Cultural Landscape Report
Golden Spike National Historic Site
Box Elder County, Utah

by
Carla Homstad, Janene Caywood, and Peggy Nelson

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CULTURAL RESOURCES SELECTIONS
INTERMOUNTAIN REGION
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Cover Illustration: View northeast from the top of the locomotive Jupiter, Central Pacific Railroad, that is facing the Union Pacific's engine 119 during the Last Spike Ceremony, May 10, 1869. Photograph by A. J. Russell, official photographer of the Union Pacific Railroad. *Source*: A.J. Russell photo No. 223.

Foreword

This Cultural Landscape Report represents the completion of the cultural landscape inventory process for Golden Spike National Historic Site – a site that celebrates the completion of the Pacific Railroad, one of our nation's most important and far-reaching events. Level I of the Cultural Landscape Inventory identified the existence of cultural landscape values at the NHS. Level II of the inventory process identified specific landscape characteristics and associated features that contribute to the eligibility of the site. An amendment to the National Register of Historic Places registration form, covering the cultural landscape values associated with the site, was prepared in response to the completion of the Level II inventory. This Cultural Landscape Report thoroughly describes the landscape characteristics and features that contribute to the park, addresses their integrity and significance, places them in their historic context, and provides recommendations for their long-term preservation and treatment.

There are unique values associated with linear cultural resources that render them difficult to protect and manage – particularly linear landscapes with extensive viewsheds. Most times, park service management authority ends at the federal property boundary, which may or may not encompass all of the resources and landscape values that contribute to the significance of particular historical properties. At Golden Spike National Historic Site it was important to identify and protect the most critical landscape features, the archaeological resources related directly to the history of the construction and operation of the nation's first transcontinental railroad. These resources depict all stages of the construction process, as well as aspects of the living and working conditions of the people who accomplished the construction. In addition, the isolated and still largely undeveloped character of the Promontory Mountains provides a historical sense of place and helps to illustrate the environmental and social context within which the railroad was constructed and operated. As a planning document, the Cultural Landscape Report considers both natural and cultural resources within their historical framework, documents their value, and provides recommendations for effective preservation management.

It is a pleasure to make this information about the resources at Golden Spike National Historic Site available.

Karen P. Wade
Regional Director
Intermountain Region

Abstract

This document presents the results of a cultural landscape analysis of the lands within the authorized boundary of Golden Spike National Historic Site (NHS). Cultural resources within the park, most of them archaeological, graphically tell the story of the final push to complete the Pacific Railroad – the Nation's first transcontinental railroad constructed by the Union Pacific and Central Pacific railroad companies between 1862 and 1869. The report documents the existing and historical conditions of the National Historic Site and identifies various landscape characteristics and associated landscape features that contribute to the historical character, feeling and association of this important place. It also places these features within their historical context. Part 2 of the document identifies an overall treatment philosophy for various components of the National Historic Site, as well as specific treatments for contributing landscape features. Implementation of the proposed treatments will ensure that the cultural value inherent in the park will be preserved for future generations.

Mission: As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of the life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. Administration. NPS-D-78.

Acknowledgements

The authors of this report wish to thank those individuals who supported and participated in various aspects of the project. Golden Spike National Historic Site Superintendent Bruce M. Powell and his staff took a strong interest in the cultural landscape analyses conducted within the NHS. They made the numerous records, photographs, and other documents housed in the park collection readily available to researchers, participated in the several field evaluations, and provided insightful comments on the various landscape values associated with the national historic site. Superintendent Powell, particularly, escorted project personnel during fieldwork, provided detailed comments on the drafts submitted for review, and guided research to address park planning and management objectives.

Dr. Adrienne Anderson, archaeologist for the National Park Service's Intermountain Support Office – Denver and the contracting officer's technical representative for this project, has conducted investigative work at Golden Spike National Historic Site since the 1970s and has extensive knowledge of the site and its cultural and natural resources. Her guidance throughout the project was greatly appreciated.

We wish to thank Cathy Gilbert, Historical Landscape Architect for the Columbia Cascade Support Office of the National Park Service, who unselfishly gave of her personal time to review and provide comments on this cultural landscape report. We also express our appreciation to Michael Polk, Sagebrush Consultants, L.L.C., who collaborated on the historical research. Finally, we thank the staffs at the various archival repositories who assisted project research personnel in the identification of pertinent research materials including: the Durham Western Heritage Museum, Omaha, Nebraska; the Church of Jesus Christ of Latter-day Saints Archives and Library, the University of Utah Archives, and the Utah State Historical Society all in Salt Lake City, Utah; the American Heritage Center, University of Wyoming, Laramie, Wyoming; the Nebraska State Historical Society in Lincoln, Nebraska; and the Council Bluffs Public Library, Council Bluffs, Iowa.

Although not a perfect document, this final landscape report is better because of the interest and active input provided by these individuals knowledgeable about the transcontinental railroad and the Golden Spike National Historic Site.

Carla Homstad and Janene M. Caywood, Historic Research Associates
Peggy Nelson, Landscape Systems
December 2000

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Part One

Chapter 1: Introduction

Management Summary

The purpose of this Cultural Landscape Report (CLR) is to identify the landscape characteristics and features that contribute to Golden Spike National Historic Site (NHS) and to make recommendations regarding the long-term preservation and management of the site. Several planning documents have been prepared for Golden Spike NHS that outline the management and interpretive goals for the site. For the most part, these goals have been expressed in general terms, and not within the context of landscape treatment recommendations. However, the stated goals do outline the interpretive intent for this park service unit.

The park's 1978 General Management Plan (GMP) identifies the management objectives for Golden Spike NHS. The goals that are specifically relevant to this analysis include the following:

- To manage the park's historic scene and resources, aś closely as practical, in keeping with their character and appearance in 1869.
- To support preservation and restoration of the site through identification, evaluation, and interpretation of historic resources.
- To provide visitors with an opportunity to understand and appreciate the railroad race to Promontory, and the effects of its completion on the development of the West, and on the social, political, and economic history of the nation.

More recent park planning documents include the Strategic Plan and Comprehensive Interpretive Plan, prepared in 1997 and updated in 2000, and the Resource Management Plan updated in 1999. All three of these plans restate the need to protect, maintain and, in some instances, restore the natural and cultural resources that contribute to one's understanding of the construction of the transcontinental railroad. Further, the Comprehensive Interpretive Plan reaffirms the long-standing temporal focus for interpretation at Golden Spike NHS: "... the Last Spike Site will be presented to recreate the May 10, 1869 scene in so far as possible." (National Park Service 1997a:24). The plan states that the focus of interpretive effort for the area within one mile either side of the Last Spike Site will be May 10, 1869. The focus of resource management activities at the summit continues to be preservation of the remaining archaeological evidence of the town of Promontory Station and of the operation and maintenance of the railroad.

Figure 1 shows the location of Golden Spike National Historic Site including its existing and authorized boundaries.

Historical Summary

The history of the landscape at Promontory Summit in northern Utah links inextricably to the history of building and operating the first transcontinental railroad across the United States. Constructed between 1863 and 1869 by the Central Pacific and Union Pacific Railroad companies, the two rails advanced from the west and the east and met at Promontory Summit on May 10, 1869. Ceremonies held that day at the summit marked the achievement by driving the last spike and by sending the news over the simultaneously built telegraph line across a rapt nation. Because no junction point was specifically stipulated in the sponsoring legislation, survey and grading crews had done their work well beyond the eventual meeting point. For a distance exceeding 200 miles crews intermittently built a parallel grade east and west of the summit. Portions of this parallel grade are still evident at the summit and testify to the archly competitive nature of the enterprise.

A plan for building a transcontinental railroad was first presented to Congress by New York merchant Asa Whitney in the 1840s. In 1853, seeking to determine the most practicable and economical route, Congress appropriated funding for five surveys. The selection of a transcontinental route, however, was plagued by political intransigence in Congress over the issue of slavery and the question of where it might extend as the country developed westward. After the secession of the South and the outbreak of the Civil War, Congress passed legislation in 1862, amending it in 1864 and 1866, to provide for the construction of the first transcontinental railroad and chartering the Union Pacific Railroad Company to help build it. This company and the privately incorporated Central Pacific were together responsible for building the Pacific Railroad. Federal assistance included 30-year government bonds at 6 percent interest and grants of land along the route. Bonds were issued at varying rates depending on the ruggedness of the terrain: $16,000 per level mile; $32,000 per mile in the foothills; and $48,000 in the mountains. Racing to meet the end of the other company's line, each sought to construct the greater portion of the road and thereby acquire more land and loans.

The Central Pacific, whose labor force consisted primarily of Chinese workers supplemented by Irish and Cornish crews as well as Paiute and Washo Indians, almost immediately faced the challenge of blasting through the granite walls of the Sierra on the California-Nevada border. The Union Pacific, on the other hand, did not encounter heavy grading work until it reached Wyoming and Utah. In addition to many Irish laborers, Germans, Englishmen, freed Blacks and American Indians also worked for the Union Pacific. Mormon crews worked for both railroad companies once the lines pushed into the bounds of Utah Territory.

By February, 1869, Central Pacific grading crews had begun the difficult work on the east slope of Promontory Summit, including work on the Big Fill at a ravine located about half way up the slope. The Union Pacific track reached Ogden by March 8, and 20 days later the company initiated construction of its Big Trestle located some 150 feet east of, and parallel to, the Big Fill. By early April, the Central Pacific track was approaching Monument Point, while on April 8 the Union Pacific's track reached Corinne – one of the infamous Union Pacific "Hell-on-wheels" towns that attracted the seamier side of business at these end-of-track locations. On April 10, by a joint resolution, Congress designated Promontory Summit as the meeting place, confirming a

Golden Spike National Historic Site

Area Map

Legend

Hydrography, Streams - 100K DLGs
- Aqueduct/Perennial
- Perennial Stream
- Intermittent Stream

Hydrography, Lakes - 100K DLGs
- Intermittent Lake/Pond
- Perennial Lake/Pond

- Contours - 50 Meter Interval (164 ft)
- Last Spike Site
- Current NHS Boundary
- Authorized NHS Boundary

Railroad Grades
- Central Pacific
- Union Pacific

Roads
- Paved
- Gravel
- 2 -Track

N

0.5 0 0.5 Miles

Produced by the NPS Intermountain Region GIS Support Office
Denver, CO
11/27/00

Utah Location Map

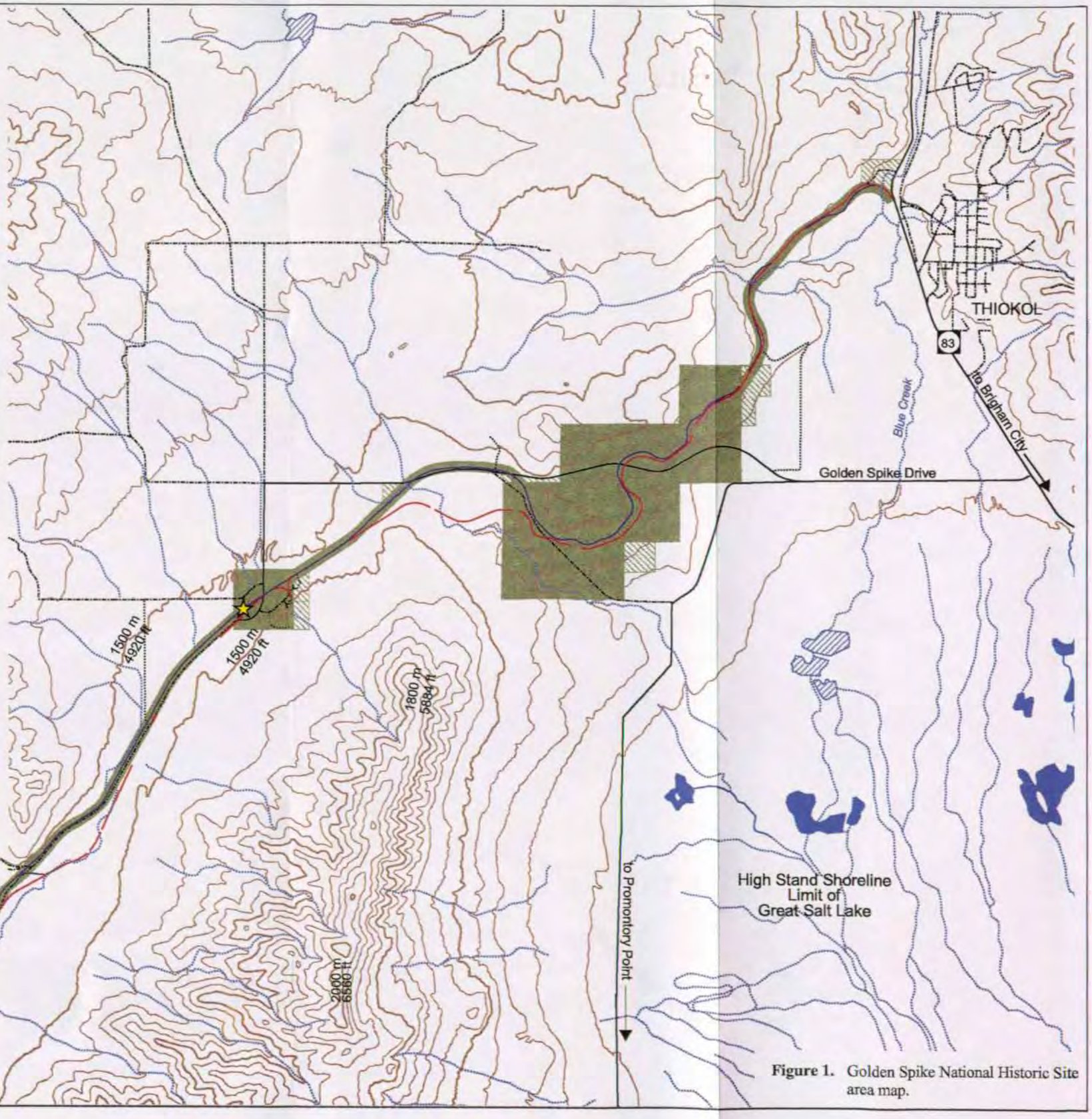

Figure 1. Golden Spike National Historic Site area map.

decision reached by the two companies the day before. The Central Pacific Railroad Company also agreed to buy the Union Pacific's track between Promontory Summit and a point 5 miles west of Ogden, leasing the remaining 5 miles from the Union Pacific for a term of 999 years.

During the months of April and May, 1869, the east and west slopes of the Promontories teemed with life in hundreds of railroad construction camps as graders, trestle-builders, and track-layers worked feverishly to complete the rail line. Archaeological evidence of these temporary camps has been found on the summit. By the end of April, the Central Pacific had completed its Big Fill, had laid 10 miles of track in one day (April 28), and on April 30, the Central Pacific's track reached the summit at Promontory. On May 5, the Union Pacific crews finished the Big Trestle and Carmichael's Cut. Between May 6 and May 9, Union Pacific workers completed the remaining rock cuts, built a 2,500-foot siding and a "wye" at the summit, and laid track to within a rail's length of the Central Pacific's track.

On May 10, 1869, officers of both companies as well as a host of others celebrated the laying of the last rail and the driving of the last spike in a ceremony at mid-day. The joining of the rails at Promontory Summit signified the end of a colossal effort to build the first transcontinental railroad in only six and one half years, less than half the time that Congress had specified. Representing one of the greatest engineering feats of the nineteenth century, completion of this continuous rail line accelerated the settlement and economic development of the American West, spelling the ultimate doom of the American Indians' traditional way of life. Completing the first transcontinental railroad also facilitated transportation and commerce, improved communications, and helped unite the country physically, economically and politically.

Until December of 1869, when the Central Pacific acquired the Union Pacific line to Ogden, which then became the terminus, some 30 establishments – large canvas tents, some with wooden storefronts – served passengers waiting to change trains at the summit. From 1870 to 1904, Promontory was a maintenance station for the railroad. Buildings associated with its railroad functions included a freight depot, a roundhouse, a section house, a water tank, tool sheds, and bunk houses for railroad workers. By 1870, the Central Pacific had improved the track on the east slope between the vicinity of the Blue Creek drainage crossing and Promontory Station, abandoning portions of the Union Pacific's line and building new track on the Central Pacific grade.

After the Lucin cutoff rerouted cross-country traffic to the south of Promontory in 1904, mixed (passenger and freight) local trains continued to cross the summit until 1942 when rails on the Promontory Branch were pulled for defense needs. Although quieter, with fewer trains using the station, the town of Promontory continued to serve as a community center. Ranching and dry-farming provided the area's economic base. The open, sparsely populated landscape at the summit reflected this rural economy.

Although the Southern Pacific Railroad had earlier placed a monument at the summit to honor the joining of the rails there, federal recognition of the significance of the site dates from 1957 when Interior Secretary Fred Seaton designated a 7-acre tract of land in non-federal ownership at the summit as a national historic site. In 1965, Congress passed legislation to create the Golden Spike National Historic Site in order to commemorate the completion of the first transcontinental railroad. By purchasing and exchanging lands the Interior Department acquired 2,176 acres for the site. The 1965 legislation also appropriated over $1 million for site development, which was used to build a visitor center, to provide parking areas and other

facilities, and to develop interpretive exhibits. In 1976, Congress increased the appropriation to over $5 million. Finally, in 1980, Congress amended the boundaries of the site, increasing its acreage to 2,735.28 acres, including 532.08 acres that remain in non-federal ownership. Since 1965, relying on pieces of the story of the building and operating of the first transcontinental railroad that remain visible within this landscape, the National Park Service has managed the resources at the site for their interpretive potential and commemorative value.

Scope of Work and Methodology

Preparation of this CLR follows the completion of Levels I and II of the Cultural Landscape Inventory (CLI). The scope of work included both archival and field research. Initially, project team members conducted a background study and literature search. The background study and literature search consisted of reviewing existing National Park Service files, documents, and research reports for the Golden Spike National Historic Site as well as conducting a brief background study of the settlement history of the Promontory Summit and other Utah areas. The background study involved examining regional and local histories, personal journals and accounts of early expeditions and settlement in the study area.

Archival Research/Document Collection

Ann Emmons, HRA Associate Historian, was assigned the task of conducting research and collecting documents for this study. Emmons collected documents from Golden Spike NHS headquarters where she reviewed cultural resource reports, historical photograph files, Central Files [including D-series (construction and maintenance), H-series (History), K-series (Interpretation) L-series (Land) and N-Series (Natural Resources)], and Research Files (including diaries, memoirs, and oral-history interviews collected at other repositories, archival indices, and, interpretive brochures.

Emmons also reviewed documents from the Church of Jesus Christ of Latter-day Saints Archives and Library, in Salt Lake City. Specific collections included Brigham Young's ingoing and outgoing correspondence, 1864-1870, Ward and Stake records for Brigham City, Box Elder, and Promontory, 1884-; and miscellaneous journals and memoirs of Mormons employed under Young's grading contracts. Because the Brigham Young correspondence files are restricted, Emmons generated a list of potential research materials by searching the annotated index for the key words: employment; railroad; railway; Union; Central; grading; Durant. Copies of these materials were made available to Emmons to review at the archival facility, where she was allowed to take notes on the information contained in the documents.

In addition, this project benefited from research completed by Michael Polk, Principal Archaeologist/Owner of Sagebrush Consultants, L.L.C. Polk provided HRA with material gathered at the California State Archives, Sacramento; Oakland Museum of California, Oakland; the California State Railroad Museum, Sacramento, and Interstate Commerce Commission (ICC) Valuation Reports ordered from the National Archives, Washington, D. C. and from the Bureau of Land Management, Salt Lake District Office.

While in Salt Lake City, Emmons also conducted research at the University of Utah Archives and the Utah State Historical Society. At the former, she focused on the Golden Spike Oral History Collection (MS 95), a series of 27 interviews conducted in 1974 and 1975 with former

Promontory residents and railroad employees. These interviews provide information on land use and development in the immediate vicinity of the NHS from ca. 1910 ca. 1945. At the latter, she reviewed the extensive photographic collection including copies of images archived at the Huntington, Stanford, Utah State University (Logan), the Union Pacific archives and other repositories, and images donated by area residents. She also reviewed journals, memoirs, and autobiographies by railroad laborers Arthur Ferguson, Jesse W. Fox, Hyrum Belnap, Goudy E. Hogan, and Milando Pratt .

Emmons also researched and collected documents from the Union Pacific Collection at the Durham Western Heritage Museum, Omaha, Nebraska; from the J. D. and Francis Casement, and Leonard Eicholtz collections at the American Heritage Center, University of Wyoming, Laramie, Wyoming; the Nebraska State Historical Society, Lincoln, Nebraska; and the Council Bluffs Public Library, Council Bluffs, Iowa. Finally, limited materials were collected from the National Park Service's Technical Information Center.

Project personnel made several trips to Golden Spike NHS in order to document the existing conditions of the landscape and evaluate its integrity with reference to its historical appearance. Peggy Nelson of Landscape Systems made a total of four research trips, Janene Caywood of HRA, made one trip to the site. Field research entailed the use of historic maps, aerial photographs, and period photographs (where available) to locate landscape features including the railroad grades, spoil and borrow areas, sidings, camp sites, and native and ornamental vegetation patterns. A pedestrian level reconnaissance survey was conducted over much of the study area and features were documented with black and white print film as well as some color slide film.

The majority of the historic and existing conditions site maps were prepared by NPS staff in the Intermountain Region Geographic Information Systems office. Mr. Dave Hammond and others located the numerous landscape features using a global positioning system (GPS) and incorporated the data into geographic imaging systems (GIS). The authors worked closely with NHS Superintendent, Bruce Powell, National Park Service archeologist, Adrienne Anderson and Dave Hammond to identify the list of chronology maps that would be prepared for the cultural landscape report and the various features that would be included for each of the different time periods. The NPS staff provided the site and chronology maps to the authors for use in conducting the site analysis and evaluation.

Data used to produce the maps in this report were generated by various technologies and reside at various scales. The following data were developed using GPS technology and can be assumed to have accuracy within 10 meters: railroad grades, railroad track, railroad grade features, archeological site datum points, historic spoil piles and borrow pits, and the roads within the authorized boundary of Golden Spike National Historic Site. Data for the Authorized National Historic Site (NHS) boundary were digitized from the NPS Land survey. The current NHS boundary and the roads that lie outside of the NHS authorized boundary are 1:24,000 Digital Line Graph (DLG) data produced by the U.S. Geological Survey. Finally, the data representing streams, lakes, and ponds are 1:100,000 DLG data produced by the U.S. Geological Survey. Data reside within the Universal Transverse Mercatur gird coordinate system, zone 12, Nad83 datum.

Description of Study Boundaries

The boundary of the study area corresponds, in general, to the 2735.28 acres included within the authorized boundary of the historic site. Of the 2735.28 acres within the authorized boundary, 2203.20 acres are held by the National Park Service in fee simple title. The remaining 532.08 acres remain in private ownership divided among 16 separate parcels. Although the documentation of cultural features was limited to the area within the authorized boundary, lands outside of this boundary were considered when they contribute to the historical setting of the site – especially in the vicinity of the Last Spike Site.

Golden Spike National Historic Site is located within the Great Basin Physiographic Province – that portion of land lying between the Sierra Nevada Mountains to the west and the Rocky Mountains to the east. Although the amount of annual precipitation varies by locality, the Great Basin is generally characterized as an arid region, with hot dry summers and cold winters. The area receives between 8 and 12 inches of precipitation annually, most of which falls in the form of winter snow.

The Last Spike Site, the focus of interpretation, is located at Promontory Summit, the highest point within a wide, basin-like pass through the Promontory and North Promontory Mountains, which border a northern arm of the Great Salt Lake. There is little surface water in the vicinity of the NHS. Blue Creek, located at the eastern edge of the site represents the nearest perennial drainage. Springs emanating from travertine formations exist in the region; one of the more notable is located at Rozel Point, 15 miles southwest of Promontory Summit. The notable absence of both surface water and the difficulty in locating productive groundwater wells has affected the pattern of cultural development within and adjacent to the site.

Current vegetation within and adjacent to the site includes a variety of grasses, both native and introduced, several types of sagebrush, snakeweed, and rabbitbrush. Junipers are located in areas of higher moisture accumulation, such as the higher elevation drainages in the mountains that surround the Last Spike Site. Wildlife within the park includes jack rabbits, kangaroo rats, coyotes, badgers, marmots, and mule deer. In addition, ring-necked pheasant, Hungarian partridge, and chucker, were introduced to the area during the historic period. A variety of raptors and owls also frequent the area, and it is possible that less frequently sighted animals such as cougar, bobcat, fox, porcupine, and antelope may be found in the more remote sections of the park.

Cultural resources specifically related to the construction of the transcontinental railroad and the driving of the last spike include a 15.5 mile section of the 250 mile "parallel line" constructed by two rival railroad companies – the Central Pacific Railroad and the Union Pacific Railroad. The parallel grades incorporate many engineered structures including a variety of culverts, trestles, rock cuts and earthen fill. The by-products of grade construction, such as soil and rock borrow areas and spoil piles, are located adjacent to the grade. In addition, this segment includes two merger points – locations where the CP constructed grade and the UP constructed grade met or merged into one alignment. The archaeological remains of approximately 31 worker campsites and supply camps, including the site of the "Hell on Wheels" town of Dead Fall, also are located in areas adjacent to the grade.

Within the 15.5-mile section of parallel grades the Last Spike Site is of particular importance, since it represents the formal joining of the CP and UP tracks. In this area the park service has

reconstructed the grades and track of the UP and CP railroads, the UP Wye and a section of both the UP and CP telegraph lines. Evidence of later periods of development – principally associated with the commercial and residential development of Promontory Station (the settlement that grew around the short-lived transfer point and the later section station), can also be found in the area, although these resources are principally archaeological in character. Exceptions include a limited amount of ornamental vegetation remaining from the settlement period. The National Park Service has also constructed a visitor center/ administrative office on the site.

Summary of Findings

As a result of the work conducted to complete this CLR, the periods of significance for Golden Spike NHS have been revised from those listed in the 1988 National Register registration form. Three periods of significance have been identified. The first corresponds to the period between February of 1869 and the first months of 1870. This represents the period of intensive construction activity through the Promontories, initiated with the CP's beginning work on the Big Fill and ending with the formal changing of the transfer point from Promontory to Ogden. Within this period, May 10, 1869, the day that the last spike was driven in the transcontinental line, is considered a date of primary significance for the historical site. The second period of significance extends from May 10, 1869 through September 18, 1904, when this segment of the transcontinental railroad was part of the main transcontinental line. The third period of significance encompasses the period between 1904 and 1942. After completion of the Lucin Cutoff in 1904, the line became known as the Promontory Branch or the Promontory Line, and was used for local traffic only. Although no longer a component of the transcontinental railroad, the branch line continued to be important to local residents, who depended upon it for both passenger and freight service.

