tanks | |
| 19 Asphalt Road & Parking Area | |
| 20 Flagpole | |
| 21 Television Satellite Dish | |
| 22 Gas Pump | |
| 23 Sidewalk | |
| 24 Diesel Fuel Tank | |
| 25 Sewage Lagoon Fencing | |
| 26 ISST Antenna | |
| 27 Utility Poles | |
| 28 Underground Diesel Storage Tank | |
| 29 Cattle Guard | |
| 30 Gravel Access Roads | |
| 31 Concrete Driveway | |
| 32 Monument Set by Woolpert, 2009 | |
| 33 Concrete Pad w/ Electric Generator | |
| 34 Portable Toilet | |
| 35 Interpretive Wayside | |
| 36 Parking Lot | |

SOURCES

TOPOGRAPHIC SURVEY, WOOLPERT INC., 2009
MINUTEMAN ICBM LAUNCH FACILITY DELTA-01,
LCS, 2009



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ARCHITECTS



Delta-09, Preferred Alternative

Delta-09 Spatial Organization, Preferred Alternative:

- Develop a landscape management plan that addresses site needs.

Delta-09 Land Use, Preferred Alternative:

- Remove the portable toilet from within the historic core.
- Provide visitor parking for cars, busses and recreational vehicles along the western side of County Road T512.
- Provide a small comfort station with vault toilets for visitors.
- Provide universally accessible parking spaces in the parking lot.
- Provide interpretive waysides at key locations between the parking lot and the gate.
- Provide a universally accessible route between the comfort station, parking lot, interpretive waysides, and Delta-09 resources.

Delta-09 Circulation Preferred Alternative:

- Add visitor parking along the west side of County Road T512.
- Provide a universally accessible route into the site and to the viewing enclosure from the universally accessible parking area.

Delta-09 Topography and Views, Preferred Alternative:

- Work with adjacent landowners to develop agreements to protect primary and secondary views.
 - Based on *Figure 4-14: Delta-09 Existing Views and Ownership*, focus on protecting views in areas where privately owned land is located within the foreground views as indicated on the diagram.
 - If possible, also address the privately owned property located in Section 15 that is within the background views of Delta-09, as indicated in Figure 4-14.
- Monitor the area at the south side of the historic core that has had erosion problems. Continue to maintain positive drainage away from the historic resources.

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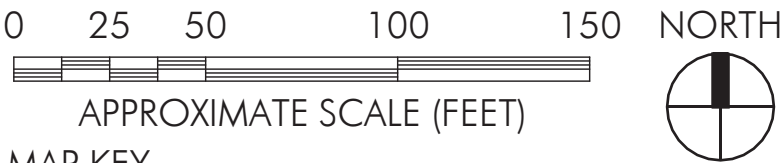
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Figure 6-2: Delta-09 Preferred Alternative

MINUTEMAN MISSILE
NATIONAL HISTORIC SITE
JACKSON COUNTY, SOUTH DAKOTA

HSR/CLR/EA
DRAFT JUNE 2010

DELTA-09 PREFERRED TREATMENT
ALTERNATIVE



MAP KEY

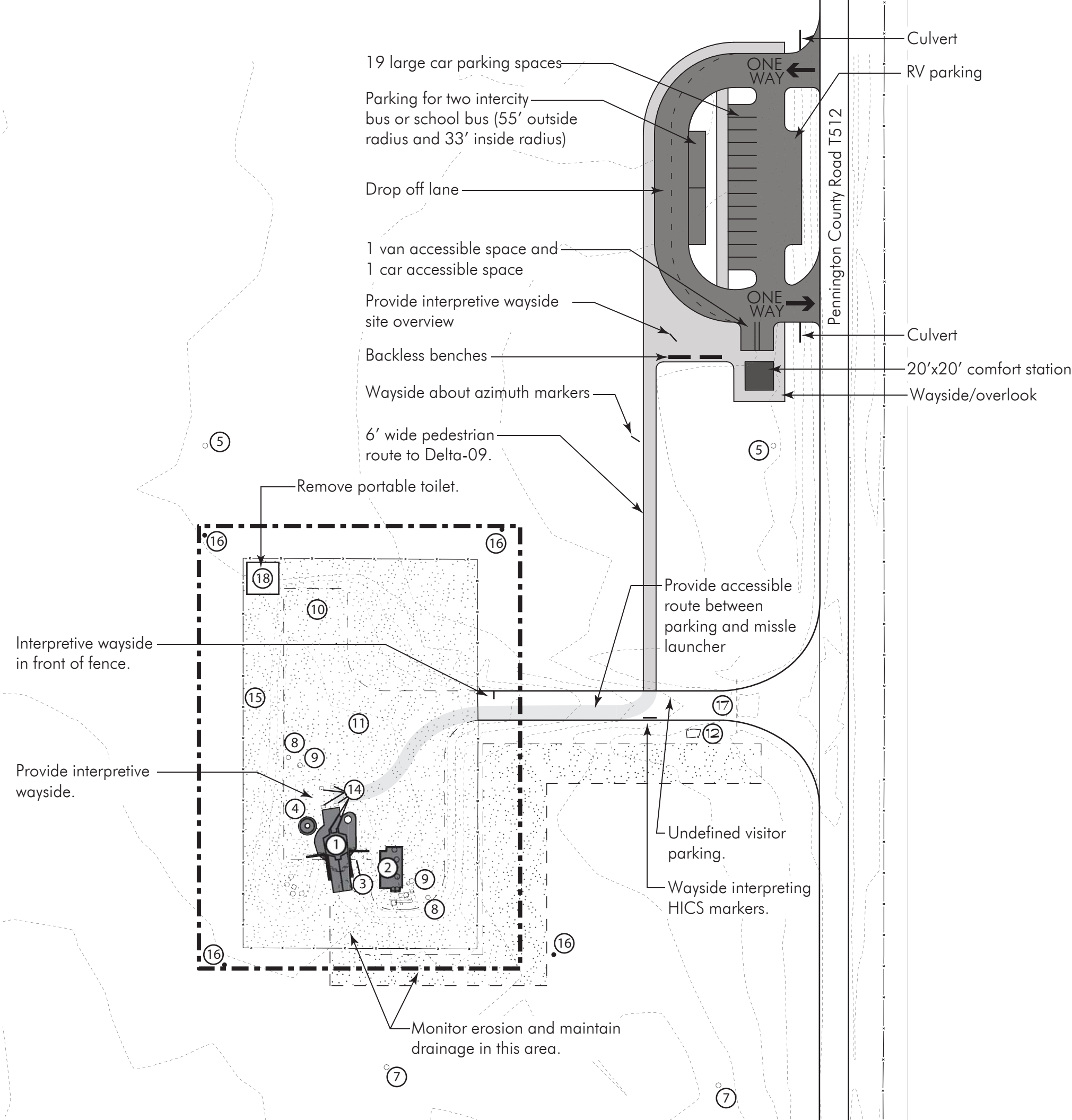
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|------------------------------------|--|---------------------|
| 1 Missile Launcher | | Building |
| 2 Launch Facility Support Building | | Property Line |
| 3 IMPSS Antenna | | Gravel Boundary |
| 4 Hardened UHF Antenna | | Security Fence |
| 5 Azimuth Marker | | Contour Line |
| 6 Security Fencing | | Low Density Gravel |
| 7 HICS Marker | | High Density Gravel |
| 8 Light Posts | | Asphalt |
| 9 Bollards | | Concrete |
| 10 Helipad & Markers | | |
| 11 Access Road & Maneuvering Area | | |
| 12 Cathodic Protection Rectifier | | |
| 13 Antenna Piers | | |
| 14 Transporter Erector Pylons | | |
| 15 Launch Facility Signs | | |
| 16 Monument Set by Woolpert, 2009 | | |
| 17 Culvert | | |
| 18 Portable Toilet | | |