The cultural landscape of Golden Spike NHS consists primarily of the structural components of the railroad grades constructed by the CP and UP railroad companies. The landscape characteristics most applicable to this inventory unit include natural features and systems, circulation, topography, buildings and structures and archaeological sites. Although clustering was an important landscape characteristic at various times during the historical period, this characteristic is no longer evident within the landscape corridor. Rather, the former clusters of buildings and structures are now manifest as archaeological sites. Similarly, the historic land uses directly associated with the railroad have become obsolete; the current land use, as an interpretive unit of the National Park Service, is compatible with the preservation of the cultural landscape.

The overall historical integrity of the cultural resources within Golden Spike NHS varies from area to area. The east and west slopes retain evidence of the structures and other features that contribute to one's understanding of the historically significant events that led to the completion and subsequent operation of the transcontinental railroad. However, the summit area and specifically the Last Spike Site no longer contain any above-ground historic resources. The thrust of the NHS interpretation efforts at the summit is to recreate the feelings associated with the May 10th, 1869 driving of the last spike, principally by protecting the surrounding viewshed from additional development. Preservation of extant historic resources (including structures and archaeological sites), as well as partial reconstruction of the historic scene at the Last Spike Site, are the primary treatment strategies for Golden Spike NHS.

Chapter 2: Site History

One of the first Euro-American explorers to cross the Promontory Summit was Jedediah Smith, who in late February, 1826, traveled around the head of Bear River Bay and across the Promontories. Four members of his party then explored the Great Salt Lake for nearly a month, trying to locate its outlet. Mountain man Jim Bridger, credited as the first Euro-American to see the Great Salt Lake, may also have crossed Promontory Summit in 1824 when he spent the autumn trapping beaver on the Bear River (Morgan 1964:143, 182-185; Goetzmann 1966:70). By the early 1840s, with the close of the fur trade, mountain men were moving elsewhere: Kit Carson scattered to New Mexico and Bridger took up residency at his fort and trading post at Black's Fork. Utah, and in particular the Promontory area, remained open lands (Stegner 1942:247). In 1841, the first emigrant wagon train party to blaze a trail west to California, the Bartleson-Bidwell party, also passed through the Promontory area. The trail that the Bartleson-Bidwell party established across northern Utah was rarely used again. The majority of pioneers crossed southern Utah instead. Nevertheless – without maps or familiarity with landmarks – the hardy emigrant party had proven that it was possible to reach California by crossing the desert and mountains (Goetzmann 1966:171). In this way, the Bartleson-Bidwell trail forecast the later significance of the Promontory area to transportation in the nineteenth century.

Prior to the completion of the transcontinental railroad, a wagon road traversed the summit. The road is marked on a January 14, 1869 map prepared by a "Special Pacific Railroad Commission appointed by the Secretary of the Interior." Little if anything else is known about this road (Anderson and Ketterson 1976).

In July of 1847 the Mormon pioneers entered the Salt Lake Valley. There, Brigham Young and the Church of Jesus Christ of Latter Day Saints began to build their new community, and by 1850, the Territory of Utah had been established. Because of Young's leadership, the Mormons played a significant role in the completion of the first transcontinental railroad in Utah (Bain 1999:494-495, 503, 532-535, 552, 620). Moreover, because of the degree of early Mormon settlement near the Salt Lake Valley by the 1850s, the desire to tap the commercial potential of northwestern Utah helped to feed the competition that developed during the construction of the transcontinental railroad.

Federal Support and Initial Construction of the Transcontinental Railroad: 1840-1867

The first call for a Pacific Railroad was initiated as early as 1832 by an Ann Arbor newspaper, *The Emigrant* (Utley 1960). By the 1840s a New York merchant, Asa Whitney, had presented Congress with a plan for the development of a transcontinental railroad route, the Pacific Railroad. In 1850 the Committee on Roads and Canals of the House of Representatives noted that building a railroad to the Pacific Coast would "cement the commercial, social, and political relations of the East and West" (White 1895). According to historian Robert Utley (1960:2), "the commercial motive remained dominant from first to last, but there were other considerations that carried more influence with Congress." These other considerations included the final subjugation of the American Indians, a reduction in the expense to the United States for

transporting mail and supplies across the continent, and the strengthening of political – as well as physical – bonds between East and West. The transcontinental railroad's ability to strengthen national political bonds would become increasingly important as sectional tensions between the North and the South escalated into the Civil War.

In 1853 Congress appropriated money for the Army's Topographical Corps "to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean" (Davis 1894). Five routes were surveyed during the years 1853 to 1855 – the Northern, Mormon, Buffalo, Thirty-fifth Parallel and Southern routes. Advocates of the Southern Route contended that it would be easier and less expensive to build because of its more temperate climate, less rugged terrain, and shorter distance (from Fulton, Arkansas to San Diego, California). But in Congress the debate over slavery blocked any selection since Northerners and Southerners could not agree, given the implications for states entering the union either free or slave. Not only did sectional differences vex them, but the question of locating the eastern terminus of the railroad also stymied progress towards reaching a decision about the best route (Bain 1999:43-48; Goetzmann 1966:265; Griswold 1962:8).

While the North and South argued over the route of the proposed transcontinental railway, a few enterprising Californians took action. On June 28, 1861 the Central Pacific Railroad Company of California was incorporated under the laws of California, and Theodore Judah was designated as the company's chief engineer (Bain 1999:99; Griswold 1962:14; Kraus 1969b:32-33). During the winter of 1861-1862, Judah, along with a group of Eastern supporters who were hoping to build the line west from the Missouri River, actively lobbied Congress seeking approval of a route for the Pacific Railway. By then, the South had seceded from the union and the Civil War had heightened the military and political importance of building a transcontinental railroad. "With no prospect of a southern route being adopted and with no southerners to oppose a northern route, senators and representatives had little difficulty agreeing on the terms of an acceptable bill. During May and June 1862 such a bill successfully made its way through both houses of Congress, and on July 1 received the President's signature" (Utley 1960:11). The title of the legislation was "An Act to aid in the Construction of a Railroad and Telegraph Line from the Missouri River to the Pacific Ocean, and to secure to the Government the Use of the same for Postal, Military and Other Purposes" (Klein 1987b:13; see also 12 *Stat.*, 489). The Railway Act of 1862 (also referred to as the Railroad Act) not only authorized the United States government's active support of the Pacific Railway, but it also chartered the Union Pacific Railroad Company – the first corporation chartered by the federal government "since the ill-starred Second Bank of the United States" (Klein 1987b:13).

The Railway Act of 1862, subsequently amended in 1864 and 1866, authorized and entitled the Central Pacific Railroad Company of California to "construct a railroad and telegraph line from the Pacific Coast at or near San Francisco or the navigable waters of the Sacramento River, to the eastern boundary of California" (Section 9, Railway Act of 1862). The Union Pacific Railroad Company, established in the early fall of 1862, was authorized by Congress to construct the eastern portion of the National Pacific Railroad Line from "a point on the one hundredth meridian of longitude west from Greenwich, between the south margin of the valley of the Republican River and the north margin of the valley of the Platte River, in the Territory of Nebraska, to the western boundary of Nevada Territory" (Section 1, Railway Act of 1862). Although Council Bluffs, Iowa, located on the eastern bank of the Missouri River, was once considered a likely eastern terminus, Union Pacific official Thomas Durant insisted on Omaha

instead, deciding against beginning construction on the rail line by first having to build an expensive bridge across the turbulent Missouri (Griswold 1962:50-51, 58-59).

The general consensus in Washington in 1862 was that the Central Pacific would only be able to build its line across the Sierra Nevada to the eastern border of California by the time the Union Pacific had completed its line as far west as the western border of Nevada. Section 1 of the 1862 act identified the terminus of the railroad to be at a point on the border between Nevada and California. The legislation, however, also allowed each of the two companies to continue building its line either westward or eastward of the California-Nevada border, depending on which company completed the line to this point first (Section 10, Railway Act of 1862). The legislation thereby effectively enabled the subsequent race to the junction point.

Government assistance to the two railroad companies took the form of land grants and financial loans. In addition to granting the companies 10 alternate sections of land for every mile of track laid, the 1862 act specified that the road would have a 400 foot right-of-way. The railroad companies were also to receive 30-year United States bonds at 6 percent interest. Recognizing that constructing the line over rougher terrain would be more expensive, Congress set the amounts of the bonds at $16,000 a mile in level country, $32,000 a mile in the foothills, and $48,000 a mile in the mountains (Sections 5 and 11, Act of 1862). Additionally, the Union Pacific and the Central Pacific could issue their own bonds in an amount equivalent to the value of the bonds issued to them by the federal government.

The Act of 1864, which amended the 1862 act, was signed on July 2 of that year. This legislation increased the land grants to twenty alternate sections, thereby doubling the amount made available to the railroads by the original legislation (Section 4, Act of 1864). This act also permitted the Central Pacific to build 150 miles east of the California-Nevada boundary, "so as to meet and connect with the line of the Union Pacific road" (Section 16, Act of 1864). The 1864 act additionally authorized the government to pay a portion of bonds in advance of the actual completion of the Union Pacific's line, not to exceed "two thirds of the value of the work done," providing that "no such bonds shall issue to the Union Pacific Railroad Company for work done west of Salt Lake City under this section, more than three hundred miles in advance of the completed continuous line of said railroad from the point of beginning on the one hundredth meridian of longitude." Congress made clear that by adding this language, it hoped to facilitate "the work on said railroad," and to enable "the said company as early as practicable to commence the grading of said railroad in the region of the mountains, between the eastern base of the Rocky Mountains and the western base of the Sierra Nevada Mountains (Section 8, Act of 1864; see also 13 *Stat.*, 356).

The Act of 1866, approved on July 3 of that year, further amended the Act of 1862 by again altering language regarding the connecting point between the two lines. In doing so, the measure laid the specific groundwork for the competition between the two railroad companies that led to the construction of more than 200 miles of parallel grades east and west of the Promontory area by April of 1869. In this case the act provided:

> That the Union Pacific Railroad Company, with the consent and approval of the Secretary of the Interior, are hereby authorized to locate, construct, and continue their road from Omaha, in Nebraska Territory, westward, according to the best and most practicable route, and without reference to the initial point on the one hundredth meridian of west longitude, as now provided by law, in a continuous completed line,

until they shall meet and connect with the Central Pacific Railroad Company, of California; and the Central Pacific Railroad Company, of California, with the consent and approval of the Secretary of the Interior, are hereby authorized to locate, construct, and continue their road eastward, in a continuous completed line, until they shall meet and connect with the Union Pacific Railroad: *Provided*, That each of the above-named companies shall have the right, when the nature of the work to be done, by reason of deep cuts and tunnels, shall for the expeditious construction of the Pacific Railroad require it, to work for an extent of not to exceed three hundred miles in advance of their continuous completed lines [Section 2, Act of 1866; see 14 *Stat.*, 80].

Despite the government bonds and the land grants, the Union Pacific and Central Pacific companies still had only a portion of the capital necessary for the development and construction of the transcontinental railway. Private investment proved essential for the design and construction of the railway. Both companies worked their contracts through construction companies that held virtually the same directors and stockholders as the two railroad companies. The Union Pacific's construction company was the Credit Mobilier of America. The Central Pacific, for its part, initially established the firm of Charles Crocker and Company but by 1867 had organized the Contract and Finance Company with Charles Crocker serving as president. Utley has described the manner in which the two railroad companies worked through the construction companies:

> Greatly simplified, the process worked like this. The Union Pacific awarded construction contracts to dummy individuals, who in turn assigned them to the Credit Mobilier. The Union Pacific paid Credit Mobilier by check (i.e., cash for the benefit of Congress), with which the Credit Mobilier purchased from the Union Pacific, at par, Union Pacific stocks and bonds, which it then sold on the open market for what they would bring. The construction contracts were written to cover the Credit Mobilier's loss on the securities and to return generous profits. In this manner the directors and principal stockholders of the Union Pacific, in their opposite role as directors and stockholders of the Credit Mobilier, reaped large profits as the rails advanced. The Big Four [Leland Stanford, Charles Crocker, C. P. Huntington and Mark Hopkins] used almost the same device to build the Central Pacific [Utley 1960:21].

During the summer of 1860 Theodore Judah began to survey a route for the transcontinental railway through the Sierra Nevada Mountains. By the fall of 1861 he had assembled a set of plans and profiles for the new roadway as it headed east from California. Pursuant to the federal legislation that extended the eastern limits of the Central Pacific's line, the company was prompted to send its surveyors out to run lines in the vicinity north of the Great Salt Lake and east of Ogden. By the early spring of 1868, the Central Pacific crews had extended their survey efforts as far east as Fort Bridger, Wyoming. The project engineers and their survey crews often rectified their selected route as they moved eastward. Frequently, they selected the same general route as that designated by the Union Pacific crews. Much of the eastern end of the Central Pacific route was not closely surveyed until 1867 and it was not until 1868 that the route in the vicinity of the Great Salt Lake was officially determined and staked.

The Central Pacific was the first of the two companies to begin construction on the Pacific Railway as it broke ground almost a full a year ahead of the Union Pacific. Charles Crocker and Company were awarded the contract for construction of the first 18 miles of Central Pacific roadbed. The Central Pacific held its ground-breaking ceremonies in Sacramento on January 8,

1863. Work began on the construction of the road by February, 1863, and by the summer of 1864 construction crews had completed 31 miles of operating railroad. As of November, 1866, approximately 94 miles of railroad had been opened for use and grading was underway on an additional 50 miles.

The story of the Union Pacific and its survey efforts is fairly similar. In addition to the federally sponsored Pacific Railroad surveys of 1853, private railroad companies, such as the Mississippi & Missouri (M&M) Railroad, began that same year directing surveys that would eventually extend to the Rocky Mountains. The surveyors included the company's Chief Engineer, Peter Dey, and a promising young engineer, Grenville Dodge, as his field assistant. After reaching the Missouri River, Dodge was sent to continue the line west of Omaha. The survey efforts were continued west to the Platte Valley. In 1859 Dodge returned to the Platte Valley and prepared a reconnaissance of the area with the idea of developing a transcontinental route – the Pacific Railroad – through the valley and continuing westward. By the fall of 1863 additional surveys had been conducted for a possible route west. Four different routes to the north bend of the Platte had been examined, reconnaissances completed for Bridger and Cheyenne passes, and the area between Fort Bridger and Provo, Utah surveyed. While the newly established railroad company – the Union Pacific – was being chartered and working to establish its board of directors, four parties of engineers were busy re-establishing the earlier surveys for a route to California.

Despite all of these early survey efforts, the alignment for the final route was constantly being manipulated in the field. In some instances, the disagreements over the locations of the routes and who was authorized to establish them resulted in undermining the stability and overall operations of the company. As with the Central Pacific, the Union Pacific crews did not confirm the route through the Salt Lake area until late summer of 1868. These continual changes in the alignment kept the engineers and surveyors just barely ahead of the graders along a good portion of the route.

Work on the Union Pacific line began with a groundbreaking ceremony on December 2, 1863, held on the Missouri River bluffs about two miles north of Omaha. Measurable progress both in grading and line construction, however, was delayed, until mid-1865. On October 6, 1865, the locomotive *General William Sherman* made its first run – a 24-mile round trip to the end-of-track from Omaha, with General William T. Sherman as guest of honor accompanied by Union Pacific Vice-President Thomas Durant and a host of Omaha citizens (Best 1969a:92; McCague 1964:98).

By August of 1866 the Union Pacific crews were 200 miles west of Omaha, and in late November of that year the Casement construction-train, led by General Jack Casement and his brother Dan, wintered over at the junction of the North and South Platte rivers where the first "hell-on-wheels" town – North Platte – was founded. Quickly built at the end of the track as it progressed westward, these towns attracted the seamier side of business: saloons, gambling dens, and houses of prostitution. Although North Platte proved to be an exception, most of these towns disappeared as fast as they arose when the construction crews moved on to the next end-of-track location. George Pine, who adventured across the continent on the train soon after the Pacific Railroad was built, described the establishment of these camp towns this way:

> When a place was selected for a new terminus sixty or eighty miles ahead, the gamblers, the desperadoes, the State Prison graduates, and the most profligate men and women congregate, lay out the tent city, open their rum shops, gambling houses and hell-houses. Eighteen thousand men receiving four dollars a day and board, money was abundant, and this traveling "Hell," as it was called, obtained more than their share of the profits on construction (1871:343-344).

While the Central Pacific's most difficult challenge – the crossing of the Sierra Nevada Mountains – was encountered almost immediately upon beginning work on the transcontinental road, the Union Pacific crews had relatively easy-going until they encountered attacks by hostile Sioux and Cheyenne in Nebraska. The Central Pacific faced unimaginable engineering obstacles in as short a distance as approximately 31 miles out of Sacramento where the work required building trestles, making cuts and fills, snaking grades and constructing a total of 15 tunnels through the solid granite of the Sierra – all of this during a stretch of unusually harsh winters that plagued construction efforts and that exacted the heaviest price of all – human lives.

In the fall of 1865 and into the spring of 1866, the Central Pacific workers met their first daunting obstacle – Cape Horn. The only way around this nearly perpendicular granite buttress involved cutting a ledge into the rock wall. Chinese laborers were lowered in baskets from which they dropped charges of gunpowder and then chiseled first a foot-hold, then a space large enough for a wheelbarrow, then one wide enough finally to lay a track (Chinn 1969:43-48). Over the course of the next two years, through mid-1868, the Central Pacific workers fought to win against the fierce Sierra. Loss of life was great – workers died when they were blown to bits in explosions or buried alive in snow. Still, the Chinese workers, joined by Cornish miners brought over from Virginia City, persevered. Blasting of the nearly 1700-foot Summit Tunnel alone took nearly a year. Finally, after building the necessary tunnels through 60 miles of mountains and constructing some 40 miles of snowsheds over the right of way so that trains could run with minimal delay through the snowy winters, the Central Pacific line broke through to western Nevada, arriving in Reno in June of 1868.

For most of the time that the Central Pacific labored in the Sierra, the Union Pacific had moved forward at a pace of nearly a mile a day. Then, as the Union Pacific approached the Rockies, the tide shifted, and it was the Union Pacific's turn to struggle with constructing tunnels and erecting trestles in order to deal with the rocky terrain in Wyoming and Utah. Once the Central Pacific workers had succeeded in laying track to Reno, the race to meet their rivals acquired a new urgency. Now able to more easily measure their progress, they quickly matched or exceeded the mile-a-day rate. Both companies were spurred to be the first to reach the Salt Lake valley in order to control the potentially lucrative trade there. The race, in fact, was on in earnest. As Nevada Senator William Stewart explained to his colleagues in the Senate as they considered how to direct the two lines to a meeting point:

> When the Central road crossed the Sierra Nevadas, then of course, a race commenced, as was perfectly natural. It would have been very strange after the Central Company had stayed in the mountains as long as they did, and had seen the Union Pacific Company in the plain and that they were likely to have much obstruction, if they had not imitated the example to some extent of the Union Pacific Company. They did so, and entered into the race. The race has been a lively one [Stewart 1869:534].

While beneficial in some respects, the race also engendered wasted labor and materials as both companies sent surveying and grading crews past a possible point of junction. Each line hoped that theirs would be the official track for the transcontinental railway, meaning that they would thus receive the accompanying land grants and subsidies for this portion of the line. Finally, seeking to protect the public interest, the federal government had to intervene, insisting that the duplicative efforts stop and that the rails join together in one continuous line. The parallel grading that is still today visible at Promontory Summit testifies to the long-lasting effects of this race to complete the road. As little else could, the physical evidence exemplifies the archly competitive nature of the first transcontinental railroad's construction.

Central Pacific and Union Pacific Labor Forces

Hiring a sufficient labor force posed a serious problem for the Central Pacific as most men could easily earn higher wages by working the relatively nearby mines. When the company did manage to assemble the necessary crews, company officials were always in fear of the men going on strike in an effort to obtain yet higher wages. Utley notes that in an effort to break a strike, Charles Crocker sent for some Chinese workers. Pleased with how hard they worked and the quality of their workmanship, the Big Four were soon sending ships to China for recruits. By 1865 there were 7,000 Chinese employed in construction of the Pacific Railroad. By 1868, this number had grown to 11,000 (Utley 1960:25). Leland Stanford described the Chinese workers as "quiet, peaceable, industrious, economical – ready and apt to learn all the different kinds of work required in railroad building" (Saxton 1966:144).

The Chinese were organized in work groups or gangs of about 12 to 20 each. Each group had a head man, usually someone with a fairly strong command of English, who at the end of each work day negotiated with a foreman to record how much time the gang had worked; this head man then kept track of how the time broke down per worker to ensure that each was correctly paid. He was also responsible for buying provisions for the gang because the Chinese workers, unlike other laborers on both lines, were expected to pay for their own food out of their wages.

Each gang also had its own cook who prepared meals and kept water hot so that each worker could wash off the day's labor with a hot sponge bath at the end of the day. The evening meal differed greatly from those of the other Central Pacific laborers and from those of the Union Pacific workers who basically stuck to meat, beans, potatoes and bread. In contrast, the Chinese feasted on dried oysters, dried abalone and other dried fish, dried bamboo shoots, salted cabbage, dried mushrooms, vermicelli, dried seaweed, dried fruit, rice, pork and poultry. The Chinese drank tea, which – because the water had been boiled – had the distinct advantage of preventing the intestinal distress that other workers suffered when they drank cold water of varying degrees of purity (Chinn 1969:43-48).

Also in stark contrast to Union Pacific workers, the Chinese did not drink any alcoholic beverages. Thus, the Central Pacific never had to contend with any "blue Mondays" on their account. Neither Central Pacific's superintendent of construction, James Strobridge, nor Leland Stanford would abide drinking in the Central Pacific construction camps. Strobridge in fact would routinely send someone to destroy the tent of anyone who had set up shop to sell whiskey along the Central Pacific construction line (Anderson 1974:17-18; Galloway 1950:162). Workers on the Union Pacific, on the other hand, were notorious for their consumption of alcohol. As

Bernice Gibbs Anderson succinctly put it, the "Union Pacific was built on whiskey" (Anderson 1974:18).

The Central Pacific work week was six days long; the workday stretched from sunrise to sunset. As the race approached Promontory, the workers even continued working past sundown, working by the light created by burning sagebrush. Initially the Chinese workers' wage was set at one dollar per day, or $26 a month. Later this was increased to $35 per month. After subtracting expenses, most or them netted between $20 and $30 for each month of work. On Sunday, the Chinese laborers typically washed and mended their blue smocks and other clothes. For living quarters, the Central Pacific issued low cloth tents but many Chinese preferred instead to live in dugouts (Chinn 1969:43-48; Kraus 1969a:53-54) [Figure 2]. The Chinese largely kept to themselves, apart from the other Central Pacific employees. These included Irish and Cornish workers, in addition to Paiute and Washo Indians who were employed to build the line in Nevada (Kraus 1969a:51-52).

Figure 2. Chinese construction camp at end-of-track, eastbound construction train just west of Powder Bluff, Nevada. *Source*: Alfred Hart photo No. 327, 1868-69, Union Pacific Railroad Archives, Omaha Nebraska.

The Caucasian workers on the Central Pacific ate their meals at dining facilities on the camp train. This train provided living quarters for Strobridge and his wife, described by an *Alta California* correspondent as a "home that would not discredit San Francisco." It also included a store, a kitchen, sleeping quarters and a telegraph office (Kraus 1969b:216-217).

With the Union Pacific waiting until the close of the Civil War to actively begin work on the construction of the railroad, finding a ready and able labor pool was not a problem. Utley

(1960:25) notes that "veterans of the Union armies, mostly Irish immigrants, flocked to Omaha to enlist in Casement's grading and track gangs." In addition to Irish laborers, the Union Pacific hired Germans, Englishmen, American Indians, and a 300-man force of freed Blacks (McCague 1964:117).

The numbers of Union Pacific laborers grew from some 250 when construction out of Omaha began to roughly 10,000 near Promontory. Only about one fourth of the total worked as track-layers. Other positions included bakers, cooks, herdsmen, blacksmiths, teamsters, carpenters, bridge-builders, masons and clerks. Averaging $3 a day, they earned more and worked fewer hours than their Chinese counterparts. Also in contrast to the Chinese, they tended to bathe if and when a stream was nearby (Combs 1986:630). Still attired in portions of their old Civil War uniforms, the Union Pacific workers were known for their hard-drinking and rowdy ways.

Somewhat similar to the Central Pacific's camp train, at the end of the UP track, four "house cars" – each twice the length of a regular boxcar, formed the camp's headquarters. One car served as kitchen and dining room. Another functioned completely as a large dining hall. A third was divided in half, providing both dining and sleeping facilities while the fourth was wholly used for sleeping in 3-tiered bunk beds on both sides of the car. The camp literally functioned as a "town on wheels" (McCague 1964:118). Other boxcars contained all sorts of supplies. The end-of-track camp train also carried a car for storing beef as cattle were butchered from among the herd of some 500 that followed the train. Two cars together served as a bakery while another carried grain for the horses and mules. The camps for the graders were much simpler, less accommodating affairs: these workers either built dugouts or lived in tents that were pitched closely together in orderly rows both for convenience and as protection against hostile Indian attacks. If the camp were a big one, a temporary shack was sometimes built to provide space for an office, kitchen and storage. Like the work day on the Central Pacific, work for graders, track-layers, and everyone else began at dawn and concluded at sunset (McCague 1964:118-120).

The editor of the Baltimore *American* described the Union Pacific work force by noting its semi-military system of organization:

> Nine out of every ten men who are now working on the line of this railroad have been in the army, and from there have brought the habits of discipline, the temper of hardy reliance and the love of an adventurous open air life which has made them the best railroad builders in the world. One can see all along the line of the now completed road the evidences of ingenious self-protection and defence (sic) which our men learned during the war. The same curious huts and underground dwellings which were a common sight along our army lines then, may now be seen burrowed into the sides of hills or built up with ready adaptability in sheltered spots. The whole organization of the force engaged in the construction of the road is, in fact, semi-military. The men who go ahead, locating the road, are the advanced guard. Following these is the second line, cutting through the gorges, grading the road and building bridges. Then comes the main line of the army, placing the sleepers, laying the track, spiking down the rails, perfecting the alignment, ballasting the rail, and dressing up and completing the road for immediate use [Union Pacific 1868:8-9].