SOURCES

LAUNCH FACILITY SITE D-9 (276) PLOT PLAN, AS
BUILT DRAWINGS SHEET C-48A, 1961
MINUTEMAN ICBM LAUNCH FACILITY DELTA-09,
LCS, 2009
TOPOGRAPHIC SURVEY, WOOLPERT INC., 2009



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Delta-09 Vegetation, Preferred Alternative:

- Determine the type of gravel that was present during the period of significance, and apply a minimum six inch layer of gravel in areas that are not identified as part of the universal access route.
- If necessary, apply approved herbicide as needed to control weeds on the site.

Delta-09 Small Scale Features, Preferred Alternative:

Table 6-3: Delta-09 Small Scale Features, Preferred Alternative

Small Scale Features	Preferred Alternative
Glass viewing enclosure	<i>Maintain</i>
Improved Minuteman Physical Security System (IMPSS) antenna (HS 903, IDLCS 100489)	<i>Preserve</i>
Hardened UHF antenna (HS 904, IDLCS 100491)	<i>Preserve</i>
Cathodic protection rectifier (HS 912, IDLCS 390310)	<i>Preserve</i>
Two azimuth markers (HS 905, IDLCS 100492)	<i>Preserve</i>
Two HICS marker posts (HS 907, IDLCS 345796)	<i>Preserve</i>
Security fence (HS 906, IDLCS 295903)	<i>Preserve</i>
Light posts (HS 908, IDLCS 354853)	<i>Preserve</i>
Bollard (HS 909, IDLCS 354859)	<i>Preserve</i>
Helipad & Markers (HS 910, IDLCS 354855)	<i>Preserve</i>
Access Road and Maneuvering Area (HS 911, IDLCS 390310)	<i>Preserve</i>
Antenna piers (HS 913, IDLCS 400831)	<i>Preserve</i>
Transporter erector pylons (HS 914, IDLCS 412538)	<i>Preserve</i>
Launch facility warning signs (HS 915, IDLCS 754362)	<i>Preserve</i>
Culvert	<i>Maintain</i>
Drainage ditch	<i>Maintain</i>
Portable toilet	<i>Remove</i>

Delta-09 Buildings and Structures, Preferred Alternative:

Delta-09 Launch Facility

The Launch Facility is in very good condition due to the cyclical maintenance provided by the Air Force personnel from Ellsworth Air Force Base and the National Park Service. With the exception of the cathodic protection system, the following treatment recommendations are maintenance in nature and can be incorporated into the on-going cyclical maintenance of the facilities as funding is available.

- Replace caulking at the perimeter edge of the steel personnel access hatch.
- When routine maintenance requires painting of exterior finishes, refer to Appendix A: Paint Analysis, for paint type and color used during the final episode during the period of significance. All surfaces should be painted to match the last/current episode.

Structural Recommendations—General Concrete

- The silo apron slabs show surface deterioration and a penetrating, breathable sealant/consolidant is recommended below to mitigate this aging. Other surfaces such as the vault topping slab and silo retaining walls do not show the same surface deterioration; however, application of such a sealant should be considered for those elements.

Structural Recommendations--Equipment Vault

- Topping Slab: Previous attempts to patch the cracking in the topping slab appear to have been unsuccessful as the patch has worn off or is gone. These cracks should be sealed with an epoxy injection if possible. There are limits to minimum crack width that injection systems can fill. Some chemical companies (SIKA) promote gravity feed epoxy products which may be applicable for fine cracks. If the cracks are too fine for either injection or gravity feed then the cracks should be routed out and filled with a modified epoxy gel.
- Walls: Fine cracks were noted in the exterior walls exposed above grade. These should be either epoxy injected or filled as with the slab above.

Structural Recommendations--Silo

- Apron Slabs: These slabs show signs of spalling and cracking. Cracks should be sealed by epoxy injection. Loose spall should be removed and patched with an epoxy modified cementitious patching material. It is important to undercut the edges of patching areas as patching materials should not be feathered at the edges. A good penetrating sealant/consolidant (such as Prosoco H40) should be applied to the

exposed surface to minimize weathering deterioration. The sealant should not entrap moisture within the concrete.

- Minor Retaining Wall Cracks: Cracking should be sealed by injection or routing and patching as discussed for the vault slab.

Cathodic Protection System

A new engineered cathodic protection system should be installed. A new system, for the most part, can be installed outside of the fence line with minimal trenching in the historic core to re-establish the negative grounding grid to the extant underground structures.

Replacement of Materials

Preservation has been identified as the appropriate management philosophy for the historic structures at Delta-09. The mid-century modern materials, for the most part, are still readily available for maintenance issues or repair to damaged or deteriorated elements. For replacement of materials that will eventually fail over time, especially on the exterior of the structures, the two alternatives are to replace in-kind with identical features or to replace with contemporary materials that are as close as possible to the appearance, color, scale, texture, size and shape of the replaced elements. For those materials that are at the high end of being character defining features, replacement in-kind should be the preferred method of replacement. For those materials for which replication may be cost prohibitive, and are still readily available in the marketplace, the latter alternative should be the preferred method. In this case, representative samples of elements removed should be saved by marking, cataloging and archiving samples, so that future managers know what appearance to replicate when using replacement materials.

The following table identifies the character defining feature, the replacement philosophy, the rationale, and the time frame or priority of the treatment.

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Table 6-4: Delta-09 Replacement of Materials

Character Defining Building Features	Replacement Philosophy	Rationale	Priority
Glass viewing enclosure	<i>Repair in-kind. Replace with contemporary system.</i>	Non-contributing	Replace in 15-20 years
Training model of missile	<i>Preserve or replace in-kind</i>	Important to the interpretive story	Lifetime of the resource
Concrete retaining walls	<i>Preserve or repair in-kind</i>	Contributing	Lifetime of the resource
Concrete launch apron and concrete/steel launch closure	<i>Preserve or repair in-kind</i>	Contributing	Lifetime of the resource
Concrete and steel closure tracks	<i>Preserve or repair in-kind</i>	Contributing	Lifetime of the resource
Underground concrete launch facility support building (vault) and associated equipment	<i>Preserve or repair in-kind</i>	Contributing	Lifetime of the resource
Steel personnel access hatch and steel pylons	<i>Preserve or repair in-kind</i>	Contributing	Lifetime of the resource
Concrete launch facility silo	<i>Preserve or repair in-kind</i>	Contributing	Lifetime of the resource

Summary of Alternatives

Table 6-5 summarizes the major elements of the Treatment Alternatives and tests each of these elements against the proposal objectives which were stated in Chapter 1. Table 6-5 reveals the Treatment Alternative that best meets the project objectives.

A comparative analysis of potential impacts from each alternative is summarized in Table 6-6. Only resource topics carried forward for analysis in this HSR/CLR/EA are included in the table. More detailed analysis and conclusions are provided in Chapter 7: *Treatment Impacts/Environmental Consequences*.

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Table 6-5 Alternatives Summary and Extent to Which Each Alternative Meets Project Objectives		
Project Objectives	Current Management (No Action Alternative)	Preferred Alternative
Recommendations for addressing missing building or landscape features.	1	2
Recommended method for maintaining historic HVAC and cathodic protection systems.	1	3
Recommendations for paint schemes and interior/exterior finishes and treating small scale features such as security elements, antennae, structures and fence configuration.	2	2
Recommended approach for site interpretation, including placement of wayside exhibits and site signage.	1	3
Identification and justification of significant viewsheds from and to Delta-01 and Delta-09.	1	3
Recommended approach(es) for maintaining or replacing mid to late 20 th century building materials and systems.	2	3
Development of schematic site planning for providing visitor services (including universal access, parking, pedestrian circulation, and restroom facilities) at Delta-01 and Delta-09.	1	3
TOTALS	9	19

1 = Partially Meets Project Objective**2 = Meets Basic Level of Objective****3 = Meets Highest Level of Objective**

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Table 6-6		
Resource Topic	Current Management (No Action Alternative)	Preferred Alternative
Buildings/Structures	<ul style="list-style-type: none"> • Direct, Indirect long-term, minor beneficial impacts <p>Section 106: No adverse effect</p>	<ul style="list-style-type: none"> • Direct and indirect long-term, minor beneficial impacts <p>Section 106: No adverse effect</p>
Landscapes	<ul style="list-style-type: none"> • Direct and indirect long-term, minor adverse impacts <p>Section 106: No adverse effect</p>	<ul style="list-style-type: none"> • Direct and indirect long-term, minor beneficial impacts to most landscape features. • Direct and indirect short and long term moderate adverse impacts to viewsheds of Delta-01 and Delta-09. <p>Section 106:</p> <ul style="list-style-type: none"> • No adverse effect for most landscape features. • Adverse effect to cultural landscape (viewsheds from Delta-01 and Delta -09).
Socioeconomics	<ul style="list-style-type: none"> • Direct and indirect long-term, negligible to minor beneficial impacts 	<ul style="list-style-type: none"> • Direct and indirect long-term, minor beneficial impacts
Visitor Experience	<ul style="list-style-type: none"> • Direct and indirect long-term, minor beneficial impacts 	<ul style="list-style-type: none"> • Direct and indirect long-term, minor beneficial impacts
Park Operations	<ul style="list-style-type: none"> • Direct and indirect long-term, negligible to minor adverse impacts 	<ul style="list-style-type: none"> • Direct and indirect long-term, minor beneficial impacts

Mitigation Measures

Cultural Resources

- Conduct archeological inventories of proposed construction sites if archeological resources are determined to be eligible for listing in the National Register of Historic Places.
- Contractors utilized for construction projects would be instructed on procedures to follow in case previously unknown archaeological resources are uncovered during construction. If previously unknown archeological resources are unearthed during construction, work would be stopped in the area of discovery and the NPS would consult with the South Dakota SHPO and, as appropriate, the Advisory Council on Historic Preservation. If impacts to significant resources could not be avoided, mitigating measures would be developed in consultation with the SHPO to ensure that the informational significance of the sites would be preserved. If appropriate, provisions of the Native American Graves Protection and Repatriation Act of 1990 would be implemented.
- The NPS would ensure that any contractors utilized for construction are informed of the penalties for illegally collecting artifacts or intentionally damaging archaeological sites, or historic properties.
- To minimize the amount of ground disturbance, staging and stockpiling areas would be located in previously disturbed sites, away from visitor use areas to the extent possible. All staging and stockpiling areas would be returned to pre-construction conditions following construction.

Park Operations

- The use of NPS Best Management Practices (BMPs) would mitigate short term and long term impacts to resources at Delta-01 and Delta-09.
- Fugitive dust generated by construction would be controlled by spraying water on the construction site, as needed. Water needed for dust control would come from park approved sources.
- To reduce noise and emissions, construction equipment would not be permitted to idle for long periods of time.
- To minimize potential petrochemical leaks from construction equipment, the equipment would be regularly monitored to identify and/or repair any leaks.

Visitor Experience

- To minimize the potential impact to park visitors, variation on construction timing may be considered, such as conducting a majority of the work in shoulder seasons.
- Construction zones would be identified and fenced with construction tape, snow fencing, or some other material prior to any construction activity. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction zone.

Environmentally Preferable Alternative

The Council on Environmental Quality (CEQ) NEPA regulations define the environmentally preferable alternative as the alternative that "...causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves and enhances historic, cultural and natural resources." The preferred alternative would result in minimal ground disturbance outside the perimeter fences of Delta-01 and Delta-09. The disturbances would be limited to a small parking area at each site and replacement of cathodic protection systems at each site. The preferred alternative would:

- Minimize long-term negative impacts to wildlife and natural systems from visitors parking along the sides of roadways and creating haphazard walking paths to the entrances of Delta-01 and Delta-09.
- Result in minimal disturbances to wildlife and natural systems during the short period of construction for the small parking areas at Delta-01 and Delta-09 and replacement of the cathodic protection systems.
- Limit all other site improvements to the highly disturbed areas within the perimeter fences for Delta-01 and Delta-09.
- Encourage landowners in the vicinity to minimize development on their properties, which would mitigate impacts to the cultural landscape, wildlife and natural systems.

No new information came forward during public scoping and early consultation with regulatory agencies or Native American tribes to necessitate the development of any new alternatives, or to choose another alternative as the environmentally preferable alternative. Therefore, after careful evaluation of all the factors involved, the preferred alternative was also identified as the environmentally preferable alternative.

Environmentally Preferable Alternative

The environmentally preferable alternative is determined by applying the criteria suggested in NEPA, which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that "...the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101." Using the six criteria from Section 101 detailed below.

- **Criterion 1**—Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
- **Criterion 2**—Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings.
- **Criterion 3**—Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

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- **Criterion 4**—*Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.*
- **Criterion 5**—*Achieve a balance between population and resource use that will permit high standards of living and wide sharing of life's amenities.*
- **Criterion 6**—*Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.*

The preferred alternative would implement a higher level of preservation than the no action alternative because of recommendations for maintaining current building and structure status, as well as recommendations for long term deterioration prevention. The preferred alternative would strike a balance between resources available and the desire to provide visitor facilities, while minimizing impacts to the natural and cultural resources at Delta-01 and Delta-09. The preferred alternative proposes protection of significant viewsheds from Delta-01 and Delta-09, which in addition to cumulative actions would benefit natural communities through preservation of a cultural resource—rural landscapes. Implementation of the preferred alternative, in context of cumulative actions in the region, would benefit local communities through improvements to the local economy today and into the future. Although some visitor amenities would result in adverse impacts to a portion of the foreground viewsheds, mitigation measures would be implemented to reduce the effects.