Nearly a century later, railroad historian James McCague also likened the Union Pacific's work crews to an army: "Like an army in itself – hard-bitten, sinewy, honed to rawhide resilience, profane, brawling, alcoholic and altogether unstoppable – the work force moved

westward....In a very real sense, in fact, these Union Pacific men *were* an army, with Major General Grenville Dodge at the top and the likes of Brigadier General Jack Casement for corps commanders." More than this, however, the work gangs were welded together "with the glue of military training and *elan*. The five-year War Between the States had left in these men a sturdy sense of organization and discipline, and leaders like Dodge and Casement knew how to use it to the fullest" (McCague 1964:126, emphasis in original).

Construction Methods and Specifications

The proposed route for the new railroad passed through nearly 1,800 miles of land claimed primarily by the federal government and by various American Indian tribes. Most of this land was still in the public domain, and the government addressed its proposed uses in the development of a set of specifications that were defined in Section 2 of the Railway Act of 1862. In these specifications, Congress "granted the right of way and the privilege of taking materials from the public lands for the construction of the road and of the telegraph line; also in alternate sections, on each side of the road, twelve thousand eight hundred acres of land per mile" (The Union Pacific Railroad from Omaha Nebraska across the Continent – Its Construction, Resources, Earnings, and Prospects 1867:1). From the sale of these lands, the railroads could also further finance their construction and encourage settlement of the West.

Numerous contracts were awarded to a variety of individuals as well as to established construction companies in order to furnish the supplies needed to keep the crews working along the line. The majority of the supplies were hauled from the east or west coast by rail and then transported to the staging areas and supply camps by wagon train. The need for crews to have a continuous supply of railroad ties and poles for the telegraph line seemed to be one of the most critical factors because work could proceed no further once these supplies were no longer available to the work crews.

The quality and overall durability of the construction of the railroad was a concern of many from the outset. In response to requests from professionals as well as from the general public, Congress appointed a special commission to solicit input from the professional community regarding the development of construction specifications for the Pacific Railroad project. These specifications were presented in a report, dated February 24, 1866 and entitled *Report of Board Convened to Determine on a Standard for Construction of the Pacific Railroad*. The report described the specifications that were required for the various elements of construction. One of the problems with the government's system of checks and balances regarding review, and approval, of the 20-mile sections of railroad was that the specifications did not have to be met prior to government approval. As explained in the report:

> . . . the board have endeavored to make such a standard as will secure a good track without retarding the progress, and advise that every step of the work be made with a view to ultimate perfection. Thus, while the board deem it essential that the work shall be thoroughly ballasted, and all the bridges provided with masonry piers and abutments, yet, knowing that the high embankments will require some time to settle before the track is finally adjusted, and that in many cases, both ballast and stone for masonry must be brought by rail, they have thought best not to make the acceptance of any section contingent on the completion of its masonry and ballasting, but prefer that such parts of the road be accepted in case this work shall have been commenced and is progressing vigorously on the preceding sections [*Report of Board Convened to Determine on a*

Standard for Construction of the Pacific Railroad...February 24, 1866 (Construction Report, 1866):3].

Specific aspects of construction are stipulated in this report. Regarding embankments and excavations, it provided that:

> In all parts of the main line of road or branches, embankments should not be less than fourteen feet wide at the grade line. Excavations, if the cuts are lengthy, should be twenty-six feet wide, and in shorter cuts, at least twenty-four feet; thus leaving in all cases room for continuous side ditches of ample depth and width, so as to secure that most essential requisite, a well-drained road-bed. Rock excavations should not be less than sixteen feet wide, and all tunnels should be excavated for a double track. Slopes of earth embankments should be one and a half base to one rise [Construction Report, 1866:11].

With respect to mechanical structures, the report advised that:

> Culverts and abutments for bridges and drains should be of stone, whenever a durable article can be obtained within a reasonable distance – say from five to eight miles, depending upon circumstances; provided that temporary trestles may be adopted upon assurances, to the satisfaction of the commissioners, that stone abutments will be substituted immediately after the line shall be opened, so that stone can be transported thereon. But if good stone be too remote, then hard-burned brick or wooden trestle work may be adopted. The wood to be of the most durable character the country will afford; and the wood or brick to be replaced by stone when that material can be conveyed conveniently by rail. Bridges of stone, or iron or wood, (such as the Howe truss, or other equally good structure,) should be used at the discretion of the company [Construction Report, 1866:11].

Regarding ballasting, it explained that:

> A railroad cannot be considered complete until it is well ballasted. If composed of gravel or broken stone it should be from 12 to 24 inches thick, depending on the lower material. In view of the settling of new embankments, which require time and rains before ballasting can be properly placed, and also in view of the number of miles required by the law to be constructed annually, the perfect finish of the road-bed in this respect must be progressive and the work of time. Yet it is the opinion of the board that such work of perfecting the ballast must proceed as usual on first-class railroads; otherwise subsequent sections should not be accepted, because the whole work is not then being carried forward as a great Pacific railroad, such as the law contemplates [Construction Report, 1866:11].

The report additionally addressed specific features of cross-ties:

> Oak or other suitable timber should be used, where it can be obtained with reasonable transportation. When such timber cannot be had for all the ties at reasonable cost, then the best the country affords may be adopted; but if it be cottonwood, or similar soft material, it must be Burnettized or kyanized thoroughly so as to increase its durability. But in all cases the joint tie should be of oak or other suitable timber, the better to hold the spikes at these points. There should be at least 2,400 ties to the mile. They should be

eight feet long, six inches thick, and if hewn, six inches on the face [Construction Report, 1866:11-12].

Concerning sidings, the report continued:

> The length of side-tracks should be at least six per cent of the line completed, to be increased as the number of passing trains shall demand. Side tracks should also be laid eight feet apart in the clear between the rails [Construction Report, 1866:12].

As the track advanced so too did the telegraph line. The *Evening Bulletin* of San Francisco explained the process of building the telegraph line in conjunction with the railroad: "Keeping pace with the track layers was the telegraph construction party, hauling out, and hanging, and insulating the wire, and when the train of offices and houses stood still, connection was made with the operator's office, and business of the road transacted" (Ketterson and Utley 1969:40-41).

A balance in the rhythm of the different work crews was essential to maintain the pace of construction as each crew was dependent on several others. Starting at sunrise, the camp train would send a signal to the supply train, which often pulled as many as 30 cars loaded with materials and supplies. The supply train would move down the track delivering the ties, rails, spikes, bolts, telegraph poles, wire, and other essential supplies for the laborers.

A reporter for the *Alta California* depicted the process of the Central Pacific work force as construction of the rail proceeded eastward:

> The rails, ties and other material are thrown off the train as near to the end of the track as feasible, and then the empty train is drawn back out of the way. At this point the rails are loaded on low flat cars, and hauled by horses to the end of the track. The ties are handled in the same way.
>
> Behind comes the rail gang, who take the rails from the flat cars and lay them on the ties. While they are doing this a man on each side distributes spikes, two to each tie; another distributes splice bars; and a third the bolts and nuts by which the ends of the rails are spliced together. Then comes the spikers, two on each side, to pin the rails to the ties. Two or more men follow to adjust and bolt the splice bars.
>
> As fast as a flat car is unloaded it is turned on its side to allow the loaded cars to pass it. It is then returned to the rails and sent back for another load.
>
> All this time wagons are distributing telegraph poles along the grade. Cross arms are nailed onto them. Another gang working under a foreman of telegraph construction digs the holes for the poles and a third gang erects the poles. It is the aim of this third gang to keep pace with the rail gang. At times lack of wagons make[s] it impossible to keep up the supply of poles and the telegraph gangs, who pride themselves on never letting the track get ahead of them, utilize sage brush, barrels, ties – surreptitiously taken from the track – or anything else that would keep the wire off the ground until the supply of poles again equal[s] the demand.
>
> Then comes a wagon bearing a reel of wire which unrolls as the wagon goes ahead. As the wire uncoils, it is carried up on the poles and made fast to the insulators.
>
> Back of the track builders follows a gang with the seven or more ties necessary to complete the foundation for each rail. These are put into position and spiked by another

> gang, which also level up the track and leave it ready for the ballasters [*Alta California*, Nov. 9, 1868, quoted in Kraus 1969b:220-221].

At day's end, the camp train moved to the end of the track, workers hungrily ate their supper, and a wire was sent to notify Sacramento of the number of completed miles of track.

Eastern reporters traveled west to cover the progress of the Union Pacific Railroad. One from the New York *Tribune* observed that "the astonishing rapidity with which this railroad has been built has become the subject of general wonder throughout the country. Nothing like it has been seen before." Vouching for the quality of construction, this reporter noted further that approximately 2,650 ties were laid to the mile and that the steel rails were joined by fishplates (metal plates that held abutting rails in alignment) to make a "continuous rail." The *Tribune* reporter also stated that water courses were "spanned by substantial Howe truss bridges or by culverts of timber," which were to be "at once replaced by solid masonry" and the road bed was "ballasted with broken stone and disintegrated granite," which was brought from the Black Hills. Having traveled from Cheyenne to Omaha, the reporter clocked the train at averaging just over 34 miles per hour and found the road to be "remarkably smooth." (Union Pacific 1868:11).

A reporter from Philadelphia captured the rhythm of the Union Pacific track-laying teams:

> Track-laying on the Union Pacific is a science, and we, pundits of the Far East, stood upon that embankment, only about a thousand miles this side of sunset, and backed westward before that hurrying corps of sturdy operatives with a mingled feeling of amusement, curiosity, and profound respect. . . . It is an Anvil Chorus that those sturdy sledges are playing across the plains. It is in triple time, three strokes to a spike. There are ten spikes to a rail, four hundred rails to a mile, eighteen hundred miles to San Francisco. That's the sum, what is the quotient? Twenty-one million times are those sledges to be swung – twenty-one million times are they to come down with their sharp punctuation, before the great work of modern America is complete! [Union Pacific 1868:9].

Development and Completion of the Transcontinental Railroad: 1868-1869

By spring of 1868, both companies had progressed to the point where they needed to determine the best route through northern Utah. The debate focused on whether a route north of the Great Salt Lake that bypassed Salt Lake City altogether was preferable to one that passed through the city and then went south of the lake. The race to complete the railroad and the competition for the greater federal subsidy was still proceeding in earnest: Central Pacific surveyors were locating a line as far east as Fort Bridger, Wyoming, while Union Pacific surveyors had already staked a line to the Nevada-California border. The decision concerning the best route around the Great Salt Lake would influence, in turn, where the two lines would finally meet.

The Union Pacific's initial surveys in the Utah area had been conducted as early as 1864 by Samuel Reed. The proposed route through Salt Lake City ran either south of the Great Salt Lake or across it, although crossing it was ultimately considered technologically unfeasible at this point in time (Galloway 1950:135; McCague 1964:288; Reeder 1970:23; Strack 1997:47). By 1867 the Central Pacific had covered the area in a survey conducted by Butler Ives; he apparently looked at routes to both the north and south of the lake, although the preferred route in his view was the northern one, which was less plagued by the mudflats and sinkholes that characterized the southern route (Bain 1999:364).

The Union Pacific's Chief Engineer Grenville Dodge, for his part, also ordered a survey of the area north of the lake. For several months the surveyors and engineers sought to find a route that would either pass around the lake or across it and avoid the steep climb over the Promontory Mountains. During the summer of 1868, Union Pacific surveyor F. C. Hodges was called into the field and

> dispatched to Promontory Point, on the west side of Bear River Bay, with instructions to explore the country thence westward to Humboldt Wells. His survey was commenced at Promontory Point on the 12th day of June [1868] and completed to the initial point of Bates and Reed, at Humboldt Wells, a distance of one hundred and ninety-eight miles on the seventeenth day of July [J. Blickensderfer, Jr., to G. M. Dodge, letter, Jan. 26, 1869, printed in Report of the Chief Engineer of the Union Pacific Railroad, February 11, 1870, 41st Congress, 2d session, House Executive Document 132:41 (Report of Chief Engineer)].

Another Union Pacific surveyor, James R. Maxwell, began a new line along the north side of Weber River through Ogden, around the north end of Bear River Bay, over the summit at Promontory, to finally connect with Hodges' line. Jacob Blickensderfer, who as engineer of the Utah Division, was in charge of locating the Union Pacific line west of Green River, explained that this line was almost the same as one that was first surveyed in 1867 by the Central Pacific surveyor, Butler Ives. It varied slightly from Ives' survey, especially on the west slope (Blickensderfer to Dodge, letter, Jan. 26, 1869, printed in Report of Chief Engineer 1870:41). Blickensderfer further explained:

> Having by the end of July completed the location between Green River and Salt Lake Valley, and obtained a connected preliminary line from mouth of Weber Canon to

> Humboldt Wells, all the forces at my disposal were concentrated on the location of this line. The forces consisted of the parties under Messrs. Morris, Hudnutt, Maxwell, Hodges, and McCabe [Blickensderfer to Dodge, letter, Jan. 26, 1869, printed in Report of the Chief Engineer 1870:41].

With specific respect to delineating the line on the east slope of the Promontory range, Blickensderfer informed General Dodge that

> On our way westward two lines had been traced on the east slope of Promontory, one at a grade of ninety feet per mile, and the other at a grade of eighty feet per mile. These lines were so nearly balanced in cost and commercial value, that it was difficult to decide which was preferable, but it was thought that the ninety-feet grade line was the better. On returning eastward Colonel Hudnutt reviewed the eighty-feet grade line, and came to the conclusion that it was superior to the ninety-feet grade line, in which view, on examination, I concurred [Blickensderfer to Dodge, Jan. 26, 1869, printed in Report of the Chief Engineer:42].

Another Union Pacific engineer, Theodore B. Morris, had the job of finishing the surveys and examinations at Promontory. After re-examining both lines and making an extended system of surveys, Morris showed "conclusively" and persuaded Blickensderfer "that the eighty-feet grade line on the eastern slope of this range was not only better than the ninety-feet grade line, but superior to any other over this summit" [Blickensderfer to Dodge, letter, Jan. 26, 1869, printed in Report of the Chief Engineer:42).

Assessing the survey efforts and selection of the line for the Union Pacific Railroad, Blickensderfer wished that the work had been better coordinated and less hurried:

> In reviewing the season's operations, a feeling of regret occasionally arises that the allotted time within which it became necessary to determine questions of moment in the location of the road was often so short as to preclude the entire, complete, and minute determination of all the facts bearing on the subject which would have been desirable. . . Had the country between Green River and Humboldt Wells been carefully examined in 1867, and the results of such an examination been available when the operations of 1868 were commenced, the labor would have been greatly diminished. As it was, less than half the distance had never been examined by your company, and the lines which had been run were in most cases so meager as to afford little or no assistance. We were obliged to trace our own preliminaries, correct our own first efforts, and fix a final as best we could, from our own results, oftentimes in valleys overflowed for miles in length, in a barren country without inhabitants, with no means of crossing the streams, and with limited opportunities for returning to correct or readjust our work. Under such circumstances we located a line of more than four hundred miles in length, on more than half of which we had no previous survey of any kind to guide us, within less than four month's time; and while I am sure that no radical error exists, it is nevertheless quite probable that in the details of the work improvements could have been effected had more time been at our command [Blickensderfer to Dodge, Jan. 26, 1869, printed in Report of the Chief Engineer:42-43].

On June 10, 1868, the route that led from Echo Canyon over the Promontory range was staked and ready for grading. Between October and mid-December, the Union Pacific had succeeded in laying track to within 37 miles from the mouth of Echo Canyon. Because tunnel

construction in Weber Canyon would proceed slowly, the Union Pacific decided to build a temporary track around the canyon so that the time spent building the tunnels would not impede construction farther to the west. By year's end, in addition to construction of the grade to Promontory, work remaining on the Union Pacific line included finishing tunnels, building bridges and grading in Echo and Weber canyons (Reeder 1970:41-42).

Needing to augment the labor force to make the final push to Great Salt Lake, especially in order to complete the grading work, the Union Pacific had negotiated a contract with Mormon President Brigham Young on May 21, 1868. The contract for more than $2 million provided that Mormon crews would do grading for a distance of from 50 to 90 miles; the discrepancy reflected the lingering possibility at the time that the southern route through Salt Lake City might be chosen. The work also involved bridge and trestle work in addition to the building of two tunnels, 300 and 500 feet in length. Young subcontracted the work to three of his sons and to Bishop John Sharp. In the span between June, 1868, and May, 1869, some 5,000 Mormons helped to build the Union Pacific road (Athearn 1969:18-19; Reeder 1970:30-33).

By early fall, 1868, General Dodge had determined that the northern route, even though it bypassed Salt Lake City, was far more advantageous than the southern. The Secretary of the Interior subsequently approved the northern route because of its more favorable alignments and grades, in addition to the greater availability of both wood and water along the northern route (Galloway 1950:131; Reeder 1970:40). Brigham Young and the residents of Salt Lake City were understandably disappointed over the Union Pacific's decision to bypass their city. This decision would require Young and his followers to later build a branch line to Salt Lake City in order to make connections with the primary transcontinental rail line. Although he had promised his full support to the Union Pacific and agreed to accept no contracts from the Central Pacific, Young referred the Central Pacific officials to several Mormon bishops when they inquired as to additional work forces needed by the company as contract labor. Young's referral to the Central Pacific came only a few weeks after the northern route was recommended and approved by the Chief Engineer of the Union Pacific. According to Dodge, Young had told Stanford that "he would not take any work from him himself, but would recommend him to proper persons to take it." Frustrated by Young's actions, Dodge quipped, "perhaps you can see the difference 'tween tweedle dum an' tweedle dee but I cannot" (Dodge to Oliver Ames, letter, Sept. 4, 1868, Grenville Dodge Collection, Council Bluffs Public Library, Council Bluffs, Iowa).

Mormon construction camps reflected the religious zeal of the crews. Twice daily, workers and their families assembled for prayers and on Sundays they attended religious services. The camps, located as near as possible to their work sites, were orderly and quiet. Neither swearing nor drunkenness characterized their construction camps (Arrington 1969:10; Pine 1871:345-346; Reeder 1970:33-35). In Echo Canyon, some 45 of these camps were temporarily established, each associated with a particular ward or Mormon community. Figure 3 is believed to be a photograph of a Mormon campsite in Echo Canyon taken in 1868. At day's end, the Mormons often found time for playing games and for singing as they gathered around campfires, singing such choruses as:

> Hurrah! Hurrah! For the railroad's begun!
> Three cheers for our contractor, his name's Brigham Young!
> Hurrah! Hurrah! we're honest and true,
> For if we stick to it's bound to go through [Reeder 1970:36].

(Kraus 1969b:237-237). Describing the terrain at Promontory, Dodge pondered the level of effort it would take to build a railroad there:

> Promontory Point,[1] the most difficult summit to make, and where the most intricate line, the heaviest work, the highest grades, and the sharpest curves occur, is a bold backbone running north and south, terminating at its southerly point, between Bear River and Spring Bays of Great Salt Lake, and for a distance of thirty miles dividing the waters of Great Salt Lake and forming these bays, and on the north joining the rim of basin between Blue Springs and Pilot Springs stage stations. The ridge is six hundred feet high, with scarcely four miles of direct ascent from the east, and twelve of descent on the west, devoid of natural ravine or water course. To approach the summit the line has to overcome the elevation by clinging to the rough sides of the ridge, and gaining distance by running up Blue Spring Creek Valley, and winding back again on its opposite side. . . . The six miles of line on the east slope of the mountain has heavy work and a few 6° curves as a maximum, and is by far the most difficult portion of the line west of Weber Canon [Report of the Chief Engineer 1870:9-10].

The Salt Lake City *Daily Reporter* expected that by the end of March, 1869, the Union Pacific would have 2000 workers building the railroad in the Promontory area (Kraus 1969b:236). In contrast, Central Pacific workers – some 300 to 400 of them – had been at work opening rock cuts on the east slope since early February (Theodore Morris to Grenville Dodge, Feb. 8 and Feb. 16, 1869, GOSP File 104-GMO, GOSP Research Files, Golden Spike National Historic Site). End-of-track construction for both companies simultaneously advanced: by April 6, working at a feverish pace, the Central Pacific track-layers had built track to a point 38 miles west of Monument Point (Silas Seymour to Grenville Dodge, April 6, 1869, GOSP File 104-GMO). Two days later, on April 8, the end of the Union Pacific's track reached Corinne (McCague 1964:286; Reeder 1970:42-44).

Parallel grading work also continued to proceed. Stanford thought that by "crossing us and at unequal grades," that the Union Pacific intended to deny the Central Pacific's right-of-way and to "claim it for themselves and that we must not get on it." On March 1, 1869, in its last days in office, a waning Johnson administration decided to release bonds to the Central Pacific for advance work all the way to Ogden – a decision that Central Pacific officials kept secret for as long as possible. Stanford strongly believed that "if it were known that we had the bonds for unfinished work that the UP would call off their graders." He noted further that the Union Pacific had "changed their line so as to cross us five times with unequal grades between Bear River and the Promontory" (Bain 1999:612-613; Kraus 1969b:237). In a March 13, 1869 telegram to Huntington, Stanford explained that the Union Pacific's grade varied as much as 50 to 80 feet from that of the Central Pacific (Bain 1999:618). For his part, Stanford planned not "to finish up our line, but keep men scattered along it until our track is close upon them." He reasoned that by doing so the Union Pacific would not "attempt to jump our line while it is unfinished and we are working it"(Stanford to Hopkins, March 14, 1869, in Kraus 1969b:237).

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[1] "Promontory Point" was another name that was occasionally then used for Promontory Summit. It should not be confused with Promontory Point on the Great Salt Lake. Another point of possible confusion stems from current local residents referring to the entire peninsula of land that juts southward into the Great Salt Lake as "the Promontory" or simply "Promontory".

It is quite possible that when the UP and CP grading crews, moving respectively west and east, began building parallel grades in the spring of 1869, many of the crews were composed of Mormons working for the Mormon firms that had contracted with the rival companies (Bain 1999:658). Another story – perhaps apocryphal – contends that when the predominately Irish Union Pacific graders met the Central Pacific's Chinese grading crews, they strategically placed blasting powder to explode right when the Chinese workers approached, killing and maiming them horrifically. In retaliation, the story continues, the Chinese then laid their own "grave" for their UP counterparts, inflicting similar damage (McCague 1964:294-295).[2] The price of the competition may have thus exceeded the combined costs of physical exhaustion, duplicated efforts and sometimes shoddy construction.

By early April, the need to determine a final connecting point was growing more and more obvious. Union Pacific's Silas Seymour wired railway operations superintendent Webster Snyder to inform him that by April 5 their track-layers had reached a point one mile east of Bear River and that grading was complete from there to the east base of Promontory. Seymour urged the necessity of laying 20 more miles of track quickly so that timber for the UP's large trestle on the east slope of the summit could be delivered. Seymour still hoped that the Union Pacific graders could finish their work over Promontory within a month and that the junction of the two lines would be at Monument Point to the west of the summit. "All this must be done within 30 days," he wrote to Snyder, "or we are whipped by Central for possession of Monument Point" (Seymour to Snyder, April 5, 1869, GOSP File 104-GMO, GOSP Research Files, Golden Spike National Historic Site). As the Senate took up this question, Ohio Senator John Sherman put it this way: "We all know that there is a dispute between the companies as to which shall build the road between Ogden and Monument Point"(1869:495).

Establishing the Point of Junction

In early 1867, Interior Secretary O. H. Browning responded to an inquiry from the House of Representatives regarding the relationship between the junction of the two lines and the amount of bonds to be issued to either company. In reply, Browning stated: "Since the locations of the different roads have not been definitely determined throughout their whole extent, the above estimate must be regarded only as near an approximation as it is possible at the present date to furnish. The point of junction of the Union Pacific and Central Pacific has been assumed to be 78.295 miles east of Salt Lake City or at a point which will entitle each of these companies to the same amount of bonds" (quoted in Railroad Across the Continent 1868:11).

Despite the apparently official nature of Browning's pronouncement, it did little to clarify the meeting point since neither company was interested in an equal amount of bonds and there was simply no legal standing for a 78.295-mile point (McCague 1964:297). The 1866 amendatory legislation, as previously noted, because of the clause that allowed each railroad company to work 300 miles in advance of its completed tracks, confounded the problem of determining a precise junction even further. Trying to resolve the issue, government and railroad officials alike

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[2] James McCague explains that the only explicit reference he ever found to this story was in Grenville Dodge's *How We Built the Union Pacific Railroad*, written many years later. McCague notes, however, that *Harper's Weekly* included a contemporaneous illustrated drawing of one of these explosions. On the contrary, Bain finds no contemporaneous support for the stories of violence (1999:658).

generally concluded that the "meeting point of the two parts of the main line ... will be somewhere in the vicinity of Salt Lake" (Railroad Across the Continent 1868:11).

Adding to the confusion, however, was Secretary Browning's subsequent October 20, 1868 approval of a map submitted by the Central Pacific indicating that the company intended to complete its rail line all the way to the mouth of Echo Canyon. Browning, in turn, wrote to Union Pacific President Oliver Ames, directing him to "cause the Union Pacific railroad as already located to that point [Echo summit], so as to unite and form a continuous line with the Central Pacific Railroad." Less than a month later, on January 6, 1869, Browning repeated these instructions (printed in *Congressional Globe* [CG], April 5, 1869, p. 496). Had this provision held sway, Golden Spike National Historic Site might now be located farther east at Echo Summit. But, as Michigan Senator Jacob Howard acknowledged when these letters were read on the Senate floor:

> In spite of this, however, it seems that the Union Pacific Railroad Company has passed Echo summit, has thought fit to diverge its line north of the line thus approved by the Secretary of the Interior, and that line runs within one or three miles at various spots of the approved line, the two routes thus passing each other, and leaving a question as to the legal right of the parties, one which is to be settled either by the courts or by an act of Congress [CG, April 5, 1869:496].

Early in March, 1869, newly elected President Ulysses Grant summoned Grenville Dodge to the White House in order to tell him that if the railroads themselves could not quickly agree on a point of junction, then Congress would do it for them. Soon thereafter, Dodge met Central Pacific's chief engineer, Samuel Montague, to discuss the problem. The two engineers agreed to meet at Promontory Summit, a decision that outraged Union Pacific President Ames because the UP had already sold bonds based on completing the line farther to the west (Ames 1969:316).

In April of 1869, the Senate began debating a joint resolution sent over from the House that sought to specify a connecting point for the two rail lines. Senator Sherman acknowledged that this point had previously been "left undetermined in order to induce each road to hasten the completion of its end." Continuing, Sherman explained that the need to "fix the point of junction ... grows out of the fact that these two rival lines are pushing their work, one westward and the other eastward, and they have already crossed each other in the grading of the road." Sherman moreover contended that both railroad companies were doing so in order to claim greater subsidies from the government (CG, April 5, 1869:496). The race essentially had worked too well, and now the situation required the federal government to quickly raise the checkered flag.