No new information has come forward during internal or public scoping; consultation with regulatory agencies or Native American tribes to necessitate the development of any new alternatives, other than those described and evaluated in this document.

Because it meets the purpose and need and objectives for the project and utilizing the CEQ's interpretations of the Section 101 criteria and the alternatives impact analysis in this document, it was determined that the preferred alternative is also the environmentally preferable alternative.

Chapter 7: Impacts from Treatment Alternatives / Environmental Consequences

Chapter 7: Impacts from Treatment Alternatives/ Environmental Consequences

Environmental Consequences

This chapter of the HSR/CLR/EA forms the scientific and analytic basis for the comparisons of treatment alternatives as required by 40 CFR 1502.14. This discussion of impacts (effects) is organized in parallel with *Chapter 3: Existing Conditions (Affected Environment)* and is organized by impact topic areas. The No Action Alternative (Current Treatment) and the Preferred Alternative are discussed within each impact topic area. Impact topics analyzed are Cultural Resources (Historic Buildings and Structures and Cultural Landscapes), Socioeconomics, Visitor Experience and Park Operations.

Potential impacts for this proposal are described in terms of type, context, duration, and intensity.

Type of impact refers to the consequences of implementing a given alternative as beneficial or adverse, direct or indirect:

Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse: A change that moves the resource away from a desired condition or detracts from its appearance or condition.

Direct: An effect that is caused by an action and occurs in the same time and place.

Indirect: An effect that is caused by an action but is later in time or farther removed in distance, but is still reasonably foreseeable.

Context describes the area or location in which the impact will occur.

Duration describes the length of time an effect will occur, either short-term or long-term:

Short-term: Impacts generally last only during construction, and the resources resume their preconstruction conditions following construction.

Long-term: Impacts last beyond the construction period, and the resources may not resume their preconstruction conditions for a longer period of time following construction.

Professional judgment is used to reach reasonable conclusions as to the type, intensity, context and duration of potential impacts for each impact topic.

Comparison of Impacts

The comparison of impacts for each alternative is summarized in Table 6-6, which is at the end of *Chapter 6: Treatment Alternatives*. The impact analysis presented in this chapter results in a determination of the Environmentally Preferable Alternative, which is also described in *Chapter 6: Treatment Alternatives*.

Cumulative Impacts

The CEQ regulations require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are impacts on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts are considered for the no-action and proposed action alternatives.

Cumulative impacts were determined by combining the impacts of the no-action and action alternatives with other potential past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other past, ongoing or foreseeable future projects at Minuteman Missile National Historic Site, and if applicable, within the surrounding area. Given this, the following projects were identified for the purpose of conducting the cumulative effects analysis.

- Ongoing maintenance to Delta-01 and Delta-09.
- Minor changes to buildings and structures changes at Delta-01 and Delta-09 during military operations. Maintenance of military assets is critical to mission readiness and changes to facilities are typical when missions are adjusted and technology improves.
- Minor alterations to the sites were completed to meet the requirements of the National Park Service.
- Implementation of the Minuteman Missile National Historic Site General Management Plan; which includes construction of a Visitor Center at a site southeast of Delta-01. The preferred site is located just north of Exit 131 of Interstate 90.
- Expansion of the Museum Collection Storage Building at Badlands National Park.
- The visitor center at Badlands National Park is a few miles from Minuteman Missile National Historic Site.
- Implementation of the U.S. Forest Service's Nebraska National Forest Land and Resource Management Plan, which includes the Buffalo Gap National Grassland.
- The National Grasslands Visitor Center in Wall, SD is another visitor contact center in close proximity to Minuteman Missile NHS.
- The relatively recent construction of the cell phone tower in vicinity of Delta-01.
- There are limited development regulations in the region, which could result in incompatible development on private lands in the vicinity of Delta-01 and Delta-

09. Incompatible development could adversely affect viewsheds of the historic rural landscape.

- Local roads leading to sites are not well maintained.
- The NPS will prepare a Land Protection Plan for Minuteman Missile NHS.
- There is a potential for construction of wind turbines within the viewshed of Minuteman Missile NHS.

Impairment Analysis

The NPS *Management Policies 2006* requires analysis of potential effects to determine whether or not actions would impair park resources or values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid or minimize to the greatest degree practicable, actions that would adversely affect park resources and values that are related to the legislative establishment of the park, National Historic Landmark, or other nationally significant resource.

These laws give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the NPS the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute impairment. Impairment may result from NPS activities in managing the park, from visitor activities, or from activities undertaken by concessionaires, contractors, and others operating in the park. Impairment of park resources can also occur from activities occurring outside park boundaries. An impact would be more likely to constitute impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park;
- identified as a goal in the park's GMP or other relevant NPS planning documents.

An impairment determination is included in the environmental consequences analysis section for all impact topics relating to cultural resources at Minuteman Missile NHS.

Impacts to Cultural Resources

Basis for Analysis (Impacts to Cultural Resources)

In this integrated HSR/CLR/EA, impacts to historic properties are described in terms of type, context, duration, and intensity, which are consistent with the regulations of the CEQ. This HSR/CLR/EA is intended to comply with the requirements of both NEPA and Section 106 of the NHPA. To achieve this, a Section 106 summary is included under the Preferred Alternative for each of the cultural resource topics carried forward for analysis. The Section 106 summary is intended to meet the requirements of Section 106 and is an assessment of effect of the implementation of the preferred treatment alternative on cultural resources, based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

Under the Advisory Council's regulations, a determination of either adverse effect or no adverse effect must be made for affected historic properties that are eligible for, or listed in the National Register of Historic Places (NRHP). 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 the Preferred Alternative that would occur later in time; be farther removed by 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 NRHP.

In accordance with the Advisory Council's regulations implementing Section 106, impacts to historic properties for this project were identified and evaluated by (1) determining the area of potential effect; (2) identifying cultural resources present in the area of potential effect that were listed in or eligible to be listed in the NRHP; (3) applying the criteria of adverse effect to affected cultural resources either listed in or eligible to be listed in the NRHP; and (4) considering ways to avoid, minimize, or mitigate adverse effects. The area of potential effect was established in *Chapter 4: Building/Landscape Analysis and Evaluation* and further refined in *Chapter 6: Treatment Alternatives*.

CEQ regulations and the National Park Service's DO-12 also call for a discussion of the appropriateness of mitigation, as well as analysis of how effective the mitigation would be in reducing the intensity of a potential impact. Any reduction in intensity of impacts 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 in Section 106 is similarly

reduced. Although adverse effects under Section 106 may be mitigated, the effect remains adverse.