In the Senate, debate initially focused on the right of either line to build to a certain point. Then on April 9, Senator Howard explained that since the joint resolution had been under consideration, the Union Pacific and the Central Pacific had reached their own agreement about the connecting point. "It seems that the discussions in this body have suggested to those parties the necessity of coming to an agreement among themselves," observed Howard. The Michigan senator then offered a substitute amendment to the joint resolution that reflected the companies' decision:

> The common terminus of the Union Pacific and Central Pacific railroads shall be at or near Ogden; and the Central Pacific Railroad Company shall pay for and own the

> railroad from the terminus aforesaid to Promontory summit, at which point the rails shall meet and connect and form one continuous line [CG, April 9, 1869:667-668].

That same day, Collis P. Huntington of the Central Pacific had met with Dodge and two Union Pacific stockholders, Samuel Hopper and Rowland Hazard, in Washington, D.C. to reach the agreement about connecting at Promontory. Reputedly, Huntington made the first move by offering to purchase the Union Pacific track between Promontory and Ogden. Should the Union Pacific decline these terms, Huntington stressed that the Central Pacific would lay its track to Ogden anyway (Ames 1969:317; Athearn 1969:28). The portion of the agreement that was pertinent to Promontory read:

> The Union Pacific company shall complete the track to the summit of Promontory Point [Summit] to which the Central shall build from the west, and the Central Pacific company shall pay to the Union the cost of the road without rolling stock from the terminus near Ogden as aforesaid to said Promontory Point, and shall pay to the Union one half the cost of the grading by the Union between the summit of Promontory and Monument Point done at this date [Ames 1969:317].

With respect to the federal subsidy, by buying the Union Pacific line from the terminus at Ogden to Promontory Summit, the Central Pacific would receive the bonds and land grants associated with that mileage (Ames 1969:317). Congress affirmed the companies' agreement by passing Joint Resolution 16. On April 10, 1869, the measure became law, thereby ensuring that the meeting point of the two lines would be Promontory Summit – a place "star-touched by the luck of geographic location and Congressional resolution" (McCague 1964:308; see also 16 *Stat.*, 56).

Completing Construction at Promontory Summit: April-May 1869

On April 11, 1869, in response to the decision to join the rails at Promontory, the Union Pacific ordered a halt to all grading work west of the summit. Just a few days later, on April 14, the Central Pacific similarly stopped all work on its line east of Blue Creek. Despite the decision that specified a meeting point, "competition had become a habit," as historian George Kraus noted. Each company still wanted to win the race by being the first to reach the summit (Kraus 1969b:244).

Two major construction features in the Promontory area – the Central Pacific's Big Fill and the Union Pacific's Big Trestle – were nearing completion by mid-April. Both crossed a deep gorge located roughly half way up the east slope. Leland Stanford of the Central Pacific had predicted that the Big Fill would require some 10,000 cubic yards of dirt to complete. Mormon workers, signed on with Benson, Farr and West, had been working on the Big Fill since February. Ultimately requiring the efforts of 500 men and 250 teams of horses, the Big Fill rose to a height of 170 feet when done (Kraus 1969b:244; Mann 1969:129). On April 14, 1869, as the job was almost finished, a Salt Lake City *Daily Telegraph* reporter noted the danger that accompanied this work:

> On either side of this immense fill the blasters are at work in the hardest of black lime-rock, opening cuts of from 20 to 30 feet depth. The proximity of the earth-work and blasting to each other, at these and other points along the Promontory line, requires the utmost care and vigilance on the part of all concerned, else serious if not fatal, consequences would be of frequent occurrence [Kraus 1969b:244].

Located about 150 feet east of, and parallel to, the Big Fill was the UP's Big Trestle. Over 400 feet long and more than 80 feet high, the trestle was then considered a temporary substitute for an earth fill to be constructed after the roads had met. Union Pacific trestle-builders under the direction of Leonard Eicholtz began work on the structure on March 28, even while Central Pacific crews continued to work on that line's Big Fill (Kraus 1969b:244-245).

By April 26, 1869, the Big Fill was completed and Central Pacific's track had reached a point some 16 miles west of Promontory. The Union Pacific workers, on the east side of summit, were still hurrying to finish the Big Trestle and also had smaller trestles and difficult rock cuts, including Carmichael's Cut and the Last Cut, yet to complete. Central Pacific's Charles Crocker had previously boasted that CP crews could lay 10 miles of track in one day. In response, Union Pacific Vice President Thomas Durant allegedly bet him $10,000 that they could not accomplish this feat. Crocker met the challenge, and at dawn on April 28, the Central Pacific track-layers went to work. Because of the short distance remaining to be covered until they both reached the meeting point – the UP end-of-track was already within 8 miles of the summit at that point – this meant that Union Pacific workers would not have a chance to best the Central Pacific record, should the CP crews prove successful (Best 1969a:46; Kraus 1969b:245; McCague 1964:304-305; Raymond and Fike 1981:19).

In 12 hours, the Central Pacific work gangs – Irish rail-handlers and Chinese support crews – laid 10 miles and 56 feet of track. Although the Central Pacific had identified a relief team, the original eight Irish rail-handlers – George Eliott, Edward Kelleen, Thomas Daley, Mike Shea, Mike Sullivan, Mike Kennedy, Fred McNamara, and Patrick Joyce – took only an hour's break at mid-day and then, refusing to quit, continued working. Relentlessly moving eastward, the crews laid the track at roughly the same pace as a leisurely walk – approximately 240 feet in just over a minute. A reporter for the *Alta California* presciently remarked that it matched the same pace "as the early ox team used to travel over the plains" (Kraus 1969b:248-250; McCague 1964:306).

The process involved first unloading 16 cars that hauled enough iron rails, spikes, fishplates and other materials for building 2 miles of track. In eight deafening and quick minutes, all of the track-building materials were on the ground. Then teams of six Chinese workers loaded 16 rails, a keg of bolts and a keg of spikes and the necessary fishplates onto iron hand cars. Horses pulled these cars to the end of the track. From here, more Chinese distributed the materials along the roadbed. Then, using nippers to grab each end, the rail-handlers lifted the rails and placed them on the ties, where a track gang bolted and spiked them down. The horses pulled the carts ahead and the process was repeated, over and over again.

Cross-ties had previously been delivered all along the 10-mile stretch. Ahead of the rail-handlers, workers called "pioneers" had the job of butting the ties to a line of rope set at a distance from the track center designated by the surveyors. At the end of the track-laying, another crew shoveled ballast under the ties for support. Then came the track-straighteners. Finally, 400 some "tampers" followed to tamp down the ballast. Foremen on horseback shouted directions all up and down the track. As one 2-mile section was completed, the next material train moved as far up the track as possible to start the whole process again.

Keeping pace with the track-laying was the crew constructing the telegraph line. The material trains also carried telegraph poles; these were delivered along the roadbed in wagons. Laborers then fastened cross-arms to the poles. Another work gang dug the holes; a third group hoisted the poles. Another wagon brought the wire forward, which was slowly unwound from a reel as the

wagon proceeded to move forward. Another crew quickly attached the wire to insulators. At day's end, the wires were connected to a telegraph set in order to communicate with supply points to the west (Galloway 1950:159).

At 1:30 that afternoon, Charles Crocker signaled it was time to break for dinner. By then, the CP crews had laid 6 miles of track. The dinner spot – now Rozel – earned the name "Victory" from workers who were confident that they could lay another 4 miles before quitting time. Camp train boss, James Campbell, served a much-appreciated hot meal to workers and audience alike. The Union Pacific had taken the day off to watch its counterparts race against time and exhaustion.

By 7:00 that evening it was time to quit, and the Central Pacific crews had done it – just over 10 miles in one day. The afternoon pace was a bit slower because rails had to be curved. To do this, workers placed the rails between blocks and hammered curves into them. The total job required the use of 25,800 ties; 3,520 rails, 55,000 pounds of spikes; over 7,000 poles; and nearly 15,000 bolts. The eight Irish rail-handlers had each lifted 125 tons. The same Central Pacific time book that lists their names indicates that they received four days' wages for the work. It is unknown if the Chinese workers received any additional pay for their efforts that day, but all could take enormous pride in the achievement (Bain 1999:639-640; Best 1969a:46-47; Kraus 1969b:252; McCague 1964:305-308; Raymond and Fike 1981:19-21). Figure 4 shows a railroad camp near Victory (Rozel) near the end of the Central Pacific's 10 miles of track laid in a day.

Figure 4. "Railroad Camp near Victory [Rozel]." 1869. *Source*: Alfred Hart Photo No. 350, Union Pacific Railroad Archives, Omaha, NE.

Present to witness the 10-mile day and realizing how close the Central Pacific crews were to the summit, Stanford wired Huntington, imploring him to do whatever he could to convince the Union Pacific to cease its grading work and temporary construction on the east slope. Stanford hoped that Union Pacific officers would agree to adopt the Central Pacific's grade and build its track on it. Despite Huntington's assurances that the April 9 agreement stipulated that the Central Pacific line to Ogden would be adopted, Union Pacific contractors received no orders to that effect. Historian David Bain has concluded that "in this matter as in so many others inertia dictated; with Dodge and Ames against it, apparently the government commissioners and the interior secretary had decided on a status quo policy which would 'not require serious action by the Government,' as a Union Pacific lobbyist wrote Dodge" (1999:640).

Leonard Eicholtz also witnessed the Central Pacific's remarkable feat. In his diary that evening, he wrote: "Saw them lay their big day's work – ten miles of iron." With Eicholtz were UP's Sidney Dillon, Thomas Durant, and Grenville Dodge. Eicholtz noted that he and this party were on their way back to "Echo, but on reaching Corinne, came back and gave orders to haul iron and ties to [the] summit tomorrow and lay track from there east" (Eicholtz diary, April 28, 1869, American Heritage Center, University of Wyoming).[3] As a result, Casement's crews hauled ties and rails in wagons around the Big Trestle and Carmichael's Cut to the summit and began building track eastward from that point. Railroad historian George Kraus explained that by doing so the Union Pacific track-layers could continue building track instead of waiting for the graders to finish their work (1969b:256), while another analyst, Maury Klein, contended that the Union Pacific intended to create a barrier so that the Central Pacific track would indeed end at Promontory Summit (1987b:219).

On April 30, 1869, the Central Pacific line reached the summit at Promontory. The *Alta California* announced: "The last blow has been struck on the Central Pacific Railroad, and the last tie and rail were placed in position today. We are now waiting for the Union Pacific to finish their rock-cutting." (Kraus 1969b:256). Additionally, the Union Pacific crews still needed to complete the work on their trestles. As the *Alta California* had reported a few days earlier: "Meantime, the Union Pacific road creeps on but slowly; they have to build a tremendous trestle-work….But their rock cutting is the most formidable work." Noting the inefficient duplicative effort, the newspaper continued: "It seems a pity that such a big job should be necessary when the grading of the Central Pacific is available and has been offered to them." Commenting further on the construction of the Big Trestle, the *Alta California* found the structure to be "like a frame gossamer; one would think that a carpenter's scaffolding were stouter" (Kraus 1969b:253). Referring to the structure in a May 4 letter to Huntington, Charles Crocker wrote that "the track passes over a piece of trestle which if we had possession we would not attempt to run over, but would immediately replace with new trestle or fill" (Bain 1999:640).

On May 2, the San Francisco *Bulletin* reported that "the great trestle-work four miles east of the Summit is nearly finished. Mr. Casement says it is only temporary, and will be filled up during the summer." The *Bulletin* further stated that the "track-layers of the Union Pacific

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[3] Other sources indicate that Dillon gave this order to begin laying track at the end of the Central Pacific's track and move eastward from there on April 30 (see, for example, Klein 1987b:219). The Eicholtz diary entry more definitively provides the actual date of Dillon's order.

Company will be kept working at either end as the graders get out of the way" (Klein 1987b:219; Kraus 1969b:256).

During the first week of May, working day and night, Union Pacific work teams made great strides to finish the remaining section of track. On May 5, they finished the Big Trestle and a train loaded with track-building materials powered across it (Figures 5 and 6). That evening they set off the last blast to complete Carmichael's Cut. The next day, May 6, they drove the last spike to finish a smaller trestle located between Carmichael's Cut and Clark's Cut. Grading crews then worked their way through both cuts, swung around the head of a ravine, then moved through a final cut to join the grading that had been previously finished in the summit's basin. Cross-ties and rails had already been positioned here to enable track-laying, and UP workers quickly installed a 2,500-foot side track at the summit (Eicholtz diary, May 5, 1869, May 6, 1869; Utley 1960:59).

By May 7, the Union Pacific crews were inching ever more closely to completion. The *Alta California* reported that "This afternoon the Union Pacific finished their track to a switch forty rods [660 feet] east of the end of the Central, on the new side track down to a point opposite the Central." To celebrate the near completion of the two lines, Union Pacific's Engine No. 66 pulled up next to the Central Pacific railhead, a mere 100 feet to the southeast, where the Central Pacific's Engine No. 62, named the *Whirlwind*, was sitting on its own track. When No. 66 let off steam, the *Whirlwind* responded with its own sharp whistle. As the *Alta California* reporter on the scene declared, this marked "the first meeting of locomotives from the Atlantic and Pacific Coasts" (Kraus 1969b:257; Utley 1960:59).

While all of this construction on the east and west slopes occurred during the spring of 1869, construction camps clustered around major work sites as each rail line progressed towards the meeting point at the summit. New "Hell-on-wheels" towns quickly mushroomed at the end of Union Pacific's track. The character of these towns contrasted sharply with that of the Chinese and Mormon camps. In late March, a reporter for the Salt Lake City *Deseret News* had noted the birth of Corinne, "built of canvas and board shanties. The place is becoming civilized," quipped the reporter, "several men having been killed there already, the last one was found in the river with four bullet holes through him and his head badly mangled" (Kraus 1969b:237-238; McCague:294).

"From Corinne west thirty miles," observed the same reporter, the grading camps present the appearance of a mighty army. As far as the eye can reach are to be seen almost a continuous line of tents, wagons, and men." The reporter continued: "Junction City, twenty-one miles west of Corinne, is the largest of any of the new towns in this vicinity. Built in the valley near where the lines commence the ascent of the Promontory, it is nearly surrounded by grading camps. . . . The heaviest work on the Promontory," the reporter additionally explained, "is within a few miles of headquarters. Sharp & Young's blasters are jarring the earth every few minutes with their glycerine and powder, lifting whole ledges of limestone rock from their long resting places, hurling them hundreds of feet in the air and scattering them around for a half mile in every direction." The reporter also believed there was "considerable opposition between the two railroad companies, both lines run near each other, so near that in one place, the U.P. are taking a four feet cut out of the C. P. fill to finish their grade, leaving the C.P. to fill the cut thus made, in the formation of their grade" (Kraus 1969b:238).

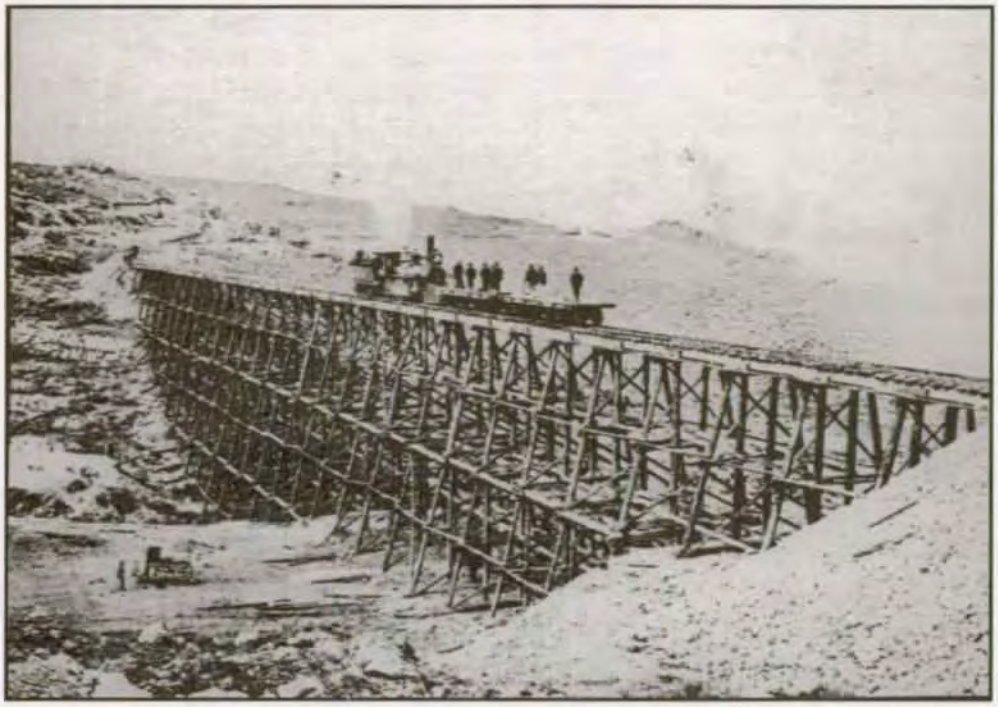

Figure 5. Overlooking north-northeast along the completed Big Trestle. *Source*: A.J. Russell, 1869.

Figure 6. Detail of west abutment – Union Pacific's Big Trestle. *Source*: A. J. Russell Photo No. 515, 1869, Union Pacific Railroad Archives, Omaha, NE.

> Four of these camps were located about twenty miles west of Corinne....Gambling tents where faro, roulette, Chinese fan tan and Mexican monte held sway, were numerous. Whiskey flowed freely, and blood almost the same....Every form of vice was in evidence and it seemed as though all the toughs in the west had gathered here. The law made no attempt to pervade these camps... (Anderson 1965:353-354).

On May 8, 1869, an incident in one of the Chinese camps turned uncharacteristically violent. A Chinese "tong war" erupted between two rival companies involving several hundred laborers of the See Yup and Teng Wo companies. Idle at Victory [Rozel] since their work was complete, the groups argued over a $15 debt. The argument escalated into a fight in which the combatants used "every conceivable weapon. Spades were handled, and crowbars, spikes, picks and infernal machines were hurled between the ranks of the contestants. Several shots were fired, and everything betokened the outbreak of a riot." Then cooler heads prevailed when some of the more influential Chinese workers, Superintendent James Strobridge and others stepped in to break up the fight (Kraus 1969b:257).

As construction neared completion on the summit, however, crew bosses started ordering their workers to vacate the area. Accordingly, the lines of white canvas tents began to disappear over the eastern and western horizons, although a few Chinese groups did remain in the area in order to complete work on the line after the rails were joined. On May 5, the *Alta California* reported that:

> The Central Pacific force are nearly all gone already, and that of the Union is going fast. Ninety of the latter left for the East this morning, and a hundred more go tomorrow, and the rest will soon follow. Between six and seven hundred graders and one hundred track-layers are working on the Union Pacific, and now only twenty-five feet of rock-cutting remains to be finished in the Promontory Range at this moment, that is nearly all drilled and ready for blasting. Work will be carried on all night, and by tomorrow noon the grading will be entirely completed [Kraus 1969b:256].

At Blue Creek, Savage noted the "returning 'democrats'" who were "piled upon the cars in every stage of drunkenness. Every ranch or tent has whiskey for sale." "Verily," Savage concluded, "men earn their money like horses and spend it like asses." At Promontory Summit, where a few workers remained, Savage counted a "1/2 doz. tents and Rum holes"(Savage, diary entries, May 8 and 9, 1869, File:119-Sav, GOSP Research Files, Golden Spike National Historic Site).

Initially, May 8 had been set for the day to celebrate the joining of the rails. But, an unforeseeable event literally held up Union Pacific Vice President Thomas Durant as he headed west for the occasion. Two days earlier, on May 6, as Durant's train pulled into Piedmont, a mob of some 300 disgruntled armed men – all tie-cutters and graders who had been laid off with back pay owed them – stopped the train. They uncoupled the official car, swarmed around Durant, and demanded the pay that had been due them for four months. Durant was not carrying anything close to the demanded sum – anywhere from $12,000 to more than $200,000, according to different sources, and so wired Oliver Ames in Boston to send the money. Instead, Ames quickly replied by telegram, asking Dodge in Salt Lake City to send troops to rescue Durant. Dodge complied, ordering a company of infantry from Fort Bridger, but another UP official in the area, Sidney Dillon, insisted that the troop train pass by Piedmont without stopping. On May 7, Dodge again wired Ames: "Tie outfit at Piedmont hold ... Durant under guard as hostage for payment of amount due them. You must furnish funds on Dillon's call." The following day, May 8, Dodge

sent a second telegram to Ames, stating that the best amount to send would be $500,000 so that others besides the 300 at Piedmont could be paid what was owed them. Ames somehow scraped together this sum out of the company's straitened assets and wired it west so that the workers could be paid and Durant could be set free (Ames 1969:322-323; Bain 1999:649-650; Kraus 1969b:260-261; McCague 1964:309-311).[4]

Other Union Pacific officials were delayed a day at Weber Canyon when the trestle-bridge at Devil's Gate needed to be repaired before the train could proceed westward. They finally arrived at the summit on May 9. While Stanford together with other Central Pacific officers and invited guests – who had arrived two days earlier – waited for the UP officials, they enjoyed dining and toasting the occasion with the Union Pacific's track-laying contractor, General Jack Casement. Accepting an invitation to inspect part of the Union Pacific's line, they also rode to Weber Creek Station, some 26 miles east of Ogden. On Sunday, May 9, they returned as far west as Monument Point and visited the shore of Great Salt Lake (Best 1969b:73; Kraus 1969b:258; Utley 1960:63).

Final construction also proceeded on May 9. On that day, a rainy one, Union Pacific track-layers finished the last 2,500 feet of track, except for the length of rail to be laid during the next day's celebration of the joining of the two lines. They also constructed a "wye" where locomotives could turn around on the track (Utley 1960:63).[5] That evening, the clouds started to lift and nothing remained to do except prepare for the driving of the last spike.

The Wedding of the Rails at Promontory Summit: May 10, 1869

The day dawned sunny and clear. At 7:00 that morning, the American flag – somewhat oddly, a 20-star version dating from 1819 – was hoisted onto one of the nearby telegraph poles (Ketterson 1969a:64-65) [Figure 8]. The Central Pacific Chinese laborers who would be responsible for preparing the last few feet of roadbed and laying the final track began to get ready for the day. The setting for the ceremony was situated in a basin at the summit at approximately 5,000 feet above sea level. Stretching for 3 miles in width, the basin was surrounded by higher rounded mountains. Typical of a dry climate, the limited vegetation included sagebrush, greasewood, bunch grass, and a few cedars in the drainages on the surrounding mountains. The junction point, located at the eastern end of the basin, also lay about 3 ½ miles east of the place where the Central Pacific crews had completed their feat of building more than 10 miles of track in one day (Bowman 1969:92; Kraus 1969b:270). Describing the setting, a reporter for *Frank Leslie's Illustrated Newspaper* on the scene that day wrote:

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[4] Ames introduces other evidence that suggests that Durant staged this event in order to force Oliver Ames to send the money. In a May 12, 1869 letter to Dodge, Oliver Ames wrote that a tie-supply firm, James W. Davis and Company, may have furnished the men who stopped the train. "Could it be one of Durant[']s plans to have these men get their pay out of the Road and we suffer for his benefit?" asked Ames. "Durant is so strange a man that I am prepared to believe any sort of rascality that may be charged ag[ai]nst him" (1969:323).

[5] Utley doubts the truth of a story, repeated in many secondary sources including Bain (1999), that the Union Pacific workers actually built a siding and a "wye" during the night of May 9, thereby preventing Central Pacific workers from doing it the next day as they had planned and thereby ensuring that Promontory would be a Union Pacific station. He bases his doubt on contemporary newspaper accounts (1960:63). Bain cites the autobiography of Grenville Dodge (1999:658).

> After a pleasant ride of about six miles we attained a very high elevation, and passing through a gorge of the mountains, we entered a level, circular valley, about three miles in diameter, surrounded on every side by mountains. The track is on the eastern side of the plain, and at the point of junction extends in nearly a southwest and northeast direction.
>
> Two lengths of rail are left for today's work. We arrived on the ground twenty minutes past eight A.M., and while we are waiting we will look about us a little. A large number of men [are] at work ballasting and straightening the track, also building a "Y" switch. Fourteen tent houses for the sale of "Red Cloud," "Red Jacket," and "Blue Run," are about evenly distributed on each side of the track [Kraus 1969b:270-272].[6]

Some twenty minutes later, at about 8:45, carrying many passengers from Nevada and California as guests of the CP, a Central Pacific train arrived, pulled up to a siding to join James Strobridge's construction train and to await the arrival of the Union Pacific train. Just a while later the Union Pacific's train, pulled by locomotive No. 119 with Sam Bradford at the throttle, arrived. The group aboard this train included: UP officials Thomas Durant, Sidney Dillon, and

Figure 8. Image early in the day – May 10, 1869. Looking southwest along the grade. Note the irregular Union Pacific ties on the grade east of the Last Spike Site. *Source*: A.J. Russell photo No. 538, Union Pacific Railroad Archives, Omaha, NE.

[6] In that this reporter observed that on the morning of May 10 workers were finishing the "wye" switch, this account tends to corroborate the story that the Union Pacific crews worked all night to build the siding and wye.

John Duff; Chief Engineer General Dodge and consulting engineer, Silas Seymour; the Casement brothers; construction superintendents Sam Reed and James Evans; Leonard Eicholtz, and a number of guests, including Reverend John Todd of Pittsfield, Massachusetts who would provide the benediction to bless the union of the two roads. Behind Durant's train came another carrying officers and men of the 21st regiment of the U.S. Army, en route to the Presidio in San Francisco. The army brought its own band; also on the scene was the Tenth Ward Headquarters Band from Salt Lake City, resplendent in colorful uniforms. Other invited guests included Mormon Bishop John Sharp and Ogden Mayor Lorin Farr, officially representing Brigham Young at the ceremony, scheduled to begin at noon (Bain 1999:660; Best 1969a:50-51; Kraus 1969b:272).

A few minutes after 11, the Central Pacific's engine, *Jupiter*, No. 60, driven by George Booth, brought Leland Stanford's special train from the west. Joining Stanford were: California Chief Justice S. W. Sanderson; Governor A. P. K. Safford of Arizona; F. A. Tritle, soon to be governor of Nevada; several of Stanford's personal friends, including Dr. J. D. B. Stillman of Sacramento; Dr. W. H. Harkness, editor of the *Sacramento Press*; and photographer A. A. Hart (Best 1969b:71-73; Section on Golden Spike, Historical Catalogue, Union Pacific Historical Museum, Omaha, Nebraska, 1951, p. 17) [Figure 9].

For about an hour and a half before noon, Chinese workers did the grading for the remaining rails, laid the necessary ties, and made final preparations for the ceremonial driving of the last spike. Because of a plan to connect telegraph wires to the maul to signal when the final spike in

Figure 9. Looking east along the completed grade – May 10, 1869. *Source*: Alfred Hart Photo No. 288, Union Pacific Railroad Archives, Omaha NE.

the transcontinental railroad had been struck, wires were strung from the nearest CP and UP telegraph poles down to a small table alongside the gap between the two rails. Here, much like twentieth-century television reporters announcing that the Eagle had landed on the moon, telegraph operators W. N. Shilling, W. R. Fredericks, Howard Sigler and Louis Jacobs waited to sound the union of the rails across a rapt and excited nation (Bowman 1969:94; Kraus 1969b:273).

By noon the temperature had risen to almost 70 degrees. Some news accounts estimated that the crowd numbered as many as 3,000; others reported a much lower figure of 500. The group, which included a few children and perhaps as many as twenty women, mostly wives of military officers and other visitors, including Sam Reed's wife and daughter, began to mill closer to the site where Durant and Stanford would drive the last spike. The *Jupiter* and No. 119 were uncoupled from their trains and pulled forward towards the end of the tracks (Figure 10). Soldiers stood at parade-rest on the north side of the tracks. Jack Casement asked everyone to withdraw a bit so that all could see the ceremony. At about 20 minutes after 12, the key operator alerted the Western Union system that in another 20 minutes, the last spike would be driven and that all wires should be kept clear in anticipation. Then, the construction superintendents for both companies, James Strobridge and Sam Reed, carried a polished laurel tie to the connecting point. The ceremonial tie had been presented by West Evans, tie-contractor for the Central Pacific. Measuring over 7 feet in length, it had an 8-by-6-inch silver plate on the top and at its center. Earlier, auger holes had already been bored into it. The inscription on the tie read: "The last tie laid on the completion of the Pacific Railroad, May, 1869." Inscribed also was a list of railroad officers and directors (Bowman 1969:87; Kraus 1969b:273).[7]

Led by their boss, H. H. Minkler, Chinese workers carried the first of the two remaining rails to the last gap in the tracks. An Irish team under foreman Michael Guilford then brought the final rail. The engines blew their whistles and the crowd cheered. One soldier exclaimed: "We are all yelled to bust." At about half past 12, the telegraph sent the following message:

> To everybody. Keep quiet. When the last spike is driven at Promontory Point [Summit], we will say "Done!" Don't break the circuit, but watch for the signals of the blows of the hammer. Almost ready. Hats off; prayer is being offered [Kraus 1969b:273].

Edgar Mills, a banker from Sacramento, in the role of master of ceremonies, announced the order of events. Reverend Todd then asked for a blessing upon the wedding of the rails: "We desire to acknowledge thy handiwork in this great work, and ask thy blessing upon us here assembled, upon the rulers of our government and upon thy people everywhere; that peace may flow unto them as a gentle stream, and that this mighty enterprise may be unto us as the Atlantic of thy strength, and the Pacific of thy love." Various guests then spiked the last rails with iron spikes, prior to the driving of the golden spike. These included F. A. Tritle, railroad commissioners J. W. Haines and William Sherman, and Henry Nottingham, president of the Michigan Southern & Lake Shore Railroad (Bowman 1969:95; Kraus 1969b:274).

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[7] The laurel tie eventually burned during the San Francisco fire of 1906. It had been taken to the Southern Pacific's main offices there from Sacramento in 1890.

Figure 10. Promontory Summit immediately prior to the Last Spike ceremony. View is to the southwest towards Promontory Hollow. *Source*: Alfred Hart photo, #357.

At 12:40, the telegraph operator informed his many listeners: "we have done praying. The spike is about to be presented." Dr. Harkness of Sacramento then presented Thomas Durant with the golden spike, the first of several ceremonial spikes, including a second gold spike, used to mark the occasion. A San Francisco businessman, David Hewes, had donated the first and more valuable of the two golden spikes. Made by Schulz, Fischer & Mohrig, also of San Francisco, it was nearly 6 inches long, weighed over 14 ounces and was cast from 350 gold dollars. On all four sides the golden spike was inscribed with the names of the railroad officers and directors and the name of the donor. The spike's top read: "The Last Spike." Attached to the tip of the spike was a gold sprue, or an unfinished piece of gold, that was detached and later made into mementoes for several of the principal railroad officials. The smaller second gold spike, donated by Frank Marriott of the San Francisco *News Letter*, was worth about $200.[8] Durant then placed both the golden spikes in the previously bored auger holes (Bowman 1969:95-96).

Tritle from Nevada then presented Leland Stanford with a silver spike. E. Ruhling & Co., assayers in Virginia City, donated the silver and directed the making of the spike. In size it matched the Hewes golden spike. Rough forged at the time of the ceremony, it was later inscribed with the words: "To Leland Stanford President of the Central Pacific Railroad. To the

[8] The first of the two was first returned to the donor and then later given to Stanford University in 1892; the second may have been given to General Dodge and has since disappeared.

iron of the East and the gold of the West Nevada adds her link of silver to span the continent and wed the oceans." Stanford placed this silver spike in another auger hole in the laurel tie at the west rail (Bowman 1969:82, 96).[9]

Next, the fourth ceremonial spike was presented by Arizona Governor Safford to Stanford. Made of a combination of iron, silver and gold, it carried the inscription: "Ribbed with iron, clad in silver and crowned with gold [,] Arizona presents her offering to the enterprise that has banded a continent, dictated a pathway to commerce. Presented by Governor Safford." Upon receiving it, Stanford placed this spike in the last holes of the ceremonial laurel tie. There may also have been two other gold and silver spikes given by Montana and Idaho for the occasion but reports are inconclusive concerning these additional ceremonial pieces (Bowman 1969:82-85, 96).

On behalf of the Central Pacific, Stanford offered his thanks for the "golden and silver tokens of your appreciation of the importance of our enterprise to the material interests of the whole country, east and west, north and south." Emphasizing the transcontinental railroad's significance especially to commerce and transportation, Stanford continued: "The day is not far distant when three tracks will be found necessary to accommodate the commerce and travel which will seek a transit across the continent." Chief Engineer Grenville Dodge offered these words on behalf of the Union Pacific: "the great [Thomas] Benton proposed that some day a giant statue of Columbus be erected on the highest peak of the Rocky Mountains, pointing westward, denoting that as the great route across the continent. You have made that prophecy today a fact. This is the way to India" (Kraus 1969b:278-279).

After the presentation of the ceremonial spikes, L. W. Coe, president of Pacific Union Express Company, handed Stanford a silver-headed maul. This maul, or sledge, as it was also called, had a hickory handle made by a San Francisco firm, Conroy & O'Connor. Another San Francisco business, Vanderslice & Company, had provided the heavy silver plating.[10] With the silver maul, Stanford most probably gave only token light blows to the group of ceremonial spikes. He then used a regular maul – the one that had been wired – to hit the last spike. He stood on the south side of the laurel tie while Durant stood outside of the rail on the north side of the tie waiting for his turn to also strike the last spike (Bain 1999:662-663; Bowman 1969:86, 96)[11].

As evidence of their nervousness perhaps and no doubt their inexperience with using a maul to pound in railroad spikes, both Stanford and Durant missed hitting the golden spike with their first blows. Regardless, the Union Pacific telegraph operator, Watson Shilling[12] tapped the three dots signifying the blows anyway, until at 12:47 "d – o – n – e" shot across the wires. The Union

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[9] The silver spike was sometime later sent to Stanford who subsequently donated it to Stanford University in the 1890s.

[10] The silver maul or sledge was later also given to Stanford University.

[11] Bain (1999) explains that "since the track ran in a southwest-to-northeast direction in the summit valley, chroniclers have variously described Stanford, for instance, as standing south of the tracks southeast of the tracks and east of the tracks. The ceremony participants considered positions in east-west terms for symbolic reasons" (fn. 29, 756) Bain therefore places Stanford as standing on the east side of the track and Durant on the west side (662-663).

[12] His name might also have been "Skilling." Sources disagree, which may reflect different spellings used by different newspaper reporters.

Pacific had built the railroad from Omaha to Promontory for a distance of 1,086 miles; the Central Pacific had built the road for a distance of 690 miles from Sacramento to Promontory, for a total length of 1,776 miles.

A magnetic ball on the dome of the capitol in Washington, D.C., then fell to note the joining of the rails. Symbolizing the accomplishment's unifying effect, cities all over the country exploded in celebrations. In San Francisco, the fire-bell in city hall rang while 220 guns saluted the event at Fort Point. In New York City, another 100-gun salute was fired. Bells were rung in Philadelphia. A huge crowd in Buffalo sang "The Star Spangled Banner." A 4-mile-long procession gathered in Chicago. In Sacramento, where crowds had also celebrated on May 8, when the ceremony was originally scheduled to be held, cannon, bells and whistles filled the air along with the shouts of thousands of excursionists brought on free trains to the city from the surrounding valleys and mountains. Addressing the California Assembly, E. B. Crocker, brother to Charles and himself a director of the Central Pacific, proposed a toast to the "greatest monument of human labor." One of the few to also honor the contribution made by the thousands of Chinese workers, he added: "I wish to call to your minds that the early completion of this railroad we have built has been in large measure due to that poor, despised class of laborers called the Chinese – to the fidelity and industry they have shown" (Bowman 1969:96-98; Kraus 1969b:281; Saxton 1966:151).

Closer to Promontory, in Ogden guns were fired for 15 minutes straight from the courthouse, city hall and Arsenal Hill. All businesses had closed in order to celebrate. Within a little more than an hour, 7,000 people had gathered at Ogden's new tabernacle to hear speeches and music – a program that ended with "Hard Times Come Again No More." In Salt Lake City, the Mormon Tabernacle overflowed with people, cheering the event (Kraus 1969b:281).

Yet more features of the ceremony remained: General Dodge and the CP's Samuel Montague next struck the gold and silver spikes. Military officers and some of the women then took their turn. When all the spikes were in place, the two engines nosed forward to touch. Engineers Bradford and Booth each christened the other's engine, smashing bottles of champagne over them, and then shook hands (Kraus 1969b:282). Photographers tripped their camera shutters to capture the moment, providing another testament to the role technology had played in the entire enterprise of building the transcontinental railroad and in celebrating this union.

Lastly, to conclude the festivities, the two engines crossed over the final link in the line. First, the CP's *Jupiter* backed up and the UP's No. 119 crossed over the connecting spot. Then No. 119 returned to the siding while the *Jupiter* moved across the junction, thereby signaling the new ability to traverse the nation by train. The ceremonial spikes were then lifted and the laurel tie removed. They were replaced by a regular tie, spiked with regular iron spikes.[13] Representative of a different ethos regarding preservation, relic hunters immediately splintered the last tie into pieces for souvenirs. Even the last rail was reportedly broken into keepsake pieces. As many as six "last ties" and two "last rails" may have been finally laid before the appetite for mementoes

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[13] One of these regular spikes was given to Union Pacific fireman, David Lemon, who asked assistant superintendent H. M. Hoxie for a souvenir. In 1954, the iron spike was sent to the Wells Fargo Bank in San Francisco. It was later donated to Stanford University.

was sated. Perhaps in the end it was Chinese workmen who laid the final tie and drove the last spike (Bowman 1969:100; Kraus 1969b:282-284; McCague 1964:332; Rae 1871:194).

In the meantime, Stanford and Durant and the other railroad officials had begun sending and receiving congratulatory telegrams. To President Ulysses Grant they wrote:

> Promontory Summit, Utah, May 10, 1869
>
> The last rail is laid, the last spike driven. The Pacific Railroad is completed. The point of junction is 1,086 miles west of the Missouri River, and 690 miles east of Sacramento City.

Among the telegrams that they received was the following from the mayor of New York City, addressed to the presidents of both companies: "To you and your associates we send our hearty greetings from the great feat this day achieved in the junction of your two roads and we bid you God speed in your best endeavors for the entire success of the trans-atlantic highway between the Atlantic and the Pacific for the new world and the old" (Dodge, n.d., "Data Chronologically Arranged for Ready Reference in Preparation of a Biography of Grenville Mellon Dodge," Grenville Dodge Collection, Council Bluffs Public Library, p. 952).

After the ceremony, Stanford invited all the UP principals for a luncheon in his car where fresh California fruit was served and the champagne continued to flow freely. Dodge remembered a speech that Stanford gave in which he criticized the federal subsidies as being more of a detriment than a benefit. According to Dodge, the statement "struck everyone so unfavorably that Dan Casement, who was feeling pretty good, got up on the shoulders of his brother, Jack," and stated the following: "If this subsidy has been such a detriment to the building of the roads, I move you sir that it be returned to the United States Government with our compliments." This roused a great cheer, but as Dodge acknowledged, "put a very wet blanket" over the remainder of the luncheon. He recalled also that those who were present remembered Dan Casement's response "for years and years afterwards" (Dodge, n.d., "Data Chronologically Arranged for Ready Reference in Preparation of a Biography of Grenville Mellon Dodge," Grenville Dodge Collection, Council Bluffs Public Library, pp. 953-954).

Between 5 and 6 o'clock, the parties dispersed and the wedding celebration was over. In Promontory itself that evening, however, the festivities continued. These involved a "torchlight procession, banquet, and 'grand ball' for which the Central Pacific would later pay the bill – three thousand dollars all told" (McCague 1964:332). A few years later, when John Erastus Lester passed through on the transcontinental train, he noted that the rails had joined at Promontory. "Interest will always attach to this place," he wrote, "as being the scene of the ceremonies, grand yet happy, solemn yet full of gayety, which took place at the driving of the last spike. The lightning sounded the stroke which welded the iron bands uniting the oceans" (Lester 1873:47-48).

Although other rail lines would be built that also joined the Atlantic and the Pacific, there could only be one "first" transcontinental railroad and Promontory Summit marks the place where what many hold as the greatest engineering feat of the nineteenth century was completed. The train brought speed and ease of travel. Building a rail line that connected East to West facilitated settlement and commerce and changed transportation in ways that perhaps a late-twentieth-century mind – growing accustomed to the possibilities of space travel – cannot fully

apprehend. By spurring the settlement and economic development of the West this rail line also hastened the end of the American Indians' way of life. Congress had said that the transcontinental railroad must be completed by 1876. The Central Pacific and the Union Pacific had done it in less than half the time, in just six and one half years. Reflecting on the accomplishment over 20 years later, Union Pacific's Sidney Dillon wrote:

> People who thought for a long time that the whole scheme was wild and visionary began after a while to realize that out there on the "Great American Desert" an extremely interesting enterprise was afoot, and that whatever came of it one thing was certain, the world had never seen railroad building on so grand a scale under such overpowering disadvantages and at such a rapid rate of progress [Dillon 1892:257].

Remembering the ceremony held on May 10, 1869, Dillon noted its simplicity and the remoteness of the location. "But our feeling was that however simple the ceremony might be," he recalled, "the people of the whole country, who had kept in such close touch with us and had given us such sympathy and encouragement from the beginning, should be with us in spirit at the culminating moment and participate in the joy of the occasion" (Dillon 1892:258). The telegraph had made that possible. Photographs would also help celebrate and preserve the moment and the image of the place where technology and resources – both natural and financial – had joined with human brawn and ingenuity to span the continent with iron rails. After the ceremony at Promontory Summit, Sidney Dillon and the other Union Pacific officials "started on their return, and the next day, May 11, 1869, trains began running regularly over the whole line. New York was in direct rail communication with [Sacramento], and a new empire was thrown open in the heart of the continent" (Dillon 1892:259).[14]

Figures 11, 12, and 13 show the configuration of historic resources within the NHS boundaries as of May 10, 1869.

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[14] The cost of the Union Pacific's section of the transcontinental railroad totaled $63.2 million and about half of that represented the federal government's loan to the company. It has been estimated that UP's profit exceeded $16 million or approximate 200 percent, as compared to the government's estimate of 27.2 percent. The estimated cost for the construction of the Central Pacific's portion of the Pacific Railroad was $36 million. "The company received land grants and government bonds valued at $38.2 million, while Stanford admitted that $54 million in Central Pacific stock transferred to the Contract and Finance Company in payment of construction contracts represented virtually net profit" (Carmen and Mueller 1926:336-338; Utley 1960:22).

A breakdown of the lands granted and the government loans made to both companies, respectively, is as follows: The completed road was 1,774 miles long. The Union Pacific received 13,875,200 acres while the Central Pacific received 8,832,000. The UP built 526 miles for which they received $16,000 per mile; 408 miles at $32,000 per mile; 150 miles at $48,000 per mile, for a total of $28,456,000. The CP built 12 miles at $16,000 per mile; 522 miles at $32,000 per mile; and 156 miles at $48,000, for a total of $24,386,000 (Crofutt 1869:21).

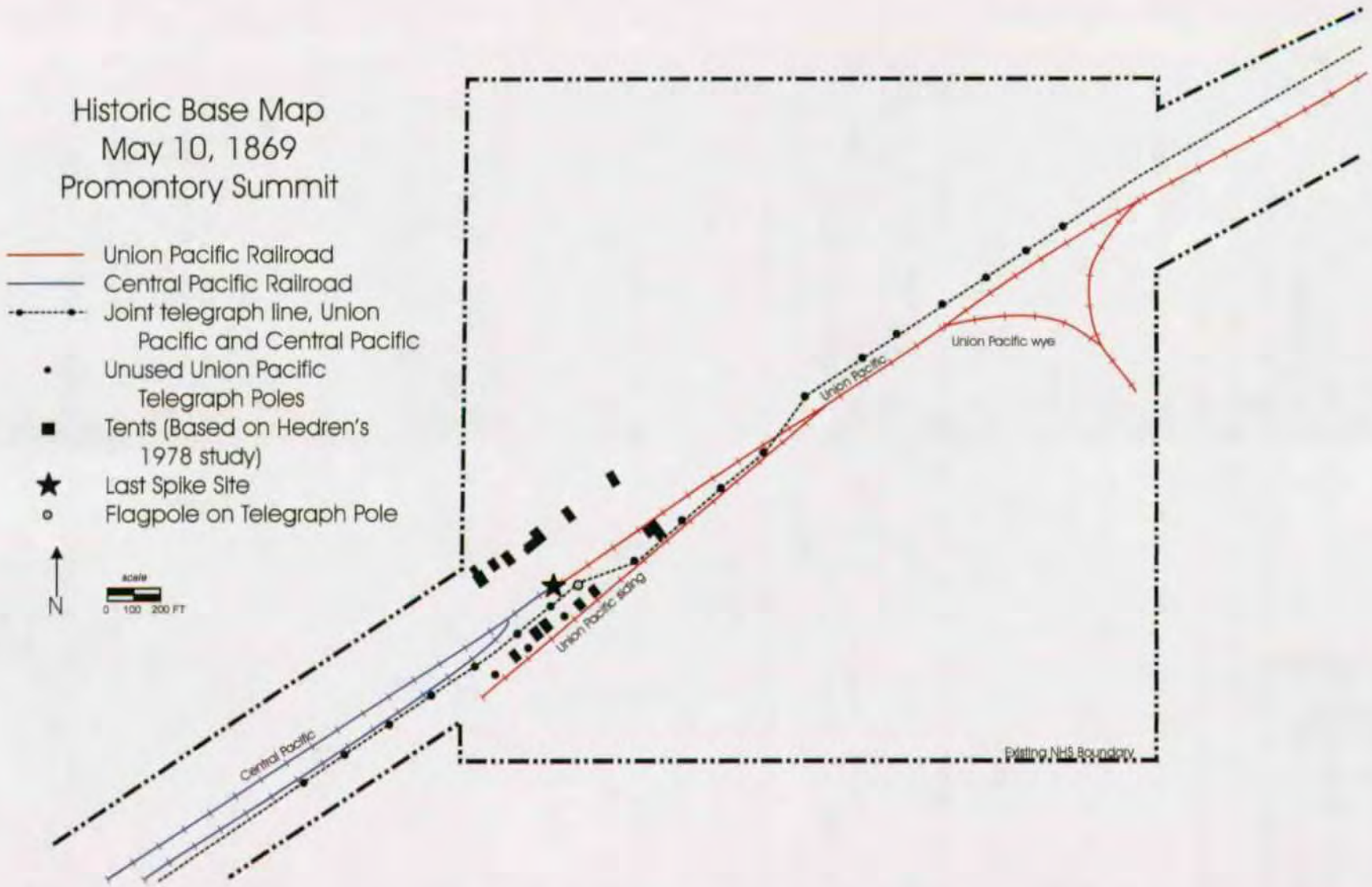

Figure 11. Historic base map- May 10, 1869, Promontory Summit.

Golden Spike National Historic Site
Historic Base Map
May 10, 1869: West Slope

Legend

RR Grade Features
- 10 Miles Sign
- Bench Cut
- Culvert
- Culvert Site
- Last Spike Site
- Representation for Telegraph Line
- Trestle Abutment
- Trestle
- Trestle Site

Historic Spoil/Borrow Pit
- Borrow Pit
- Spoil Pile

Worker Campsite
- General Location

Railroad Grades
- Central Pacific
- Union Pacific

Railroad Track
- Central Pacific
- Union Pacific

Roads
- 2-Track

N

0.25 0 0.25 Miles

Produced by the NPS Intermountain GIS Support Office
Denver, CO
11/27/00

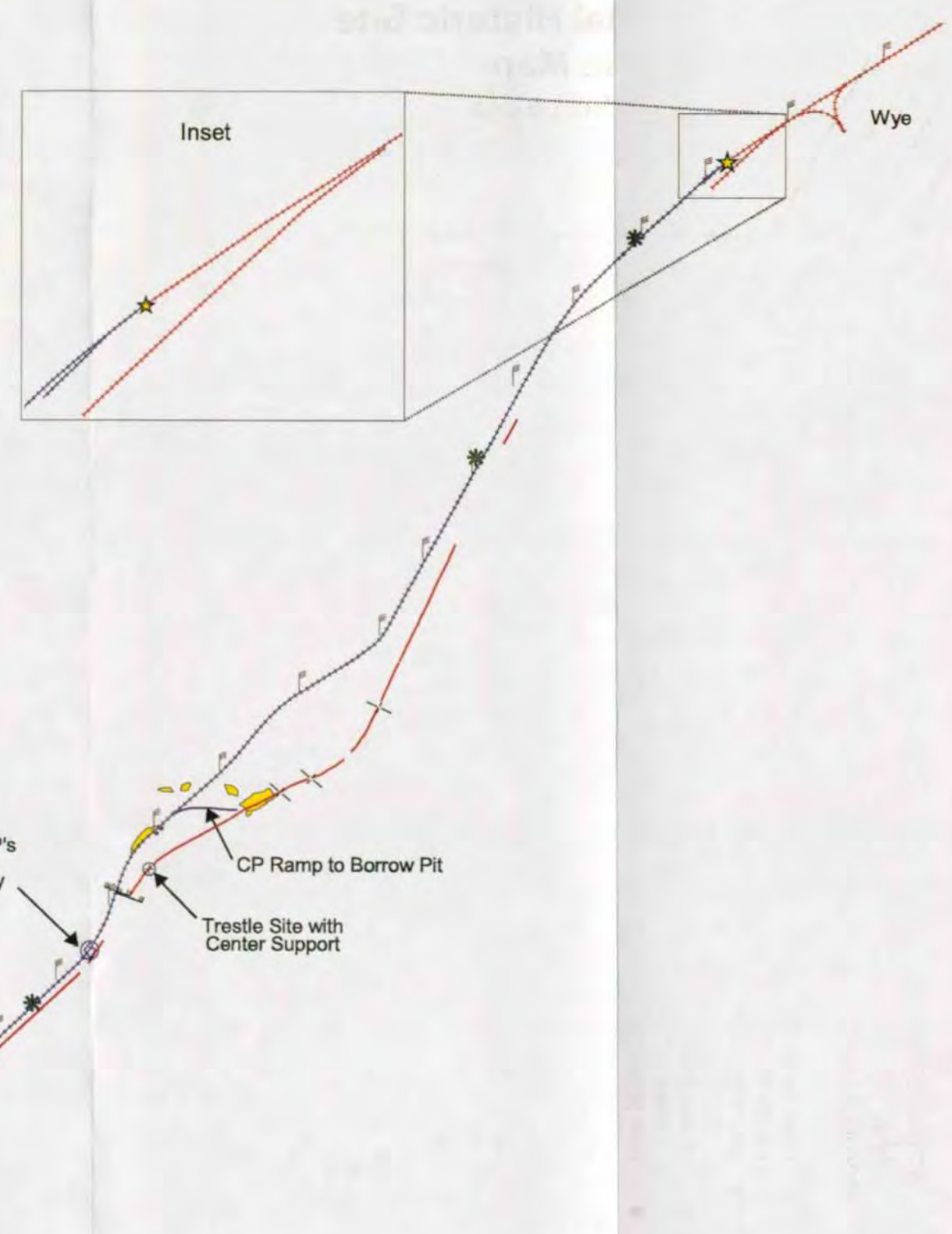

Figure 12. Historic base map-May 10, 1869: West Slope

Golden Spike National Historic Site
Historic Base Map
May 10, 1869: East Slope

Legend

RR Grade Features
- 10 Miles Sign
- Bench Cut
- Culvert
- Culvert Site
- Last Spike Site
- Representation for Telegraph Line
- Trestle Abutment
- Trestle
- Trestle Site

Railroad Grades
- Central Pacific
- Union Pacific

Railroad Track
- Central Pacific
- Union Pacific

Roads
- 2-Track

Historic Spoil/Borrow Pit
- Borrow Pit
- Spoil Pile

Worker Campsite
- General Location

N

0.25 0 0.25 Miles

Produced by the NPS Intermountain Region GIS Support Office
Denver, CO
11/27/00

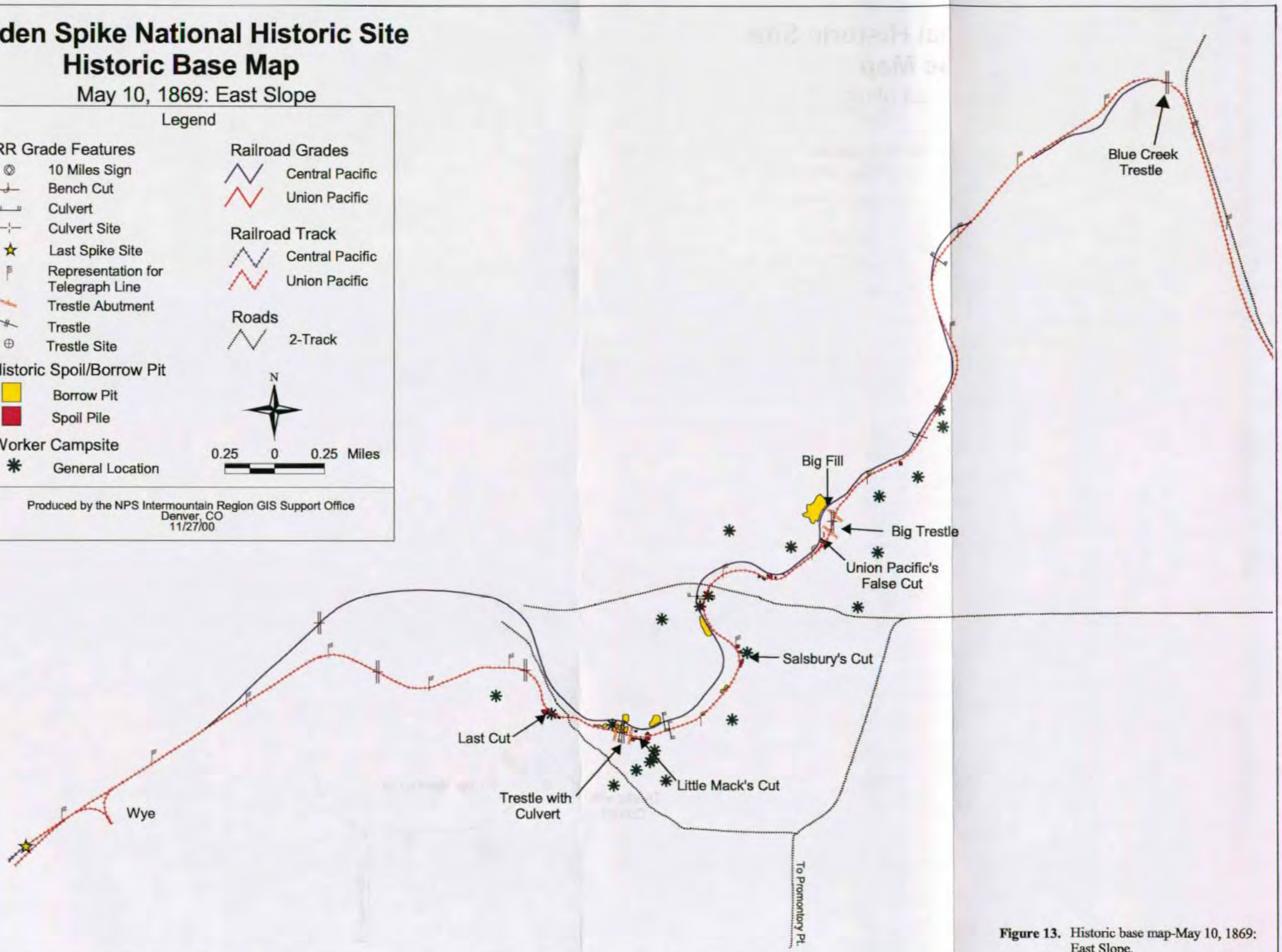

Figure 13. Historic base map-May 10, 1869: East Slope.