Cultural Resources (Buildings, Structures, Landscapes)

Intensity levels:

- **Negligible:** Impact(s) would be at the lowest level of detection, or barely perceptible and not measurable. For the purposes of Section 106, the determination of effect would be — **no effect**.
- **Minor Adverse impact:** impacts would not affect buildings or the overall cultural landscape, or the significant landscape characteristics. For purposes of Section 106, the determination would be — **no adverse effect**.
Beneficial impact: preservation of the buildings, structures, overall cultural landscape and significant landscape characteristics in accordance with the *Secretary of Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be — **no adverse effect**.
- **Moderate Adverse impact:** impacts would alter the cultural landscape or one or more of the significant landscape characteristics, buildings or structures, but would not diminish the integrity of the buildings or landscape to the extent that its NRHP status or eligibility is jeopardized. For purposes of Section 106, the determination would be — **adverse effect**.
Beneficial impact: rehabilitation of the cultural landscape or one or more of the significant landscape characteristics and buildings in accordance with the *Secretary of Interior's Standards for the Treatment of Historic Properties With Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be — **no adverse effect**.
- **Major Adverse impact:** impacts would alter buildings, structures and the overall cultural landscape or one or more of the significant landscape characteristics, diminishing the integrity of the landscape to the extent that its NRHP status or eligibility is jeopardized. For purposes of Section 106, the determination would be — **adverse effect**.
Beneficial impact: restoration of the buildings, structures and cultural landscape or one or more of the landscape characteristics in accordance with the *Secretary of Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*. For purposes of Section 106, the determination of effect would be — **no adverse effect**.

Current Treatment (No Action Alternative)
(Impacts to Cultural Resources)

Buildings and Structures

Analysis of No Action Alternative, Impacts to Cultural Resources

Delta-01: Due to constant maintenance from the Air Force during the period of military operations and from the National Park Service following transfer of ownership, the buildings and structures at Delta-01 were determined to be in good condition. Because the Launch Control Facility Support building and the vehicle storage building are aboveground, they are exposed to weather conditions, which hasten deterioration of exposed surfaces. The Launch Control Center and the vehicle storage building would continue to be maintained to current standards; however some minor interior and exterior treatments would be completed over a longer time period due to limited NPS funding. Implementation of current management actions (no action alternative) could result in direct and indirect long-term, minor beneficial impacts to the facilities.

Delta-09: Similar maintenance standards were applied to the Launch facilities at Delta-09 over the years and the facilities at this site were determined to be in good condition. At Delta-09 the facilities are primarily underground and have less exposure to weather conditions, which results in fewer weather related maintenance issues. The Missile Launcher and Launch Facility Support Building would continue to be maintained to current standards; however some minor interior and exterior treatments could be incorporated into the cyclical maintenance programs to prevent deterioration of historic materials over time and as funding allows. Implementation of current management actions could result in direct and indirect long-term, minor beneficial impacts to the facilities.

Cumulative Impacts: Changes to the buildings and structures at Delta-01 and Delta-09 have occurred over time due to ongoing maintenance, technology improvements and safety requirements. Ongoing maintenance and safety improvements resulted in some minor alterations to the historic fabric of the facilities but have resulted in no adverse impacts to the sites. The implementation of current management actions would contribute minor beneficial impacts to the overall cumulative actions associated with the National Historic Site area.

Conclusion: Continuing current management actions, in addition to related cumulative actions would result in indirect long-term, minor beneficial impacts to buildings and structures at Minuteman Missile National Historic Site.

Impairment: Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Minuteman Missile National Historic Site; (2) key to the cultural integrity of the National Historic Site; or (3) identified as a goal in the National Historic Site's general management plan or

other relevant National Park Service planning documents, there would be no impairment of the National Historic Site's resources or values from the implementation of Current Management (No Action Alternative).

Section 106 Summary: The potential effects of Current Management (No Action Alternative) have been evaluated and after applying the Advisory Council's criteria of adverse effects (36 CFR Part 800.5), the National Park Service concludes that implementation of Current Management (No Action Alternative) would result in no adverse effect to the buildings, structures at Minuteman Missile National Historic Site.

Cultural Landscape

Analysis of No Action Alternative, Impacts to Cultural Resources

Delta-01: Ongoing maintenance by the Air Force extended to the landscape of Delta-01. However, the site's grounds were previously managed for military purposes, not interpretive purposes, or to accommodate numerous visitors. There is no protection in place to protect important viewsheds on lands that are privately owned and there are currently no agreements with public land owners to manage the rural landscape associated with Delta-01. Current management actions would account for some needs of visitors by providing incremental site improvements such as portable toilets and improved parking. Vehicle circulation would be incrementally improved if the no action alternative were implemented. Vehicles would still have to be parked at the current visitor parking area, which is not adequate to handle continually increasing numbers of visitors. Access to Delta-01 is on county-owned road, which due to minimal funding, is poorly maintained. Although there would be incremental improvements for individual personal vehicles, there would be no circulation improvements for larger vehicles such as recreational vehicles or busses. A small scale feature that has been added to the landscape in recent years is the small, unmarked electric fence that has been added to prevent livestock from entering the visitor parking area and damaging vehicles. This feature is not compatible with site features and is also a potential hazard to visitors. Implementation of current management actions (no action alternative) could result in indirect long-term, minor adverse impacts to the landscape of Delta-01.

Delta-09: Although visitation increases are anticipated, landscape circulation would not be improved and larger vehicles would not have adequate space to maneuver. Universal access would be improved on an incremental basis as funding allows. There is no protection in place for significant viewsheds on lands that are privately owned and there are currently no agreements with public land owners to manage the rural landscape associated with Delta-09. Ongoing vegetation management actions would be the same as Delta-01. Implementation of current management actions (no action alternative) could result in indirect long-term, minor adverse impacts to the landscape of Delta-09.

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Cumulative Impacts: Although ongoing landscape maintenance has occurred at both Delta-01 and Delta-09 these past actions did not constitute adverse impacts to the landscape. The past action of erecting a cell tower outside the perimeter of Delta-01 has resulted in adverse impacts to the landscape and the lack of development regulations could result in additional adverse impacts to the landscape at some time in the foreseeable future. Potential long term development that might occur within view of Delta-01 and Delta-09 includes wind turbines. Although these structures are becoming more common in the rural landscape they would not be compatible with the viewsheds experienced by the missileers. The implementation of current management actions would contribute minor adverse impacts to the overall cumulative adverse impacts from actions associated with the National Historic Site area.

Conclusion: Continuing current management actions would result in indirect long-term, minor adverse impacts to the landscape at Minuteman Missile National Historic Site, but would only add minimal adverse effects to the overall cumulative adverse impacts.

Impairment: Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Minuteman Missile National Historic Site; (2) key to the cultural integrity of the National Historic Site; or (3) identified as a goal in the National Historic Site's general management plan or other relevant National Park Service planning documents, there would be no impairment of the National Historic Site's resources or values from the implementation of Current Management (No Action Alternative).

Section 106 Summary: The potential effects of Current Management (No Action Alternative) have been evaluated and after applying the Advisory Council's criteria of adverse effects (36 CFR Part 800.5), the National Park Service concludes that implementation of Current Management (No Action Alternative) would result in no adverse effect to the cultural landscape at Minuteman Missile National Historic Site.

Preferred Alternative: Preservation (Impacts to Cultural Resources)

Buildings and Structures

Analysis of Preferred Alternative, Impacts to Cultural Resources

Delta-01: The Preferred Alternative emphasizes preservation of the historic resources within Minuteman Missile National Historic Site. Exterior treatments to the Launch Control Support building would be incorporated into the park's maintenance cycle as funding allows. These proposed maintenance improvements include repairs to existing security and safety features, improvement of site drainage and window treatments. Minor interior treatments to the women's latrine and the generator at the Launch Control Support Building are recommended. No treatment recommendations to the Launch Control Center or the vehicle storage building are proposed. Replacement of the cathodic protection system in its current configuration and location would result in protection of subsurface facilities and mitigate potential negative impacts to structures or potential subsurface artifacts. The Preferred Alternative would result in direct and indirect, short and long-term, minor beneficial impacts to the historic fabric of the buildings and structures.