Promontory Station: Post-Celebration, 1869, through Spring of 1870

Just one day after the driving of the golden spike, the first train arrived from the east carrying tourists who had hoped to attend the ceremony on May 10 but who had been delayed by the threat of floods at Weber Canyon. The group had traveled from New York to Chicago on the New York Central & Hudson River and the Michigan Southern & Lake Shore railroads, then to Council Bluffs on the Chicago & Northwestern, then to Omaha by ferry across the Missouri River, where they boarded the Union Pacific to cross the plains and the Rockies. They arrived at Promontory during the early morning of May 11 where accommodations were almost non-existent. A Central Pacific train to take them any farther west was not available until that night, so they waited all day without benefit of shelter. One of the travelers, a W. L. Humason of Hartford, Connecticut, later remembered of Promontory "nothing but sand, alkali, and sage brush" (McCague 1964:335-336).

On the western slopes of the Sierra Nevada, at a station town called Colfax, Humason's group met another excursionist train headed for Omaha that would also change trains in Promontory. On May 15, less than a week after the ceremony at Promontory, both the Central Pacific and the Union Pacific began regular transcontinental passenger service. Trains left daily from Omaha and Sacramento on a trip that took five days to complete. After a 12-hour steamship ride up the Sacramento River from San Francisco and by making connections to Chicago and New York, a passenger could leave the Pacific Coast and arrive on the East Coast seven and a half days later. Until December of 1869, after Ogden had become the official terminus where passengers had to change rail lines, as the congressional resolution of April 10, 1869 had stipulated, Promontory grew livelier but, without sources of water and fuel, the station town was never able to wholly thrive (Anderson 1968:7-8; Section on Terminus, Historical Catalogue, Union Pacific Historical Museum, Omaha, Nebraska, 1951, pp. 14, 19).[15]

Another portrait of Promontory right after the wedding of the rails was painted by Isaac Morris, a commissioner sent to the area to examine unaccepted portions of the Union Pacific Railroad. According to the Union Pacific's congressionally sanctioned charter, every 40-mile section of completed road had to meet the criteria of a "first-class railroad" before the company could obtain legal title to the lands on each side of the finished road as part of its total federal subsidy. Assigned to report on sections of the UP line that had not met the criteria, Morris submitted his report on May 28, 1869. He described the Promontory area in this way:

> This summit is a considerable plateau, covered with artemisia, and quietly resting between two mountain combs or crests. Some thirty tents and a few board sheds mark the spot. The trader had reached it with his wares as soon as the road itself. It is a lonely and desolate locality, without water or fuel, both of which have to be brought from a distance, and Promontory City, as it is called, is not likely to become a commercial emporium, while it will have some fame and a romantic interest attached to it as the place where the Atlantic and Pacific first embraced [Morris 1869:5].

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[15] Railroad historian Gerald Best states that the terminus officially changed in March of 1870 (1969a:137), but given that the Supreme Court determined that the Union Pacific Railroad was completed to Ogden on November 6, 1869, it seems logical that the earlier date for the change is the correct one.

Morris noted further that "no railroad buildings have been erected there, except one or two mere sheds for the storage of baggage and the use of the telegraph" (1869:5) [Figure 14]. Far from excusing some of the track in the road because of the race to complete it, Morris thought that the speed with which it was built had derived principally from abject greed. The result was a railroad poorer in quality than he believed the substantial congressional subsidy had warranted:

> Evidently the first and, it may be said, natural object of the company was to extend the line of its road without regard to much, if anything, else than what was indispensable to the necessities arising out of its construction. Five hundred and thirty miles, as I was informed, were built within the past year, and, to repeat the idea just expressed, the whole road was pushed forward in too much of a hurry, both in regard to economy and durability. There was a temptation to do this offered by the subsidies and lands too great for poor, avaricious human nature to resist [Morris 1869:5].

Because Congress had not predetermined a meeting point, and because whichever company built the most road would receive the greater subsidy, a desire for "pecuniary advantage" had driven the companies to an "almost superhuman effort....Gangs of men were worked day and night, and on the Sabbath the same as any other day. Time was too precious to incur delay in procuring the best material or performing the work in the best manner. The great primary object of the companies was money," concluded Morris, a fact that would "be made more manifest by time. The road by the charter, was to be completed by the first day of July, 1876 but its completion is announced in May, 1869! This may be American enterprise," he pondered, "or it may be American recklessness" (Morris 1869:5-6).

Regarding the Union Pacific road from the foot of the Promontory Mountains to the summit, Morris observed that this section of road was "the most difficult of construction, except the tunnels," of any portion he had examined (1869:6). He traced the course of the line, noting some of its problems:

> For a mile and a half the ties, it is true, are virtually laid on the ground, but the road then passes through several sand banks, some comparatively small and some of formidable proportions, with intervening spaces of nearly level surface; thence it passes through rock excavations, one being some forty feet deep and a quarter of a mile long through the heaviest body of the mountain, overlooking Salt Lake; thence it sweeps around the mountain's side to its base, describing in its course a succession of short curves, so sharp indeed that an ascending and descending train would collide before either would be aware of the proximity of the other [1869:6].

Morris found the trestles to be "very frail and dangerous," stating that the Union Pacific planned "to fill up these ravines so as to have a solid road bed over them." He questioned whether the grade was actually 80 feet to the mile, thinking that "it must be much greater than this a part of the way." The "partly finished" Central Pacific's grade down the east slope appeared to Morris to be "still greater, and its curves sharper. The engineers evidently did not agree in their surveys," he surmised. He further criticized the rails at "56 pounds to the linear yard" as too light and thought that the ties were not large enough "to insure safety"(1869:6).

Figure 14. Looking east along the railroad grade through Promontory Summit – ca. late 1869 or 1870. *Source*: A. J. Russell photo No. 536, Union Pacific Railroad Archives, Omaha, NE.

General problems that Morris found in all portions of the Union Pacific road that he examined included the following: insufficient ballast; the need for greater regularity in how ties were laid on the roadbed; and the use of untreated white pine for ties (processing included either "burnettizing or kyanizing") (1869:10-11). The use of white pine, however, reflected the limitation in the choice of available materials, and, while the profit motive no doubt at times had led railroad officials to cut corners and to push construction forward at too rapid a pace, there was no refuting that the transcontinental railroad had been completed more than six years ahead of schedule.

Photographs of Promontory Summit taken in 1869 show an assortment of establishments, such as the Pacific Hotel, and the Echo Bakery and Restaurant, which boasted "meals at all hours." These buildings, numbering around 30, were actually large canvas tents, some of which had wooden storefronts, lined up along a single street that ran parallel to the train tracks (Figure 15). A couple of weeks after the driving of the last spike, New York *Tribune* correspondent, Albert Richardson, described Promontory in this way: "It is bivouac without comfort, it is delay without rest. It is sun that scorches, and alkali dust that blinds. It is vile whiskey, vile cigars, petty gambling, and stale newspapers at twenty-five cents apiece. It would drive a morbid man to suicide. It is thirty tents upon the Great Sahara, sans trees, sans water, sans comfort, sans everything" (Bain 1999:653).

During 1869, Promontory's saloons, cheap hotels and gambling businesses earned the place a rough reputation (Best 1969a:197). Customers included railroad construction workers who had

Figure 15. Looking northwest to the tent city that developed north of the railroad tracks at Promontory Summit. *Source*: J.B. Salvias photo, 1869.

stayed in the area and were waiting to receive their last pay (Anderson 1968:8). Englishman W. F. Rae, an early passenger through Promontory, recalled the gambling dens' practice of sending agents onto the trains to entice passengers to try their luck at the gambling table in Promontory. After typically stripping the passengers, many of them emigrants, of all their cash, the proprietors in a fit of charity would give them some of their money back to pay for the rest of their trip. "Although the small population of this place is composed for the most part of roughs and gamblers, with the admixture of a female element quite as obnoxious," explained Rae, "yet the peace is tolerably well kept on account of the awe felt for the railway officials. It is tacitly understood that open lawlessness or any serious disturbance would end in the clean sweep of the whole nest of scoundrels" (Rae 1871:185-186, 189-190).

In 1869, Crofutt's Transcontinental Guide described the journey from Blue Creek Station to Promontory:

> Leaving the station, we cross Blue creek on a trestle bridge 300 feet long and 30 feet high. Thence by tortuous curves we wind around the heads of several little valleys, crossing them well against the hill side, by heavy fills. After passing some deep cutting and heavy work, we pass a trestle bridge 500 feet long, and 87 feet high. At and around this point the work is very heavy. Here we come close to the graded bed of the Central, which extends past Promontory to Ogden City....Through more deep rock cuts and over heavy fills, we wind around Promontory Mountain until the [Great Salt] lake is lost to view. Up, up we go, the engine puffing and snorting with its arduous labors, until the summit is gained, and we arrive at the present terminus of the Union Pacific Railroad, Promontory Point [Summit] [1869:131].

Commenting on the source of water for Promontory at the time, Crofutt's guidebook explained that the "supply of water is obtained from a spring about four miles south of the road, in one of the gulches of the Promontory Mountain[s]." The railroad brought water for its use from Indian Creek, also known as Kelton, as well as from other water stations along the line. Water trains ran daily. Commenting further on the agricultural potential of the area, the transcontinental guide observed that the "bench on which the station stands would doubtless produce vegetables or grain, if it could be irrigated, for the sandy soil is largely mixed with loam, and the bunch grass and sage-brush grow luxuriantly (Crofutt 1869:139). Given the difficulties in obtaining water, however, agricultural development involving irrigation proved unfeasible in the Promontory area.

On November 10, 1869, the Union Pacific and Central Pacific reached an agreement regarding the purchase of the UP's line between Promontory and Ogden, as the April 10, 1869 joint resolution in Congress had directed. For approximately $3 million, the Central Pacific bought 48½ miles of UP track. During the course of negotiations, the Central Pacific threatened to build a separate track to Ogden if the Union Pacific would not accept its terms. In serious financial distress, the Union Pacific was not in a position to obtain a higher price, having originally asked for more than $4 million. As part of the settlement, the Central Pacific also agreed to lease the remaining 5 miles west of Odgen but this 999-year lease was not actually negotiated until June 13, 1875 (Best 1969a:67; Section on Terminus, Historical Catalogue, Union Pacific Historical Museum, Omaha, Nebraska, 1951:16, 20).

The April 10, 1869 resolution had also ordered the appointment of a commission to examine the condition of the Central Pacific and Union Pacific railroads, and to estimate the sums necessary to pay for any deficiencies in the roads. The goal was to ensure that the transcontinental railroad was "first-class," defined further as a road that "should be capable of transporting passengers and freight with rapidity, safety, and certainty – a road as good as the majority of those in the thickly settled States" (Letter of the Secretary of the Interior, May 23, 1870, 41st Congress, 2d session, Senate Executive Document 90:2).

Appointed to the commission were Hiram Walbridge, S. M. Fenton, C. B. Comstock, E. F. Winslow, and J. F. Boyd. They submitted their evaluation in a report dated October 30, 1869. They reviewed such specific construction features as: location, road-bed, tunnels, bridges, trestles, and culverts, snow sheds, track, sidings, ballast, station-houses, water stations, machine shops and engine-houses, equipment, and telegraph line. Minimal deficiencies were noted for the Central Pacific line. The modifications recommended for the CP line were limited to ballasting the track and widening the embankments. Echoing the earlier report of Isaac Morris, the commission noted a greater number of deficiencies, however, along the Union Pacific line. Because several of them were concentrated in the part of the line between Promontory and Ogden, the commission prepared a separate cost estimate for this short section. With regard to ballast used in the Promontory area, the commission found that, although a "considerable portion of the road is well ballasted with good material," still "quite a large amount" was needed to meet construction standards (Sen. Exec. Doc. 90:8).

Also requiring more work, according to the commission's evaluation, were the trestles near Promontory Summit: "Several of the high trestles between Blue Creek station and Promontory ought to be filled up at once. They were evidently intended as temporary expedients to gain time

in opening the road" (Sen. Exec. Doc. 90:6). The report's cost estimate, designating all the work that needed to be done on the line between Promontory and Ogden, appeared as follows:

Estimates for Supplying Deficiencies, Union Pacific Railroad, Promontory to Ogden	
Ballasting track	$46,000
Widening embankments	6,400
Filling high trestles between one thousand and seventy-sixth and one thousand and eighty-fifth miles, inclusive	$38,000
Abutments and piers at Bear River bridge, in addition to materials on hand and work done	5,000
Abutments, Ogden River bridge, in addition to work done and materials on hand	4,000
Filling up and making permanent water-ways at forty-four short openings	20,000
Filling up and making permanent water-ways at three larger openings	1,200
Filling, putting in straining beam bridges and abutment, at three large trestles	5,400
Correcting construction and reducing grades to conform to accepted location between one thousand and eightieth and one thousand and eighty-fifth miles inclusive	80,000
TOTAL	$206,000

When the Central Pacific acquired the Union Pacific line, the company assumed the job of making these adjustments. The work resulted in the abandonment of some of the Union Pacific's line in order to relocate the track to the much better quality Central Pacific grade. The end result was a road that was some 1,200 feet longer between Promontory and Blue Creek. The track bypassed the UP trestles and ran instead on the solid fills constructed by the CP (Crofutt 1879: 132). East of the Big Fill, material from the redundant CP constructed grade was used to reconstruct the through grade so that the height and alignments of the various grade segments matched. The cost of the work greatly exceeded the estimates, totaling over $750,000 when completed (Gregory 1876:21; Section on Terminus, Historical Catalogue, Union Pacific Historical Museum, Omaha, Nebraska, 1951:17).[16] Figure 16 shows the conditions on the east slope in 1870, after the CP assumed control of the line between Promontory and Ogden and made changes to the alignment for both safety and ease of maintenance. (See Figure 13 to compare the differences between 1869 and 1870 alignment.)

When Central Pacific took over the line between the summit and Ogden, it also became responsible for Promontory Station. In response to passengers' complaints, CP officials promptly evicted the proprietors of the tent city establishments and sent a special train to Promontory to take them as far as Corinne where they were summarily dropped. This ejection, coupled with the switch of the terminus to the station in Ogden, spelled the end of Promontory as a lively railroad stop (Best 1969a:138, 197).

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[16] More historical research is necessary to provide more specific details concerning the construction history on the east slope during the 1870s. Newspaper accounts, especially from early Corinne newspapers, may provide this information. Ayres (1982) found little information in Southern Pacific Railroad records, noting that many records were probably destroyed in the 1906 earthquake and fire in San Francisco (91-92).

Golden Spike National Historic Site
Historic Base Map
1870: East Slope

Legend

RR Grade Features
- 10 Miles Sign
- Bench Cut
- Culvert
- Culvert Site
- Representation for Telegraph Line
- Trestle Abutment
- Trestle

Historic Spoil/Borrow Pit
- Borrow Pit
- Spoil Pile

Archeological Site
- General Location

Railroad Grades
- Central Pacific
- Union Pacific

Railroad Track
- Central Pacific
- Central Pacific

Roads
- 2-Track

N

0.25 0 0.25 Miles

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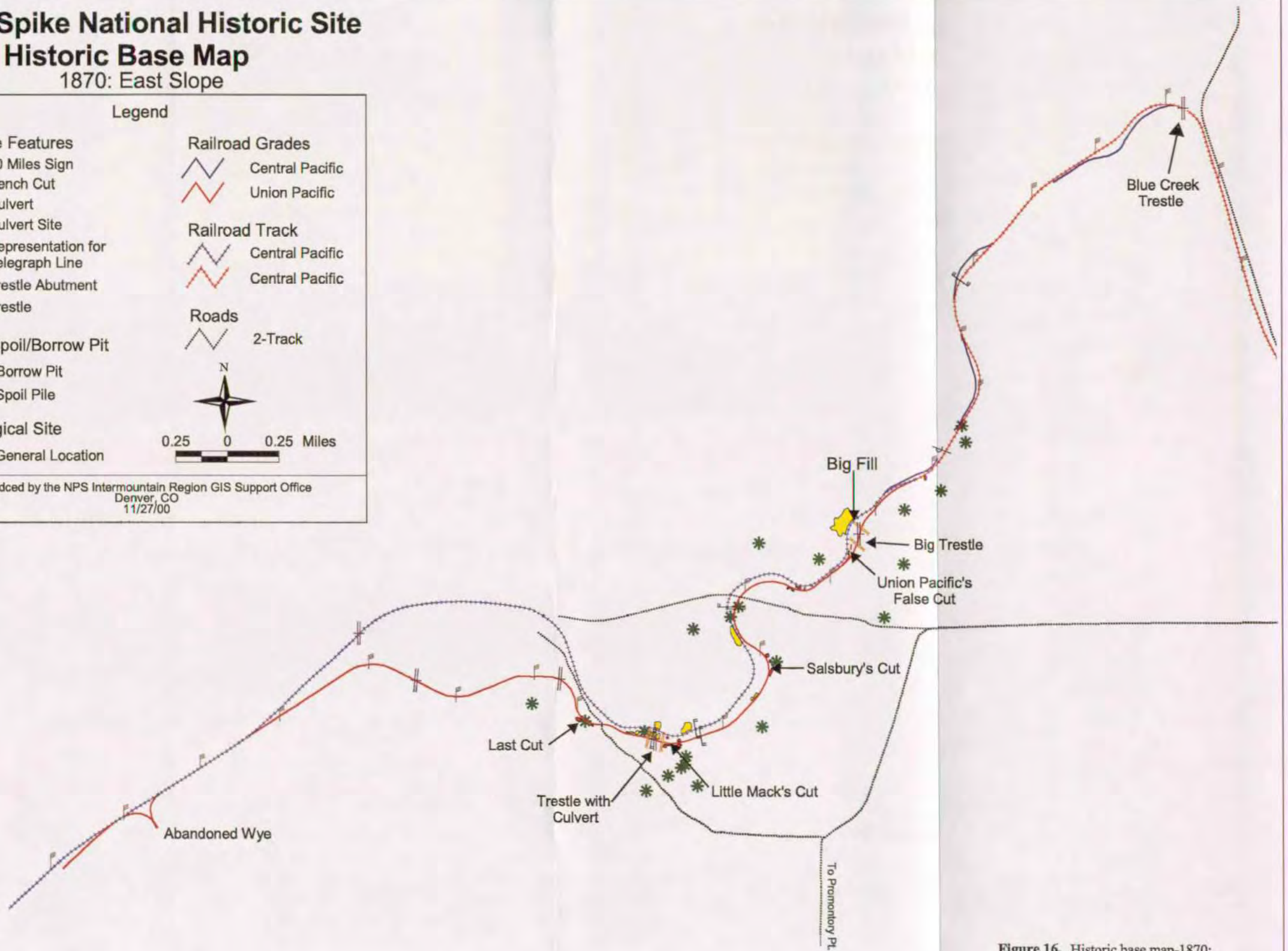

Figure 16. Historic base map-1870: East Slope

Rather than a burgeoning railroad town, then, Promontory Station became a "freighting town" and a maintenance station for the railroad. Buildings associated with its railroad functions included a freight depot from which freight was loaded onto wagons for transport to mining camps to the north and to other destinations. Other structures that served the railroad and railroad and train employees included a turntable, which had tracks running fanwise into a roundhouse built on a brick foundation. Estimates of the capacity of this roundhouse range from four to eight engines (Ayres 1982:107-109). To the south and west of the track were built a section house, tool sheds and bunk houses for workers, all painted a dark red at this point (Figure 17). Some of these buildings used cross-ties in their construction. A water tank, measuring 24 feet by 24 feet, stood near these structures (Ayres 1982:106, 108).[17] Tank cars delivered water here from the Bear River at Corinne. Water used at the Golden Hotel, described as "a more permanent frame building," was also pumped from these tank cars and stored in nearby cisterns. Water pipelines ran from the cisterns to the tracks. Promontory residents planted box elder trees – where water could reach them – to add a little green and shade to their surroundings, two of which have survived into the present (Anderson 1968:8; Owens 1974:7; Raymond and Fike 1981:22-27).

During the 1870s and 1880s, and for some time afterward, the Central Pacific continued to stop at Promontory for a short dinner break. T. G. Brown, proprietor of Promontory's Golden Hotel (Figure 18) as of the early 1890s, had handbills distributed on all the transcontinental trains, advertising his "first-class meals, 50 cents – Don't fail to treat yourself to a first class meal at this celebrated point" (Ayres 1982:108, 113; Best 1969a:197). The Golden Hotel possibly also served as the passenger depot and post office as well as a home for the Brown family (Anderson 1968:8). Brown's daughter, Marion Woodward, recalled that her father operated a restaurant, which had a small store at one end (Ayres 1982:78, 113; copy of Woodward's remembrance available at Golden Site National Historic Site).

By 1872, Crofutt's description of Promontory had changed, reflecting the reduction in activity there since the terminus had switched to Ogden. "The town was formerly composed of about 30 board and canvas buildings including several saloons and restaurants," the guidebook noted, "but now is almost entirely deserted" (1872:116). Also by 1872, passengers on the trains could look out their window to see a sign that read "Ten Miles of Track Laid in One Day, April 28th, 1869." This sign, located at a spot on the south side of the track roughly 4 miles west of Promontory Station, marked the east end of the portion of track where the Central Pacific workers had accomplished that unexcelled feat (Crofutt 1872:121).

Because of the steep slopes east and west of the station, nearly all trains coming through Promontory required the use of "helper engines." These engines met the trains either at Blue Creek or Rozel (Anderson 1968:8). In its 1876 issue, another transcontinental guidebook of the

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[17] Ayres explains that a 1920 Southern Pacific Railroad map provides the water tank's dimensions and locates it on the north side of the tracks. Interviewees differ on their memory of this, but most also place the tank on the north side (1982:108).

Figure 17. Promontory ticket and telegraph office. Photo pre-dates 1900. *Source*: GOSP Historical Photo Collection, GOSP NHS.

Figure 18. The old Golden Hotel – used as the Houghton Store after 1909. Photo taken in 1947. Source: GOSP Historic Photo Collection, C-409, GOSP, NHS.

period, Henry Williams' *The Pacific Tourist*, noted the use of helper trains out of Blue Creek: "If we have a heavy train a helper engine is here awaiting our arrival, and will assist in pulling us up the hill to Promontory." Describing the route as it wound farther up the slope, the guide continued:

> Between this and the next station, are some very heavy grades, short curves and deep rocky cuts, with fills across ravines....Leaving this station [Blue Creek], we begin to climb around a curve and up the side of the Promontory Range. The old grade of the Union Pacific is crossed and recrossed in several places, and is only a short distance away [Williams 1876:163].

By 1870, the Central Pacific had altered the track between Blue Creek and Promontory Station. The 1874 issue of Crofutt's guidebook explained that the "track along here," climbing the slope out of Blue Creek, "has been recently changed, to avoid passing over several high trestle bridges built by the Union Pacific when they extended their track to Promontory" (Crofutt 1874:91). Gradually ascending to the summit from the east, *The Pacific Tourist* noted the "grand" view of Great Salt Lake, Corinne, Ogden, and the Wasatch Mountains. Traveling west out of Promontory, this guidebook pointed out that "a sugar-loaf peak rises on our right, and as we near it, the lake again comes into view, looking like a green meadow in the distance." Regarding Promontory Station, *The Pacific Tourist* observed that "its glory has departed, and its importance at this time, is chiefly historic," well known as it was "as the meeting of the two railroads." The guidebook lamented the fact, however, that, because the trains passed through Promontory at night, passengers could not "catch even a glimpse" of the historic junction site (Williams 1876:164, 166).