Delta-09: The Preferred Alternative emphasizes preservation of the historic resources within Minuteman Missile National Historic Site. The buildings and structures at Delta-09 were determined to be in good condition due to maintenance practices of the Air Force and NPS. Treatment recommendations, although not required to improve the physical condition of the facilities, could be incorporated into the park's maintenance cycle as funding allows. Minor exterior improvements to the personnel access hatch, application of sealants to exposed concrete to mitigate weathering and the replacement of the cathodic protection system are recommended. Implementation of these treatment recommendations would result in direct and indirect, short and long-term, minor beneficial impacts to the historic fabric of the buildings and structures at Delta-09.

Cumulative Impacts: Changes to the buildings and structures at Delta-01 and Delta-09 have occurred over time due to ongoing maintenance, technology improvements and safety requirements. Ongoing maintenance and safety improvements resulted in alterations to the historic fabric of the facilities but have resulted in no adverse impacts to the sites. The implementation of Preferred Alternative would contribute minor beneficial impacts to the overall cumulative actions associated with the National Historic Site area.

Conclusion: Implementation of the Preferred Alternative, would result in direct and indirect long-term, minor beneficial impacts to buildings and structures at Minuteman Missile National Historic Site and to the overall cumulative impacts associated with the National Historic Site.

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Impairment: Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Minuteman Missile National Historic Site; (2) key to the cultural integrity of the National Historic Site; or (3) identified as a goal in the National Historic Site's general management plan or other relevant National Park Service planning documents, there would be no impairment of the National Historic Site's resources or values.

Section 106 Summary: The potential effects of the Preferred Alternative have been evaluated and after applying the Advisory Council's criteria of adverse effects (36 CFR Part 800.5), the National Park Service concludes that implementation of the Preferred Alternative would result in no adverse effect to buildings or structures at Minuteman Missile National Historic Site.

Cultural Landscape

Analysis of Preferred Alternative, Impacts to Cultural Resources

Delta-01: The Preferred Alternative emphasizes preservation of the historic landscape resources within Minuteman Missile National Historic Site. This alternative recommends development of policies for visitor access and behavior within the perimeter fence to mitigate potential negative impacts to site features. These policies would allow some use of recreational equipment by visitors, but with education and monitoring, these activities should not adversely impact landscape features. As identified in the General Management Plan, land would be acquired across the county road for construction of a visitor parking area. The new parking area would include enough space for large vehicle maneuvering. Utilization of existing parking near the security gate for universal access would result in fewer spaces in the new parking area across the county road. The Preferred Alternative establishes large areas within the rural landscape that are considered primary and secondary views from Delta-01 and Delta-09. The Preferred Alternative proposes negotiations with private and public landowners to encourage preservation of those rural landscapes. Most small scale landscape features would be preserved; however the small unmarked electric fence would be removed and replaced with a livestock fence compatible with typical fencing found in the vicinity. Vegetation management within the historic core could include continued use of appropriate herbicides, or construction of an asphalt base under the historically compatible gravel. Incompatible features such as the portable toilet and interpretive waysides would be removed and relocated to a proposed parking area. Most proposed landscape treatments would result in direct and indirect, short and long-term, minor beneficial impacts to the landscape at Delta-01. Although most proposed treatments in the Preferred Alternative would result in minor beneficial impacts to the historic landscape, the proposed construction of a parking area across the county road would result in direct and indirect, short and long-term moderate adverse impact to a portion of the landscape. The proposed location of the parking area would only affect a small portion of the overall viewshed from Delta-01. A minimum parking area to meet projected visitor counts is proposed. The siting of the proposed parking area is

also intended to mitigate adverse impacts to the viewshed. It is to the northeast of Delta-01, beyond a rise in elevation. Further mitigation could be use of disturbed soil from the site to create berms that will help to screen the parking area from Delta-01.

Delta-09 –This action alternative recommends adding visitor parking and a small vault toilet building northeast of the site. The parking area would be sized to accommodate projected visitor counts and include adequate space for maneuvering of larger vehicles such as busses and RVs. The parking area would include interpretive waysides. The portable toilet would be removed from the historic core and replaced with a small vault toilet building near the parking lot—outside the historic core. Most proposed treatments in the Preferred Alternative would result in direct and indirect, short and long-term, minor beneficial impacts to the landscape at Delta-09; but the construction of a parking area in proximity to the site would result in direct and indirect, short and long-term moderate adverse impact to a portion of the landscape. Similar to the situation at Delta-01, the parking lot would be approximately two acres in size, which is a very small percentage of the overall viewshed of Delta-09. Construction of the parking area would result in a direct and indirect, short and long-term moderate adverse impact to a portion of the landscape.

Cumulative Impacts: Site maintenance has occurred at both Delta-01 and Delta-09 by the Air Force and the National Park Service over the past decades; however these past actions did not constitute adverse impacts to the landscape. The past action of erecting a cell tower outside the perimeter of Delta-01 has resulted in adverse impacts to the landscape and limited development regulations could result in adverse impacts to the landscape at some time in the foreseeable future; however to mitigate the potential for adverse impacts, the Preferred Alternative recommends mitigation of adverse impacts through partnering with the South Dakota SHPO in negotiations with the current landowner in relocation of the cell tower and working with landowners to establish agreements to protect viewsheds. The implementation of current management actions would contribute minor beneficial impacts to the overall cumulative adverse impacts from actions associated with the National Historic Site area.

Conclusion: Implementation of the Preferred Alternative, would generally result in direct and indirect long-term, minor beneficial impacts to most features of the landscape at Minuteman Missile National Historic Site and to the overall cumulative actions associated with the National Historic Site; however the construction of parking areas at both Delta-01 and Delta-09 would result in moderate adverse impacts that would require mitigation.

Impairment: Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Minuteman Missile National Historic Site; (2) key to the cultural integrity of the National Historic Site; or (3)

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identified as a goal in the National Historic Site's general management plan or other relevant National Park Service planning documents, there would be no impairment of the National Historic Site's resources or values.

Section 106 Summary: The potential effects of the Preferred Alternative have been evaluated and after applying the Advisory Council's criteria of adverse effects (36 CFR Part 800.5), the National Park Service concludes that implementation of most treatment recommendations in the Preferred Alternative would result in no adverse effect to the cultural landscape at Minuteman Missile National Historic Site. The construction of the parking areas at Delta-01 and Delta-09 would result in adverse effects to the viewsheds of the cultural landscape. Mitigation measures would be implemented.

Impacts to Socioeconomics

Basis for Analysis (Impacts to Socioeconomics)

The NPS Management Policies, Section 8.11 includes provisions for the study of social sciences, which encompasses the resource topic Socioeconomics. As it relates to the proposed action of implementing proposed Treatment Alternatives in this HSR/CLR/EA, the discussion of socioeconomics includes the potential effects to the local economy.

Intensity Levels:

- **Negligible:** Economic and socioeconomic conditions would not be affected, or effects would not be measurable.
- **Minor:** The effect on economic and socioeconomic conditions would be small but measurable, and would affect a small portion of the population. Few effects could be discerned outside of the local area.
- **Moderate:** The effect on economic and socioeconomic conditions would be readily apparent and widespread in the vicinity of Pennington and Shannon Counties, with effects being evident at the local level.
- **Major:** The effect on economic and socioeconomic conditions would be readily apparent and would substantially change the economy or social services within the three county region.

Current Treatment/No Action Alternative (Impacts to Socioeconomics)

Analysis: Continuation of current management actions at Minuteman Missile National Historic Site would result in direct and indirect, short and long-term, negligible to minor beneficial impacts to the local economy. Although the Current Management alternative would not include the site improvements recommended in the action alternatives, Minuteman Missile National Historic Site would still operate and provide opportunities for visitors to the region to gain insight into military history. The number of visitors has increased every year the National Historic Site has been open, and this is anticipated to continue due to proximity to I-90 and Badlands National Park.

Cumulative Impacts: Implementation of current management (no action alternative) would continue to build on past actions by local organizations and the NPS in establishing an expanding tourism component to the local economy. This alternative, when combined with past actions and any foreseeable actions including construction of a visitor center for Minuteman Missile National Historic Site should benefit the local economy, but would still fall within the low end of the minor intensity level.

Conclusion: Implementation of Current Management (no action alternative) would result in direct and indirect long-term, negligible to minor beneficial impacts to the local economy and to the overall cumulative impacts associated with the National Historic Site.

Treatment Alternative 1(Preferred Alternative)
(Impacts to Socioeconomics)

Analysis: Implementation of the Preferred Alternative would result in improvements to visitor experience, preservation of historic resources, and the potential for an increased workload to cyclical maintenance. Improvements to visitor experience could result in longer stays at the National Historic Site, which could result in more local spending. Although construction of new parking areas within cultural landscape viewshed of Delta-01 and Delta-09 would result in adverse impacts to cultural resources there would be a short-term, direct minor benefit to the local economy during the period of construction. The improvements to visitor experience at both sites, which includes construction of the parking areas could result in an increase of repeat visitors, which could result in long-term benefits to the local economy. The increased workload for maintenance and preservation of historic resources could result in increased spending by park staff for supplies and potentially additional staff to maintain the sites. Recommendations to coordinate road improvements could benefit local residents as well as visitors, either through local government employment, or contracting of construction workers. Implementation of the Preferred Alternative would result in direct and indirect, short and long-term, minor beneficial impacts to the local economy.

Cumulative Impacts: Implementation of the Preferred Alternative would continue to build on past actions by local organizations and the NPS in establishing an expanding tourism component to the local economy. As tourist attractions continue to be added to the region, there would be increased incentives for visitors to extend their stay. Longer stays by visitors in this region will benefit local retailers and ultimately local residents. This alternative, when combined with past actions and any foreseeable actions should benefit the local economy, and provide direct and indirect, short and long-term, minor benefits to the local economy.

Conclusion: Implementation of the Preferred Alternative would result in direct and indirect long-term, minor beneficial impacts to the local economy and to the overall cumulative actions associated with Minuteman Missile National Historic Site.

Impacts to Visitor Experience

Basis for Analysis (Impacts to Visitor Experience)

NPS Management Policies state that enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the NPS is committed to providing appropriate, high-quality opportunities for visitor to enjoy the parks. The analysis focuses on the potential affects from the overall guidance provided in the Alternative and whether those affects would benefit the visiting public.

Intensity levels:

- **Negligible** – a negligible effect would be a change that would not be perceptible or would be barely perceptible by most visitors.
- **Minor** – a slight change in a few visitor's experiences, which would be noticeable but which would result in little detraction or improvement in the quality of the experience.
- **Moderate** – a moderate effect would be a change in a large number of visitor's experiences that would result in a noticeable decrease or improvement in the quality of the experience. This would be indicated by a change in frustration level or inconvenience for a period of time.
- **Major** – a substantial improvement in many visitors' experience or a severe decrease in the quality of many visitors' experiences.

Current Treatment/No Action Alternative (Impacts to Visitor Experience)

Analysis: Implementation of current management would provide visitors the ability to experience military history through ranger-led tours at Delta-01. Self-guided tours are available at Delta-09. Visitors on tours at Delta-01 will be offered the opportunity to ride a small elevator to the launch control capsule. The ranger leading the tour will ask each visitor the question of whether or not the visitor could and would be willing to climb a ladder in case the elevator malfunctioned. If visitors choose to not ride the small elevator down to the launch control capsule, they would be given the opportunity to watch a pre-recorded video. Watching a pre-recorded video would likely result in a reduced visitor experience for those that chose to not ride the elevator down to the launch control capsule. Limited parking opportunities and visitor amenities would likely negatively affect visitor experience and reduce opportunities for large tour groups. Visitor experience could also be negatively affected by road conditions leading to Delta-01. Although visitors have some freedom to explore the site at Delta-01, there are no policies in place to allow a more active experience by using outdoor recreation equipment at the site. These limitations to visitor amenities could possibly result in reduced numbers of return visitors to either site. This may be particularly true for visitors traveling in RVs or bus tours. Continuation of current

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management actions at Minuteman Missile National Historic Site could result in direct and indirect, long-term, minor beneficial impacts to visitor experience.

Cumulative Impacts: Continuation of current management provides a beneficial impact to visitor experiences. Implementation of this alternative in addition to the construction of a new visitor center for Minuteman Missile National Historic Site and other visitor attractions in the region would benefit visitors to a greater degree. Visitor experience would benefit through the increase in visitor attractions in this region. Other options include the National Grassland Visitor Center, increase visitor contact facilities at Badland National Park. Visitors will be provided additional opportunities to learn and play, which provides additional benefits to visitors. The visitor experience may be tempered due to past adverse actions such as construction of the cell tower, and potential future adverse actions such as potential development on properties in the vicinity of the National Historic Site; however current management would provide a minor beneficial impact to the cumulative adverse impacts associated with past and foreseeable future actions.

Conclusion: Implementation of current management (no action alternative) would result in direct and indirect long-term, minor beneficial impacts to visitor experience and to the overall cumulative impacts associated with the National Historic Site.

Treatment Alternative 1 (Preferred Alternative)
(Impacts to Visitor Experience)

Analysis: Visitor experience would be enhanced through implementation of the Preferred Alternative. This alternative would provide increased visitor accessibility through parking lot improvements and routes for visitors with mobility impairments and proposed coordination of local road improvements. Interpretive waysides would be provided at strategic locations outside the historic core of Delta-01 and Delta-09 to reduce impacts to the cultural landscape. In addition to providing both ranger-led tours and interpretive signage at Delta-01, visitors will have the ability to utilize the outdoor recreation equipment while waiting for tours to start. This would provide more of a first person perspective on the daily lives of the missileers.