In 1876, the House of Representatives passed a resolution requesting a careful and exact survey of the distances on the Union Pacific and Central Pacific lines. Captain James F. Gregory with the Army Corps of Engineers was in charge of measuring the distance of the Central Pacific Railroad between Ogden and Battle Mountain, Nevada. Specific measurements that applied to the Promontory Summit area show changes in the line since 1869 and identify two places where "old and new grades" crossed. On the east slope the "eastern junction of [the] old and new grades" was at a point 47 miles and 2089.3 feet west of Ogden. Still on the east slope, at a distance of not quite 5 miles from the previous meeting of the grades, the "western junction of [the] old and new grades" was found to be 52 miles, 1187.8 feet west of Odgen. Promontory depot was 53 miles, 443.8 feet west of Ogden. "Promontory, switch 1" was located at a point east of the depot, at a distance of 52 miles, 4007.8 feet from Ogden. Just 264 feet west of the depot was another switch, at the 53-mile, 707.8-feet mark. The "original junction" of the Central Pacific and the Union Pacific was spotted at a distance of 53 miles, 892.8 feet west of Ogden. Just 415 feet west of there was a third switch, located at a point 53 miles and 1307.8 feet west of Ogden. A fourth switch was spotted at a point 1770 feet farther west. Between the Blue Creek depot and the Rozel water tank, the surveyors identified the locations of 10 culverts and spotted the sign-post that indicated the eastern end of the 10-mile-day at a point 56 miles, 4115.8 feet

west of Odgen (Gregory, 1876, in House Executive Document 38, 44th Congress, 2d session, Feb. 1, 1877:23).[18]

Specifics concerning grades and curves on the line are as follows: The ascent of the west slope required a grade of 1.62 percent, or 1.62 feet of rise over a distance of 100 feet. On the steeper east side, the grade was "a grueling" 2.21 percent. The entire line, from Ogden to Lucin, included 31 miles of track that lay on curves less than 6 degrees; another 2 miles contained curves greater than 6 degrees; and some curves over a short stretch of the line measured 10 degrees. (A curve of 3 degrees on a main line is considered a sharp curve; a curve of 6 degrees is considered very sharp.) The speed of all trains along the route was restricted to 15 miles per hour (Strack 1997:49).

By the early 1880s, ranching was becoming an increasingly important aspect of the Promontory area's economy. Charles Crocker, one of the Central Pacific's Big Four, had been principally involved in organizing a huge livestock operation, the Golden State Land and Cattle Company (which later became the Bar-M). Crocker also oversaw the building of a large mansion that served as headquarters of the livestock company and as a place to entertain guests of the railroad. Located about a mile north and visible from Promontory Station, the "Big House" contained eight bedrooms, each with a private bath. Water from nearby springs was piped into the house. Ranch workers stayed in bunk houses with large dining rooms. Chinese cooks were hired to prepare the food for both ranch hands and guests (Anderson 1968:9).

Crocker ran as many as 75,000 cattle on open range that extended eastward from the Nevada border to the Bear River and northward through western Box Elder County, Utah and into southern Idaho. During the fierce winter of 1888, when so many ranchers throughout the West were wiped out, Crocker's outfit lost approximately 10,000 head. Around 1900, the "Big House" was moved to another Bar-M ranch, the Sorenson Ranch located in Howell, Utah. Other ranches in the Promontory area, many of which were eventually bought by Bar-M, included the Davis ranch, Connor Springs ranch, Dilly's ranch, and Hillside ranch. (Anderson 1968:9).

By the 1880s, many of the key Central Pacific officers had also incorporated the Southern Pacific Railroad Company in order to build a railroad from San Francisco to San Diego and to other points to the east. In business since late 1865, the Southern Pacific system was initially leased to the Central Pacific. In the mid-1880s this lease arrangement was reversed. During a six-week period between late September and early November, 1884, officials of both companies held a series of meetings in New York City to agree on the terms of a new leasing agreement. On February 17, 1885, the lease was signed. The Southern Pacific Company, newly organized and incorporated in Kentucky, agreed to lease the Central Pacific railroad for a term of 99 years dating from April 1, 1885, and to pay an annual rent that could vary from $1.2 million to $3.6 million, depending on the earnings of the Central Pacific (Daggett 1922:148-151; Raymond and Fike 1981:22; Section on Terminus, Historical Catalogue, Union Pacific Historical Museum, Omaha, Nebraska, 1951:26; Strack 1997:45-46).

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[18] The congressional appropriation for this survey considered Council Bluffs, Iowa, the eastern terminus of the railroad, although the House resolution indicated that Omaha was the eastern end. Captain W. J. Twining, in charge of the entire survey, treated Council Bluffs as the eastern terminus. He noted that in 1875 the Supreme Court had provided authority for this change. See House Executive Document 38, 44th Congress, 2d session, Feb. 1, 1877:4.

Remaining an entirely separate corporate entity until 1959 when it formally merged with Southern Pacific, the Central Pacific underwent a reorganization in 1899 – the timing of which reflected the coming due of the 30-year bonds issued by the federal government as part of the railroad's subsidy. After the reorganization, the Central Pacific was more able to attend to improving its railroad. Of significant concern was the objective of eliminating the route over Promontory Summit, which had become "an operational bottleneck," because the sharp ascent over the summit added both time and distance to the route. Passenger trains typically had to be divided into three sections, each of which required a helper train in order to get to the summit. The "bottleneck" moreover added expense: the frequent use of helper engines cost the railroad some $1,500 per day (Mann 1969:129; Strack 1997:47).

Planning for what would be called the Lucin Cutoff began in November, 1899. At the time, six million tons of railroad traffic – ten trains a day, each consisting of thirty-three 50-ton cars – was annually passing over Promontory Summit. The cutoff over the Bear River and Spring Bay arms of Great Salt Lake shaved 43 miles off the trip between Nevada and Ogden. In transit time, it saved an average of 24 hours. On November 13, 1903, the last rail of the Lucin Cutoff was laid. Several months later, on March 8, 1904, freight trains began taking the cutoff route, but because some parts of the fill into the lake were still settling, passenger trains continued to pass through Promontory until September 18, 1904. Finally, on January 1, 1905, the Lucin Cutoff was officially opened (Strack 1997:47-48). Subsequently, the frequency of trains through Promontory Station gradually diminished and the economy of the area increasingly depended on agriculture.

The Promontory Branch Line: 1905-1942

The line between Ogden and Lucin that crossed Promontory Summit after the creation of the Lucin Cutoff became known as the Promontory Branch. During this 37-year period, the railroad performed routine maintenance on this branch (Strack 1997:48). The number of times that a train whistle blew at Promontory Station gradually lessened as train traffic decreased from 10 trains daily to a once-weekly mixed train (passenger and freight) that traveled the entire branch and another mixed train that ran between Corinne and Kelton three times a week, on Mondays, Thursdays, and Saturdays. Freight traffic was primarily outbound. During serious periods of drought in the late 1920s and again in the mid-1930s, however, the trains delivered emergency supplies of water along the line. In 1928, trains hauled 435 tons of water to the area; in 1934, the quantity reached 269 tons (Strack 1997:49).

By the late 1930s, the number of trains using the Promontory Branch had diminished even further. From December 1937 to June 1938, a mixed train covered the route between Lucin and Ogden only on Wednesdays, and another, sometimes called the "Alkali Flyer" or the "Sage Brush Special," went as far as Kelton from Ogden twice a week. For a year following June 1938, only the Wednesday train ran. From June 1939 to March 1940, the train no longer went as far west as Lucin, running only once a week between Kelton and Ogden. Finally, from March, 1940 until the line's abandonment in 1942, an on-call, freight-only service operated on Wednesdays (Anderson 1968:10; Strack 1997:49).

Types of freight reflected the predominately agricultural nature of the economy in the Promontory area. Shipments out of the area during this period included wheat and sugar beets, sheep and cattle, as well as asphalt from a company located near Rozel. Promontory Station served as one of the places for loading grain. In addition to emergency deliveries of water,

shipments to the area primarily brought hay and grain to supplement the sparse grazing resources characteristic of the arid environment (Strack 1997:48-49).

During the branch's last years in operation, special passenger trains were occasionally run, including groups of rabbit hunters that took excursion trains across the Promontory line. Also, twice in 1938, and once in 1939, the Civilian Conservation Corps took groups of passengers on special trains over the Promontory Branch (Strack 1997:49).

Shortly after the turn of the century, the building that housed the Golden Spike Hotel became the Houghton's store. In addition to being the general store where one could buy everything from tobacco to socks to cured meat to wine, this building continued to serve as the depot and post office, as well as a boarding house (Anderson 1968:8; Finn 1974:24). Sometime between 1905 and 1907 Frederick Houghton bought the business (Ayres 1982:113). One of his daughters, Bernice Houghton Gerristen, later remembered that the train then arrived at noon and that on every Thanksgiving and Christmas her mother always set pies out: one for the engineer and one for the baggage car workers (1974:11).

W. A. Clay, who was born at Promontory Station in 1884, was the son of the night telegraph operator there. The family soon moved to Blue Creek after he was born, but he noted that the area remained sparsely settled: "The closest neighbors were two and a half miles away, and then they averaged up to ten or fifteen miles away. Nearly all of them were Mormons. All up and down the east side of Promontory there were half a dozen ranches, and they were all Mormons" (1974:3).

Della Owens, daughter of Hans Ethelbert Larson, was born at Brigham City in 1909, although her family lived at Promontory at the time. The Larsons had been there for three years by then. Their ranch, where they raised both horses and cattle and had a dry-farming grain operation, was located "just east, down the hill and [was] the first place south on the mountain." She later recalled that all the railroad buildings had been painted yellow over the original red paint. She described the section house as "just a big two story building," while the bunk houses were "low houses made out of ties" with 7-foot ceilings and flat roofs that may have been made out of dirt. She remembered area schools, including one at Promontory Station that was probably located south and west of the tracks (Owens 1974:1, 5-7, 13).

Della's sister, Mrs. Jennings Phillips, remembered riding in the train one time. She described its process up the slope in this way: "Going up the grade, one little old engine puffing away with a lot of smoke trailing it and maybe two or three cars." Although the train only ran three times a week then, its schedule was regular enough so that "we knew the time of day by when that train came" (Phillips 1974:12). Like others with memories of their childhood in the Promontory area, her lasting impression was one of the remoteness of the place. Characterizing the area as "a lot of nothingness," she recalled that the "nearest house we could see was five miles or more to the south" (1974:2).

Growing up near Promontory Station, Della Owens remembered that no one then placed any special emphasis on the history of the joining of the rails of the first transcontinental railroad at the summit. Nor did anyone pay any particular attention to the spot where the golden spike had been driven: "Oh, we knew [about] it," she explained, "but there was no notoriety other than just in our little area there. Nobody ever talked about it at that time" (1974:23). This lack of emphasis perhaps explains why various sources provide different dates as to exactly when the Southern

Pacific placed the white obelisk monument on the north side of the tracks to commemorate the driving of the last spike (Figure 19). Bernice Gibbs Anderson, who spent most of her childhood on a ranch located west of Corinne, dates the erection of this monument during the years 1914-1915 (Anderson 1968:2, 4). This memory conflicts, however, with the original plans, which are dated May, 1916, and are currently archived at Golden Spike National Historic Site. Bernice Houghton Gerristen remembered that the monument was located about "half way between the section house and the store" that her family ran, and was therefore located close to the junction point (1974:7; NPS 1988:8). On a granite block embedded in the concrete obelisk are inscribed the words:

> Last Spike. Completing First Transcontinental Railroad.
> Driven at this Point. May 10th 1869.

Figure 19. The obelisk placed by the Southern Pacific in its original location. *Source*: GOSP Historic Photo Collection, GOSP NHS.

Southern Pacific's Efforts to Abandon the Promontory Branch and the "Undriving" of the Last Spike

Initially, in April 1933, contending that there simply was not enough business on the line, Southern Pacific sought permission from the federal Interstate Commerce Commission (ICC) to abandon the western end of the line between Kelton and Lucin. Over a year later, in June of 1934, the ICC denied this application, ruling that the slight potential savings to the railroad company did not justify the inconvenience to shippers that would result from abandoning this portion of the branch. Southern Pacific again tried to close this segment of the railroad in December of that year, still arguing that there was not enough business to warrant running any trains over this 55-mile stretch of the road. The ICC denied this application for reconsideration in March of 1936, for the same reason that it had denied the original attempt. Trying a different approach, the SP next sought permission from the Utah Public Service Commission, which ruled in March of 1937, that the company could discontinue all trains on the westernmost 20 miles of the line (Strack 1997:48-50).

Some five years later, on June 11, 1942, after the United States had entered World War II, the ICC finally approved Southern Pacific's request to abandon 123 miles of the remaining Promontory Branch line. This decision followed an April 22, 1942 request from the War Department for help from the Southern Pacific in obtaining old rails for defense purposes. The War Department had, in fact, specifically inquired about the "very rarely used" rail of the Promontory Branch (Strack 1997:50).

During the summer of 1942, beginning on July 1 and finishing during the first week of September, a Chicago firm – the Hyman-Michaels Company – pulled the rail along the Promontory line, starting at a spot 4 miles west of Corinne. At a rate of roughly 3 miles a day, two engines moved track-pulling equipment that lifted and loaded the old rails onto flat cars. An 8-man crew operated the block-and-tackle hoist that was mounted on a wooden frame at the end of a flat car. Because of the danger of ground fires caused when the locomotives sparked fires in the vegetation along the right-of-way, workers also had to dig fire breaks in order to protect the thousands of acres of wheat then growing on either side of the Promontory line (Mann 1969:131). Providing sorely needed wartime rails for tracks at military installations, the pulled rails were subsequently reused for tracks at the Utah Quartermaster Depot in Ogden, at Hill Field, at the Clearfield Navy Supply Depot, and the Tooele Army Depot (all in Utah), and at another military base located in Hawthorne, Nevada (Mann 1969:131; Strack 1997:50).

To mark the occasion of the pulling of the last spike of the Promontory Branch, Utahns scheduled a ceremony for September 8, 1942. Among those in attendance were: Utah Governor Herbert Maw, representatives of both the Union Pacific and Southern Pacific railroads, other state officials including the attorney general and secretary of state, military personnel, members of the Daughters of Utah Pioneers, Box Elder County officials, as well as ranchers and farmers from the area. Of special significance, Mary Ipsen, then 85, who as a young 12-year-old had also been part of the crowd that celebrated the driving of the golden spike on May 10, 1869, was able to attend (Mann 1969:131, 134).

Those who planned the "undriving" ceremony attempted to recreate many of the features of the "driving" celebration that had occurred some 73 years earlier. The weather even cooperated

by bringing a similarly pleasant, clear day. At around noon, the Hyman-Michaels Company situated its two locomotives nose to nose at a rail length's distance. George Albert Smith, a member of the Council of Twelve Apostles of the LDS church, provided an invocation.

Mrs. Ralph Talbot, Jr., whose great-uncle had attended the 1869 ceremony and whose husband was the brigadier-general commanding the Utah Quartermaster Depot, then handed a claw bar to Governor Maw. He and others took turns removing the last spike, until Everett Michaels, vice-president of Hyman-Michaels, made the final pull (Mann 1969:134).

The closing of the Promontory Branch brought even quieter times to the summit. Circa 1950, the roof of the previously abandoned Houghton store caved in. The 1930s telegraph wires continued to hum until the late 1950s, when the Southern Pacific Company replaced the telegraph line with a cable laid along the new track over the Lucin Cutoff. Vandals destroyed parts of old wooden culverts and trestles; others took pieces of the remaining structures for souvenirs. The last of the section houses burned down during the 1960s. But every year for twenty years before Congress voted to create the Golden Spike National Historic Site in 1965, the Golden Spike Association of Box Elder County, Utah, celebrated the joining of the rails at Promontory by re-enacting the May 10, 1869 ceremony. In this way the local organization helped to keep alive the memory of the historic race to complete the first transcontinental railroad.

Figures 20 and 21 show the conditions on the west and east slopes of the NHS in 1942.

Creation and Administration of the Golden Spike National Historic Site: 1957-2000

On April 2, 1957, Interior Secretary Fred Seaton took the first official step to recognize the significance of what had occurred at Promontory by designating a 7-acre tract of land at the summit that belonged to the Southern Pacific as a national historic site to commemorate where Leland Stanford, Thomas Durant and others had driven the last spike. This designation reflected both the continuing efforts of the Golden Spike Association since 1947 and growing National Park Service interest in protecting the site. From 1957 until 1965, the Golden Spike Association of Box Elder County, spearheaded by Bernice Gibbs Anderson, maintained the site through a cooperative agreement[19] among the federal government, the state of Utah, and the Southern and Central Pacific railroad companies. Both the designation of the land and the cooperative agreement were done under the authority of the Historic Sites Act of 1935 (Anderson 1968:1; Stewart Udall, Secretary of the Interior, to Sen. Henry Jackson, letter, May 17, 1965, printed in Senate Report 329, 89th Congress, 1st session, p. 4).

In addition to the annual reenactments of the Golden Spike ceremony, other developments at the site between 1957 and 1965 included placing two parallel lengths of rail on the 7-acre leased tract. The concrete monument previously placed there by the Southern Pacific remained at the site, surrounded by an iron fence. A brass plaque, indicating that the area had been named a national historic site, was placed on the monument in 1958. But it seemed to many that the completion of the first transcontinental railroad linking the Pacific to the Atlantic and opening

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[19] The agreement was actually signed in 1956.

the interior West to settlement and economic development deserved more recognition. In October of 1959, and again in September of 1960, the Advisory Board on National Parks, Historic Sites, Buildings and Monuments recommended enlarging the site and increasing development and interpretation of the area (Udall to Jackson, letter, May 17, 1965, Senate Report 329, 89th Congress, 1st session, pp. 4-5).

In February of 1963, the Southwest Region of the National Park Service completed an area investigation report, numbered NHS-GS 7100A, recommending that the federal government acquire as much land as was thought necessary to establish a national monument at the site of the completion of the first transcontinental railroad, including the site of the driving of the last spike that symbolized the completion. This report kindled interest in Congress regarding the need to create a more lasting and more informative tribute to the joining of the rails at Promontory (Senate Hearing before the Subcommittee on Parks and Recreation of the Committee on Interior and Insular Affairs, United States Senate, 89th Congress, 1st session, May 19, 1965, pp. 1-2).

As the centennial of the May 10, 1869 Golden Spike ceremony approached, the Utah delegation in Congress began to sponsor legislation that would establish the Golden Spike National Monument (later amended in the final bill to Historic Site). Utah Senator Wallace Bennett, for example, introduced bills to create a national monument in both the 87th and 88th congresses. Finally, in 1965, during the first session of the 89th Congress, Senate bill 26 was passed, which authorized "the Secretary of the Interior to acquire lands for, and to develop, operate, and maintain, the Golden Spike National Historic Site" in order to commemorate "the completion of the first transcontinental railroad across the United States." On July 30 President Lyndon Johnson signed the measure into law (Act of July 30, 1965; Senate Hearing before the Subcommittee on Parks and Recreation of the Committee on Interior and Insular Affairs, United States Senate, 89th Congress, 1st session, May 19, 1965:15).[20]

During Senate hearings on S. 26, held on May 19, 1965, the bill's sponsor, Utah Senator Frank Moss, stated that the action to enlarge and develop the site at Promontory was "long overdue." Describing the achievement as the culmination of the "greatest roadbuilding race in history," Moss praised the railroad engineers who a century ago had defeated

> Indians, sweltering heat, sub-zero weather, and the seemingly unassailable ramparts of the towering Rockies and Sierra Nevadas. A heterogeneous host of workmen were used, including brawny Irishmen, pigtailed Chinese, and industrious Mormons. Success was achieved only by a veritable miracle of organization and teamwork, and the unbelievable endurance of the men who laid the rails.
>
> The "marriage of the rails" fulfilled the dream of Columbus for a shorter route to the Orient, insured possession of the entire West to the United States, and began a new era of development of the Nation [1965b:6].

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[20] The citation is 79 *Stat.*, 426.

Golden Spike National Historic Site
Historic Base Map

1942: East Slope

Legend

RR Grade Features
- 10 Miles Sign
- Bench Cut
- Commemorative Obelisk (Original Location)
- Culvert
- Culvert Site
- Eroded Grade Remnant
- RR Property Marker
- RR Set-out
- SP Wood Trestle
- Representation for Telegraph Line
- Trestle Abutment
- Trestle
- Trestle Site
- Well (Blue Creek)

Historic Spoil/Borrow Pit
- Borrow Pit
- Spoil Pile

Railroad Grades
- Central Pacific
- Union Pacific

Railroad Track
- Southern Pacific
- Southern Pacific

Roads
- Paved
- Gravel
- 2 -Track

Archeological Site
- General Location

N

0.25 0 0.25 Miles

Produced by the NPS Intermountain Region GIS Support Office
Denver, CO
11/27/00

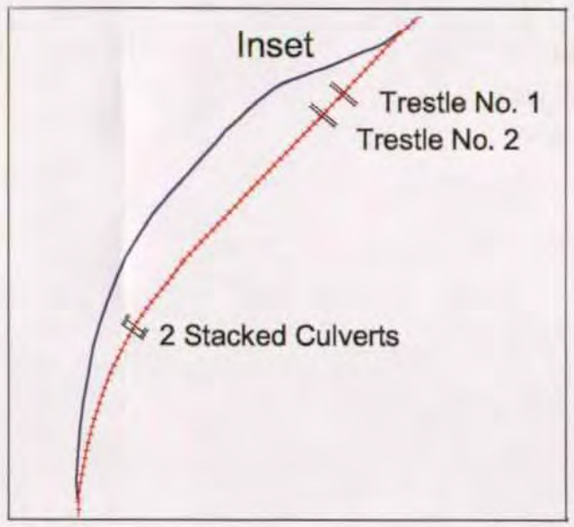

Figure 21. Historic base map-1942: East Slope

Senator Moss also noted that at its last session the Utah state legislature had created a Golden Spike Centennial Commission and had appropriated $10,000 for the commission to spend on organizing a celebration in honor of the 100th anniversary in 1969. Building on that momentum, Moss found the time ripe for giving "the area the status it deserves so its full development may be undertaken by the National Park Service and it can be ready for its rendezvous with history in 1969." Moss explained further that the Southern Pacific Railroad had recently deeded to the federal government a 730-acre portion of the old right-of-way, but that the Department of Justice had raised questions regarding the title to this land. The need to obtain a clear title, Moss continued, had been one of the reasons he was seeking this legislation (1965b:7).

Also testifying at the Senate hearing in favor of the bill was the director of the National Park Service, George B. Hartzog, Jr. He stated that the creation of the Golden Spike National Historic Site (NHS) would allow the National Park Service "to preserve and to partially restore this significant area and to employ its skill in interpreting the railroad story and showing the social, political, and economic results of this great transportation advance." Hartzog noted that through a combination of purchasing and exchanging lands, the Interior Department would acquire 2,176 acres for the site, in a linear strip of the railroad's right-of way measuring 15½ miles long. Most of this strip, Hartzog explained, was 400 feet wide, except for wider areas at the Golden Spike Monument and other locations needed for a visitor center, access roads, overlooks, parking, wayside exhibits and other necessary facilities (1965b:11).

Director Hartzog also explained that of the total site acreage, 1,542 acres of private land (including the Southern Pacific Railroad Company acreage under clouded title) would be purchased for $118,000 and the remaining 634 acres of state lands would be exchanged for other federally owned lands. In answer to a question from Nevada Senator Alan Bible as to why this much acreage was needed for a historic site, Hartzog replied that the Union Pacific and Central Pacific railroads had started building their two lines in 1862.

> They passed each other here. Rather than meeting, they went by each other until finally the Federal Government rejected this and required that they join their lines at the site that has now been recognized as Promontory Summit, on this right-of-way. All of the cuts and fills, evidencing this competition between these two lines, still remains on the terrain. This is hilly county, through this large area here, and affords the best opportunity for a high-ground interpretation of the passing of these two lines....We believe that it is necessary to acquire enough land to spread out in this particularly historic area for roadside interpretation and an overview of this whole terrain [1965b:12].

In addition to the funds needed for land acquisition, Congress also appropriated $1,050,000 for development of the site. This money was used to build the visitor center, to provide the necessary parking areas and other facilities, to build access roads, and to develop interpretive exhibits at the Golden Spike NHS. The legislation also authorized annual operating costs, which were initially estimated at $80,000 (Senate Report 329, 89th Congress, 1st session, 1965, p. 3). In 1976, Congress voted to substantially increase the appropriation for the site, raising the total for land acquisition and development to $5,422,000 (Act of October 21, 1976).[21] Finally, in 1980,

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[21] The citation is 90 *Stat.*, 2732.

Congress amended the boundaries of the site, increasing its acreage to just over 2,735 acres, including 532 that remained in non-federal ownership (Act of September 8, 1980; NPS 1988:4).[22]

As of 1988, this development ceiling had been changed to $5,324,000, but an additional $348,000 had been allocated for land acquisition (NPS 1988:6). Also, in 1992, Congress appropriated $195,000 for a study of the feasibility of constructing a tourist railroad to link Golden Spike NHS to Ogden. Although the 1980 legislation had first authorized this study, it was not conducted until the early 1990s (NPS 1994:Executive Summary). Several related studies have been completed or are underway with funds from the State of Utah to further assess the viability of this proposal or, alternatively, of a shorter passenger operation at the Last Spike Site.

Site Development since 1965

The timing of the creation of the Golden Spike NHS reflected the imminent centennial of the joining of the rails at Promontory Summit. As a consequence, early developments after 1965 focused on building a visitor center, completed in 1969, and on preparing to re-enact the May 10, 1869 ceremony as authentically as possible. Over 28,000 people attended the 100th anniversary festivities, including Bernice Gibbs Anderson who had worked so hard to promote the establishment of the national historic site. Two representative engines, the *Genoa* and the *Inyo* were delivered to the site, on loan from the Virginia and Truckee Railroad in Nevada. To prepare for the event, planners studied old photographs and the historical record to ensure that features like telegraph poles and lines, cross-ties, rails, spikes, and the parallel grades appeared as similar to the originals as possible (Hanover 1996:26; Ketterson 1969a:60-68). The National Park Service has since partnered with the Golden Spike Association of Box Elder County to continue to reenact the May 10, 1869 ceremony (NPS 1988:5).