Visitors on tours at Delta-01 will be offered the opportunity to ride a small elevator to the launch control capsule. The ranger leading the tour will ask each visitor the question of whether or not the visitor could and would be willing to climb a ladder in case the elevator malfunctioned. If visitors choose to not ride the small elevator down to the launch control capsule, they would be given the opportunity to watch a live-feed video of the tour. Watching a live-feed video would result in a slightly less positive experience for visitors that chose to not ride the elevator down to the launch control capsule; however the live-feed video would provide a degree of a shared experience with other members of their group, which should reduce the negative impacts from not going down to the launch control capsule. Implementation of the Preferred Alternative at Minuteman Missile National Historic Site could result in direct and indirect, long-term, minor beneficial impacts to visitor experience.

Cumulative Impacts: Implementation of the Preferred Alternative provides a beneficial impact to visitor experiences. Implementation of this alternative in addition to the construction of a new visitor center for Minuteman Missile National Historic Site would benefit visitors to a greater degree. Visitor attractions are increasing in this region which provides additional opportunities to learn and play, which provides additional benefits to visitors. The visitor experience may be tempered due to past adverse actions such as construction of the cell tower, and potential future adverse actions such as potential development on properties in the vicinity of the National Historic Site. The Preferred Alternative would provide a minor beneficial impact to the cumulative adverse impacts associated with past and foreseeable future actions.

Conclusion: Implementation of the Preferred Alternative would result in direct and indirect long-term, minor beneficial impacts to visitor experience and to the overall cumulative impacts associated with the National Historic Site.

Impacts to Park Operations

Basis for Analysis (Impacts to Park Operations)

Implementation of any alternative would affect the operations of Minuteman Missile National Historic Site. This includes the number of staff required to accomplish recommendations for any alternative; when these actions would occur; and how these actions were to occur. Park operations related to maintenance of park structures and grounds and interpretation of the cultural and natural heritage of Minuteman Missile National Historic Site.

Intensity levels:

- **Negligible** – Park operations would not be affected or the effect would be at low levels of detection.
- **Minor** – The effect would be detectable, but would be of a magnitude that it would not have an appreciable adverse or beneficial effect on park operations.
- **Moderate** – The effect would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable to staff and the public.
- **Major** – The effect would be readily apparent and would result in a substantial adverse or beneficial change in park operations in a manner noticeable by staff and the public, and would be markedly different from existing operations.

Current Treatment/No Action Alternative (Impacts to Park Operations)

Analysis: On-going maintenance and interpretive park operations would continue to be based out of the temporary administrative center at Cactus Flat in the short term. The continuation of current management actions at Minuteman Missile National Historic Site would result in ongoing maintenance, protection and preservation of the historic landscape features, buildings and structures within Delta-01 and Delta-09. However, in this alternative, on-going maintenance actions would be conducted without the benefit of additional guidance on maintenance, rehabilitation or restoration of historic resources at Delta-01 and Delta-09, and without additional interpretive facilities to assist Minuteman Missile National Historic Site interpretive staff in telling the story of the military history of the site and region. In addition, there are no facilities for NPS staff or rangers at Delta-09. When a ranger makes a trip out to Delta-09, they would have to sit in their vehicle to avoid poor weather conditions, or extreme sun or heat. The Current Management Alternative would result in direct, short and long-term, negligible to minor adverse impacts to park operations.

Cumulative Impacts: Implementation of this alternative and the potential future action of construction of a new visitor center for Minuteman Missile National Historic Site would benefit park operations by providing a more functional administrative facility for park staff that is not any farther from Delta-01 or Delta-09 than the current temporary facilities. This alternative, in addition to previous and future actions could result in short and long-term, negligible to minor beneficial impacts to park operations.

Conclusion: Implementation of current management (no action alternative) would result in direct and indirect long-term, negligible to minor adverse impacts to park operations and to the overall cumulative impacts associated with the National Historic Site.

Treatment Alternative 1, Preferred Alternative (Impacts to Park Operations)

Analysis: Implementation of this alternative would increase the workload of maintenance staff; however implementation of this alternative would also provide additional guidance on maintenance, rehabilitation or restoration of historic resources at Delta-01 and Delta-09. This alternative would provide additional support for interpretation of Delta-01 and Delta-09 through interpretive waysides. There would be minor increase in workload to install these signs, but in the long term they will offer visitors information on the stories associated with operations at both Delta-01 and Delta-09, without having constant contact with a Ranger. Interpretive waysides at Delta-09 would reduce the amount of time spent by rangers in traveling to and from that location. In addition, no facilities are proposed for rangers. When a ranger makes a trip out to Delta-09, they would have to sit in their vehicle to avoid poor weather conditions, or extreme sun or heat. Implementation of Treatment Alternative 1 at Minuteman Missile National Historic Site could result in direct and indirect, long-term, minor beneficial impacts to park operations.

Cumulative Impacts: Implementation of the Preferred Alternative in addition to the proposed future action of constructing a new visitor center would result in direct and indirect, long-term, minor beneficial impacts to park operations.

Conclusion: Implementation of the Preferred Alternative would result in direct and indirect long-term, minor beneficial impacts to park operations and to the overall cumulative impacts associated with the National Historic Site.

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Chapter 8: Class “C” Cost Estimates

Chapter 8: Project Phasing and Class “C” Cost Estimates

Chapter 8 will be included in the next draft of this report.

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Chapter 9: Consultation and Coordination

Chapter 9: Consultation and Coordination

Internal Scoping

Internal scoping was conducted by an interdisciplinary team of professionals from Minuteman Missile NHS, the NPS Midwest Regional Office and members of the consultant team. Interdisciplinary team members met at Minuteman Missile NHS on two separate occasions (June 9, 2008 and March 10-11, 2010) to discuss the purpose and need for the project; identify issues to be addressed; discuss a variety of preliminary treatment alternatives concepts; potential environmental impacts: past, present, and reasonably foreseeable projects that may have cumulative effects; and possible mitigation measures. Team members also gathered at the site the week of June 29, 2009 to conduct additional data collection and extensive site visits at Delta-01 and Delta-09.

External Scoping

External public scoping was conducted to inform various stakeholders and the public about the proposal to establish treatments for historic landscapes and historic structures at Minuteman Missile NHS and to generate input on the preparation of this HSR/CLR/EA. The external public scoping was a similar process to the public scoping process for the Minuteman Missile NHS General Management Plan. Those stakeholders with a likely interest in the HSR/CLR/EA were contacted. Those contacted included affiliated Native American groups:

- Cheyenne River Sioux Tribe
- Crow Creek Sioux Tribe
- Flandreau Santee Sioux Tribe
- Lower Brule Sioux Tribe
- Oglala Sioux Tribe
- Sisseton-Wahpeton Sioux Tribe
- Rosebud Sioux Tribe
- Yankton Sioux Tribe
- Standing Rock Nation
- Ponca Tribe
- Omaha Tribe
- Santee Sioux Tribe
- Winnebago Tribe
- Spirit Lake Nation
- Three Affiliated Tribes
- Turtle Mountain Band of Chippewa
- Trenton Indian Service Area

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External scoping also included regulatory agencies such as:

- South Dakota SHPO
- U.S. Fish and Wildlife Service

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Parsons-Staven Company.

As Built Drawings

Upgrade and Alteration Drawings (various dates)

Dismantlement As-Built

Photograph Collections:

D-09 Complete

D-09 Emplacement – DENR Photographs

D-09 Pre-START conversion

D-09 Topside Pre-START Conversion circa 2000

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