The "ribbon of land" that constitutes the site can be segmented into three major areas of historic interest – the east slope, the west slope, the summit area (NPS 1988:7). At the summit, the Park Service tells the story of the completion of the railroad and its impact on the development of the West, and in turn, the history of the nation. At the summit, in addition to the 1969 completion of the 3,000-square-foot visitor center, two miles of track have been laid that link the historic railroad grade at the last spike site to a locomotive storage building located northeast of the visitor center at the "tail" of the historic UP wye. Construction of this track was designed to reproduce the appearance of the track in 1869 as much as possible, including consideration of how the ties appeared and how switches were then built (Gordon Chappell to Warren Huffstutter, memorandum Aug. 29, 1979, Central Files "D" – Construction and Maintenance, Golden Spike National Historic Site; NPS 1988:18). Construction of the track, including sidings and a re-creation of the Union Pacific's "wye," entailed the use of 684 rail lengths; 5,472 cross-ties, and 21,888 spikes (Bob Dowty to Maintenance Foreman, memorandum, Sept. 30, 1987, Central Files "D" – Construction and Maintenance, Golden Spike National Historic Site). In 1979, replicas of No. 119 and *Jupiter*, the two steam engines that met on May 10, 1869, arrived at the site to help tell the story even more completely (Housing

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[22] The citation is 94 *Stat.*, 1133. The expanded acreage was based on "Boundary Map, Golden Spike National Historic Site, Utah," no. 431-80,026, dated December 6, 1978.

Management Plan for Golden Spike National Historic Site, March 3, 1988, Central Files "D" – Construction and Maintenance, Golden Spike National Historic Site).

Other physical features of the park lands inform visitors about the construction race to complete the railroad. On the east slope these include: the remaining parallel grades of both the Central Pacific and Union Pacific lines; Union Pacific trestle footings at the Big Trestle location and the Central Pacific's Big Fill bridging the same ravine; stone and wooden culverts; two still-standing Southern Pacific trestles; drill marks still visible in the rock cuts; and the bases of historic telegraph poles. A self-guided 7-mile-long auto tour in combination with a 1-mile round-trip walk to the Big Fill are features on the east slope that help relate the construction history. In addition, much evidence of the locations of railroad construction camps can be found on the east slope. This evidence includes the remains of pit houses, dugouts, fireplace chimneys, and hearth areas, as well as numerous stone foundations, rock walls, and leveled tent platforms (Anderson 1983:225-238; NPS 1988:8, 14). On the east slope there is also a natural rock arch known as Chinamen's Arch located just north of the railroad grade near Carmichael's Cut. The name for this natural feature is part of the oral tradition of the area; its exact origin is unknown, other than it is believed to have been named Chinamen's Arch in memory of the Chinese workers who helped to build the transcontinental railroad.

The west slope includes just over 3 miles of the 10 miles of Central Pacific track that was laid in one day – on April 28, 1869. Also evident are the remnants of the Union Pacific's grade that proved to be a duplicative effort. The west slope also contains the best example of a stair-step cut, an incomplete cut in the UP line that shows how material was removed in a stair-step fashion from bedrock outcrops. Drill marks, and stone and wooden culverts are similarly present on the west slope. Likewise, archaeological evidence of construction camps dots the west slope, including the remains of pit houses, lean-to shelters, trash pits, as well as rock walls and chimneys (Anderson 1983:225-238; Ketterson 1969b:Historic Base Map with Modern Features).

Although there is some concern for the impact of increasing pollution in the Salt Lake Valley, high points in the park continue to afford vistas of the north arm of Great Salt Lake. While traffic on nearby roads has markedly increased, especially to and from the Morton-Thiokol plant located some 6 air-miles east of Golden Spike NHS, the site area remains remote. This remoteness itself is part of the continuing story of Promontory. The decision to establish the terminus at Ogden reflected Promontory's isolation and, consequently, Ogden's greater commercial viability. The terminus decision thus spelled the end of Promontory's short life as a bustling tent-city.

Prior to the building of the Pacific Railroad by the Union Pacific and the Central Pacific, the Promontory Summit area remained the quiet home of jack rabbits and sagebrush. For a period of intense construction activity during the first months of 1869, the slopes of the summit teemed with life at railroad construction camps, and days and nights both were filled with the heavy work of parallel grading and the quick progress of track-laying. On the day of May 10, 1869, the final rails were laid and the last spike driven. The telegraph constructed at the same time announced the accomplishment to the rest of the nation, which exploded in celebrations from coast to coast.

For several months after the wedding of the rails, when Promontory Station served as the terminus, passengers and railroad workers supported Promontory's string of tent establishments and a few more substantial businesses such as the Pacific Hotel. But when the terminus shifted to

Ogden, Promontory changed to a maintenance station and home to just a few families. Ranching and dry-farm grain production became the prominent economic activity in the vicinity. After 1904, as a result of technological advances in railroad construction that had made possible the Lucin Cutoff, Promontory gradually grew even quieter; windmills dotted the landscape and a few rural roads crossed it. The frequency of the trains over the summit then diminished over the next three decades, until the rails were pulled to help support the war effort during World War II.

But the national significance of completing the first transcontinental railroad in 1869, told in the story of the joining of the rails at Promontory, warranted greater recognition than what the monument placed there by the Southern Pacific Railroad could convey. As the centennial of the road's completion approached and with the support of Utah's congressional delegation, Congress formally recognized the value of preserving the history of this achievement by creating Golden Spike National Historic Site. Since then the park at Promontory Summit has provided a way both to honor the significance held by the building of the transcontinental railroad in United States history and to retell the extraordinary story of its construction.

Chapter 3: Existing Conditions

The Golden Spike National Historic Site is comprised of three distinct areas, Promontory Summit or the "headquarters" area, which includes the "Last Spike Site," and the two predominately linear segments of park land that extend east and west from the site, referred to as the West Slope and the East Slope. Promontory Summit serves as the center for visitor services and interpretation and for park service administration, and maintenance. Areas to the east and west sides of the Last Spike Site are used principally for interpretive purposes. The following discussion of the existing conditions of Golden Spike NHS is organized by landscape characteristics, in most cases with a separate discussion for each of the three areas identified above. Figures 22 through 24 illustrate the existing conditions of the summit and of the west and east slopes respectively.

Existing Land Use and Spatial Organization

Promontory Summit

Promontory Summit is the most intensively developed area within the park boundaries. It serves as the focal point for park service interpretive and commemorative efforts, for visitor services, and for park service administration and maintenance. The single, permanent employee housing unit is also located in this area.

Interpretation and Commemoration

Park visitors are usually introduced to the site through the visitor center, where they pay their entrance fees and are given the opportunity to watch a film or video and view the museum exhibits. Visitors then proceed outside to the Last Spike Site. In order to present the events of May 10, 1869, the park service has reconstructed the transcontinental grade tracks and ties along its historical alignment. Replicas of the two telegraph lines, square poles for the CP and round poles for the UP have also been reestablished along the two respective grades. A United States 20-star flag flies from a pole affixed to one of the UP telegraph poles. Two full-scale operational steam engines, replicas of the UP's 119 and the CP's Jupiter, are used daily during the summer season to reenact the joining of the rails. Wooden benches have been constructed just opposite the Last Spike Site, to accommodate visitors during the park's reenactment of the ceremony. Modern interpretive signage is also located in the vicinity of the visitor center and the Last Spike Site. Figure 25 shows the reconstructed rails and replica engines at the Last Spike Site.

An area near the visitor center contains various memorial plaques, erected to commemorate the contribution of various ethnic groups (Chinese, Irish), to the completion of the nation's first transcontinental rail line (Figure 26). The obelisk erected by the Southern Pacific Railroad to commemorate the completion of the transcontinental line is currently located on the east side of the visitor center, opposite the parking area.

Visitor Services

Visitor services other than those associated with interpretation are limited. Restroom facilities are contained within the visitor center, and a few picnic tables are located outside this building.

Park Service Administration and Maintenance

Park administration functions are housed in the visitor center. Maintenance buildings (consisting of a combination garage/shop and the engine house) are located about 1000 feet northeast of the visitor center at the base of a hill slope (Figure 27). A large earthen berm shields these buildings from the visitor center and Last Spike Site. A "bone yard" consisting of three small buildings and piles of surplus materials, is located 150 north of the primary maintenance area, adjacent to the park boundary (Figure 28).

Employee Housing

The single permanent housing unit, the ranger residence, is located in the vicinity of the maintenance area, northeast of the visitor center. Within the past year several trailers have been moved into the area adjacent to the visitor center for use as housing for a seasonal archaeological field crew. Concrete pads for volunteer trailers and motor homes are also located adjacent to the visitor center.

West Slope

Interpretation and Commemoration

Lands within the park boundary west of Promontory Summit are used principally for interpretation of the final push to complete the transcontinental railroad. Portions of the transcontinental railroad grade (the grade originally constructed by the CP) have been adapted for reuse as a self-guided automobile tour route. Numbered stops along the grade correspond to a tour book obtained at the visitor center. In addition to the continuous segment of the CP grade, this area contains the discontinuous segments of the UP grade, which was never completed. A replica of the historic-period sign marking the completion point of the CP's 10 miles of track laid in a day is the single commemorative marker in this area (Figure 29).

Agricultural uses

Other west slope land uses include two stock crossings. Adjacent private landowners move their livestock from one side of the grade to another through the specified crossings demarcated by an electric fence. Land use adjacent to the grade but outside the park boundary is limited to agricultural activities including grazing and some dry-land farming.

Figure 22. Key

Feature Number	Description and Identification (If Known)
	Historic Features (contributing to landscape significance)
1	Historic trash area - Possibly the remains of the Peterson Ranch
2,3,4	Railroad track beds
5	Historic trash area
6	Abandoned road or road-like feature
7,8	Historic trash area
9	Depression & historic trash area
10	Cellar & small pit
11	Matrimony Vine (*Lycium barbarum*) cluster with scattered bricks on the surface. This may be the remains of the Section House.
12,13,14	Depressions
15	Historic trash area
16	Shallow depression
17,18,19	Depressions
20	Shallow depression
21,22	Small circular pits
23	Matrimony Vine (*Lycium barbarum*) cluster with shallow depression in the center. This may be the remains of the "tie houses" - the Southern Pacific houses for workers.
24	Site of Promontory school house (second and third school houses)
25	Abandoned path or feature resulting from ground disturbing removal of the 3rd schoolhouse.
26,27	Site of ranch buildings, cistern (Floyd/Larson Place)
29*	Mound of cinders
30	Site of Houghton Store & associated structures - now appears as Matrimony Vine (*Lycium barbarum*) clusters, cistern & cellar
31	Historic box elder (*Acer negundo*) trees
32	Site of "Blue House." This is the remains of the wind mill foundation and location of the well. Semicircular berm around well is recent and done to protect the well from water runoff. Blue house site is actually under the road, and associated Matrimony Vine appears north, around the modern parking lot. This was the Houghton home.
33	Large circular depression once used for feeding cattle. Its original function is unknown.
34	Hansen cistern
35	Building debris
36	Hansen Ranch remains and features
37	Depression - Hansen Ranch remains
38	Golden Currant (*Ribes aureum*)
39	Round house foundations (based upon LeFevre's 1973 test excavations)
40	General site of post - 1910 burial (railroad worker) - site located in 1978 by Mayme Lower, whose family tended the grave as long as she lived in Promontory Station.
41	The third Promontory school house. (Private ownership; not in original location - moved when NPS acquired lands.)
42	General site of 5 historic graves once tended by Whitaker family before locations were obliterated by NPS - area pointed out by Arnold Whitaker in 2000.
43	Current location of Commemorative Obelisk (moved to this site in 1980)
44, 45	Abandoned ranch roads
46	NPS two-track service road on alignment of historic road system through Promontory Station
47	Original location of Commemorative Obelisk
48	Snodgrass complex, including windmill, matrimony vine clusters, building remains

Figure 22. Key

Feature Number	Description and Identification (If Known)
	Modern Features (non-contributing to landscape significance)
60	Visitor center/administrative offices/interpretive complex/parking
61	Service road to residence and maintenance facilities
62	Ranger residence
63	Maintenance facility
64	Engine house
65	NPS "bone yard" storage facility
66	Reconstructed telegraph poles
67	NPS well
68	NPS earthen protective screen (berm) for maintenance yard
69	NPS septic system
70	NPS entrance sign
71	Engine yard
72	Maintenance yard
73	NPS fire hydrant
74	Transformer
75	NPS water tank
	Modern Removed Features (non contributing to landscape significance)
100	Remains of NPS gravel path to now-removed picnic area underneath Box Elder tree.
101	Second location of Commemorative Obelisk - Moved to this site in 1968 and moved to current location in 1980.
102	Abandoned county road
103	1969 NPS erroneous reconstruction of UP siding

* Number 28 does not exist (feature associated with old highway through the area was removed and its location obliterated).

Golden Spike National Historic Site

Existing Conditions: East Slope

Legend

RR Grade Features
- 10 Miles Sign
- Bench Cut
- Cattleguard
- Stock Crossing
- Commemorative Obelisk
- Culvert
- Culvert Site
- Eroded Grade Remnant
- Entrance Sign
- Last Spike Site
- AT&T Cable Manhole
- Pipeline (Gas)
- Powerpole
- RR Property Marker
- RR Set-out
- SP Wood Trestle
- Telegraph Pole Remnant
- Trestle Abutment
- Trestle Site
- Blue Creek Well

Railroad Grades
- Central Pacific
- Union Pacific

Roads
- Paved
- Gravel
- 2 -Track

Archeological Site
- General Location

Historic Spoil/Borrow Pit
- Borrow Pit
- Spoil Pile

N

0.25 0 0.25 Miles

Produced by the NPS Intermountain GIS Support Office
Denver, CO
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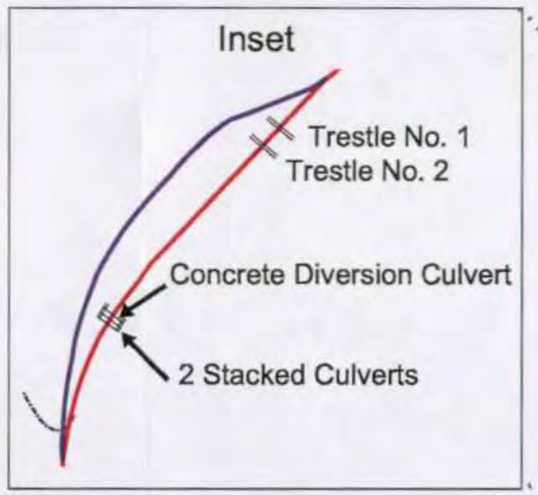

Figure 24. Existing Conditions: East Slope.

Figure 25. View to northwest toward the reconstructed rails and replica engines at the Last Spike Site. *Source*: HRA 2000.

Figure 26. View to northeast – memorial plaques at rear of Visitor Center. *Source*: HRA 2000.

Figure 27. View to southeast towards the engine house. Roof of maintenance building is visible at right of photo. *Source*: HRA 2000.

Figure 28. View to northwest toward park service bone yard, Promontory school and windmill. Fence marks the current park boundary. *Source*: HRA 2000.

Figure 29. View to northeast along CP grade – west auto tour – replica of historic "10 miles of track laid in one day" sign. *Source*: HRA 2000.

East Slope

Interpretation and Commemoration

Like the lands on the west slope, lands within park boundaries on the east slope are also used primarily for interpretive purposes. The East Grade Auto tour runs along a portion of the historic transcontinental grade in this East Slope area. In addition to the auto tour, there is also an interpretive hiking/biking trail – the Big Fill Walk – that interprets the construction challenges of the Big Fill built by the Central Pacific and the Big Trestle built by the Union Pacific. The park service has added several parking pullouts, some with interpretive signage, to access points of interest.

Agricultural Uses

Like the west slope, the east slope park lands also are affected by adjacent agricultural uses. Along this portion of the grade there are several ranch access roads that cross the grade. At the east end of the park, near Blue Creek, the railroad grade was once used as a county access road. Local ranchers continue to use it in this manner.

Circulation

Circulation systems within the park consist of the publicly funded road systems that provide access to and through the park, private ranch access roads, internal roads constructed by the park service primarily for operations and maintenance purposes, and park service interpretive roads

and trails. In addition, the summit area contains a variety of pedestrian paths to facilitate movement through the visitor center and Last Spike Site.

Promontory Summit

Public Access

The only access route into the park is via County Road 7200 North, also known as Golden Spike Drive. This road branches from State Highway 83 and leads to the park service visitor center at Promontory Summit where it skirts the perimeter of the parking lot (Figure 30). Access into and out of the parking area is limited to two points by a continuous curb. Visitors enter the parking area through an opening in its east side and exit through an opening at the west end. Visitors can either proceed west along the county road to access the starting point of the west-side auto tour, or turn back east to exit the park along the same route that they came in.

Pedestrian Paths

The pedestrian circulation system in the vicinity of the visitor center begins in the parking lot, where an exposed aggregate sidewalk leads to the entrance to the building. Visitors proceed to the Last Spike Site through a doorway at the rear of the visitor center, where they follow a circular path (also constructed of exposed aggregate) to the "Last Spike Site."

Figure 30. View to southwest towards Last Spike Site and Visitor Center from county access road. *Source*: HRA 2000.

Internal vehicular circulation

The visitor center/administration area is connected to the maintenance area/boneyard and the ranger's residence by a narrow gravel roadway constructed by the park service. Public access to this road is restricted by signage.

West Slope

Public Access

West of the visitor center the county road parallels the abandoned grade of the transcontinental railroad. Just past the visitor center parking lot the surface changes to gravel. The road extends southwest paralleling the old railroad grade past the west end of the NHS and the access point for the west side auto tour. Approximately 4.5 miles of the county road are located within the NHS boundary.

Interpretive Roads and Trails

The park's west-side auto tour, 4 miles in length, is located on top of the grade constructed by the Central Pacific. (The west-side auto tour will be extended to 7 miles in length as soon as a stave culvert is reconstructed.) The access point for this tour is located on a Bureau of Land Management parcel west of the west NHS boundary. Cars may travel eastward only along the top of the old railroad grade. Tracks and ties have all been removed; gravel has been added to the surface of the grade to protect it from erosion.

East Slope

Public Access

Public access roads on the east slope include Golden Spike Drive (7200 North), and Poulsen Road (see Figure 24). Both roads bisect the large block of park service land on the east slope. Golden Spike Drive is a paved two-lane road; Poulsen road has a gravel surface.

Interpretive Roads and Trails

The east slope auto tour is approximately 2.5 miles in length. The east auto tour is accessed directly from Golden Spike Drive. This also is a one-way route located on top of the CP grade with a gravel surface. The only modification to the grade to accommodate this adaptive reuse has been the application of gravel to the grade surface. A short access trail has been constructed from a parking pull-off along the east-slope auto tour to provide access to an overlook above the UP's "Last Cut." This is a stone-lined graveled path through sagebrush scrub that crosses Poulsen Road to a point overlooking the Last Cut.

In addition to the auto tour, a 1 ½ mile hiking and biking trail, the "Big Fill Trail" follows the route of the historic parallel grades for the Union Pacific and the Central Pacific Railroads up to the Big Fill and Big Trestle site. This section of abandoned grade was formerly part of the east slope auto tour. A short connecting trail between the west edge of the Big Fill and Big Trestle provides access between the two grades and a vantage point that also contains an interpretive sign.

Private Ranch Access

Several ranch access roads that predate the establishment of the park continue to be used by local ranchers to access private property truncated by the old railroad right-of-way (Figure 31). These are principally unimproved dirt two-tracks.

Vegetation

Lands included within the boundaries of Golden Spike NHS include remnant stands of the native sagebrush-steppe vegetation, as well as historic and modern ornamental plantings – the latter located principally in the summit area. In addition, lands outside the boundary but within the viewshed of the historic site also contain agricultural vegetation – mostly dry-land farm crops such as winter wheat.

A study conducted by Allen and Curto in 1994 and 1995 indicates that 69 percent of the 121 plant species identified within the park are native to the area; 31 percent of the species are introduced (Allen and Curto: 1995). Although native species significantly outnumber introduced species, the composition of native vegetation stands and dominance of individual species within those stands has changed rather markedly. Today a mixture of shrubby plants including sagebrush, rabbitbrush, broom snakeweed, and a variety of introduced species dominate, replacing the once extensive stands of native grasses. This variation of the sagebrush-steppe vegetation zone is primarily a result of the disturbances caused by intensive grazing and agricultural use.

Figure 31. View to west along CP constructed grade in the summit area. Two-track access road to left of grade provides ranch access for private landowner. *Source*: HRA 2000.

Promontory Summit

Native Plant Communities

Much of the 160-acres in the block of land owned by the park service in the summit area consists of remnant sagebrush-steppe vegetation, especially the hillslope south of the visitor center. Although historic-era agricultural practices, principally grazing, have altered the distribution and density of native shrubs and grasses, the area retains mixed stands of native shrubs and grasses.

Ornamental Vegetation

Ornamental vegetation is concentrated in the area around the modern visitor center. Ornamental plants include those leftover from the settlement era (1870-1942), when the area was known as Promontory Station, as well as the landscape plantings done by the park service in the vicinity of the parking lot and visitor center.

Extant historic-era ornamental plantings include two box elder trees, both located inside the park boundary (Figure 32). Although box elder is native to the region, these trees were planted by settlers of Promontory Station. Similarly, the ornamental matrimony vine (*Lycum barbarum*), also locally known by the common names of "pea-vine" or "tea-vine," is an introduced perennial planted by area settlers. Other isolated ornamental plantings include a single Golden Currant (*Ribes aureum),* located adjacent to the parking lot.

Figure 32. View to east from the vicinity of the Last Spike Site along the reconstructed main line and UP siding (to right). Box elder tree is inside the park boundary. *Source*: HRA 2000.

The landscape plantings in and around the visitor center consist mostly of native shrubs (including those in the landscape islands within the parking lot and adjacent to the rear of the building). However, patches of lawn occur in front and back of the visitor center, flanking the entrances to the building.

Agricultural Vegetation

Cultivated fields are located on all sides of the 160-acre parcel of park land in the smmit area. The predominant crop is winter wheat; some fields are fallow.

West and East Slopes

Native Plant Communities

Vegetation within the existing and authorized park boundary on the west and east sides of the summit consists of remnant sagebrush-steppe vegetation. Relative densities of shrubs versus grasses and forbs vary from site to site. Introduced species dominate in some disturbed areas, such as the unfinished segments of the Union Pacific grade on the west slope, a few of which are covered with cheatgrass (Figure 33).

Figure 33. Looking southwest from west slope auto tour (CP grade) across unfinished UP grade. Note variation in vegetation – shrubs (sage and rabbitbrush) between the grades and cheat grass on the UP grade. *Source*: HRA 2000.

Buildings and Structures

Currently, there are few buildings located within the existing or authorized boundaries of Golden Spike NHS. Conversely, there are numerous structures within the park, most of which are historic and associated with the CP and UP railroad grades.

Promontory Summit

Virtually all of the buildings within the summit area are modern, constructed by the park service to accommodate its various functions. The visitor center is the largest building on site. Located adjacent to the Last Spike Site, this building was completed in 1969 (Figure 34). An open-sided shelter is currently under construction adjacent to the east side of the visitor center. Also, four storage sheds are located in the administrative compound at the rear of the visitor center. Other park service constructed buildings include the ranger's residence, the engine house and the maintenance building. In addition, the bone yard includes three small buildings used for storage purposes.

Only one historical building remains in the summit area – the last in a series of Promontory schoolhouses. Located on private land within the authorized park boundary, it was moved to its current location after the park service acquired the land in the summit area. Currently, it is associated with a wooden windmill and some fencing – the only above-ground remains of the Snodgrass place. Finally, one structure, a metal Butler building, is located on private land north of the headquarters area. This structure is located outside the authorized park boundary.

The most prominent structure in the summit area is the 1942 SP grade, upgraded in 1979 to safely handle the reconstructed track, ballast and the steam locomotives (See Figure 32). In addition, a few modern culverts with mortared stone headwalls can be found in the area between the visitor center and the Last Spike Site, where they control drainage through the site (Figure 35).

West Slope and East Slope

The west and east slopes contain no historic or modern buildings. However, the majority of the engineered structures associated with the transcontinental railroad are located in this area. In addition to the CP and UP railroad grades, each of which is counted as a separate structure, twenty-four historic culverts have been identified. A variety of culverts from several time periods have been identified. The earliest culverts – those installed at the time of grade construction are made of stone, whereas later replacement culverts are constructed of wood. Many of the culverts have been stabilized and/or restored (Figures 36 and 37). The park also contains two intact trestles. Located on the east slope near Blue Creek, these structures date to the 1930s, and are in poor condition (Figure 38).

Figure 34. View to south towards the visitor center from the Last Spike Site. *Source*: HRA 2000.

Figure 35. Modern culvert headwall near visitor center. *Source*: HRA 2000.

Figure 36. Detail of stabilized stone culvert in CP grade – west slope. *Source*: HRA 2000.

Figure 37. Detail of wood culvert in CP grade – west slope. *Source*: HRA 2000.

Figure 38. View to the southwest of Trestle No. 1. Located at east end of park near Blue Creek. *Source*: HRA 2000.

Archaeological Sites

A variety of archaeological sites are located within and adjacent to the boundary of Golden Spike National NHS. Most of the built environment once associated with Promontory Station has been removed, leaving only archaeological signatures. Similarly, archaeological sites represent the only evidence of the intensive human habitation that characterized the last months of construction and the completion of the transcontinental rail line. (See Figures 23 and 24 for the distribution of archaeological sites along the west and east slopes of the park.)

Promontory Summit

Archaeological resources in the Promontory Summit area include the remains of the buildings and other improvements associated both with railroad companies and with private individuals. In general, all of these features can be considered part of the development at Promontory Station. Features include earthen berms, the locations of at least five historic buildings, a possible dugout, a cellar, 3 unidentified depressions, 2 circular pits, one cistern, a water trough, and the remnants of a corral. Other features shown in the figures include 3 sidings north of the reconstructed main tracks and several trash middens. (See Figure 22 and associated key for the locations of the previously identified archaeological features in the Promontory Summit area.)

West and East Slopes

In addition to the archaeological remains located in the Promontory Summit area, the east and west slopes of the park contain the remains of Camp Dead Fall, Hall's Camp and other workers' campsites, believed to be associated with the construction of the railroad. In general, these campsites are clustered near the locations of major engineered structures, such as the fills and trestles constructed by both the CP and UP railroad companies. These campsites contain a variety of features believed to be the remains of the shelters erected by workers themselves and of larger structures erected by employees of the railroad companies (e.g., cook tents, etc.). Anderson (1983) reports four basic types of domestic structures within the various worker's campsites; pit structures, masonry foundations, leveled platforms and dugouts (Figures 39 and 40). In addition several of the small rockshelters in the vicinity of the construction corridor were used as domestic habitations by construction workers.

Figure 39. View to west. Archaeological remains of domestic shelters built by railroad construction worker - west slope. Note the shallow depressions in the middle of the photo above the road. *Source*: HRA 2000.

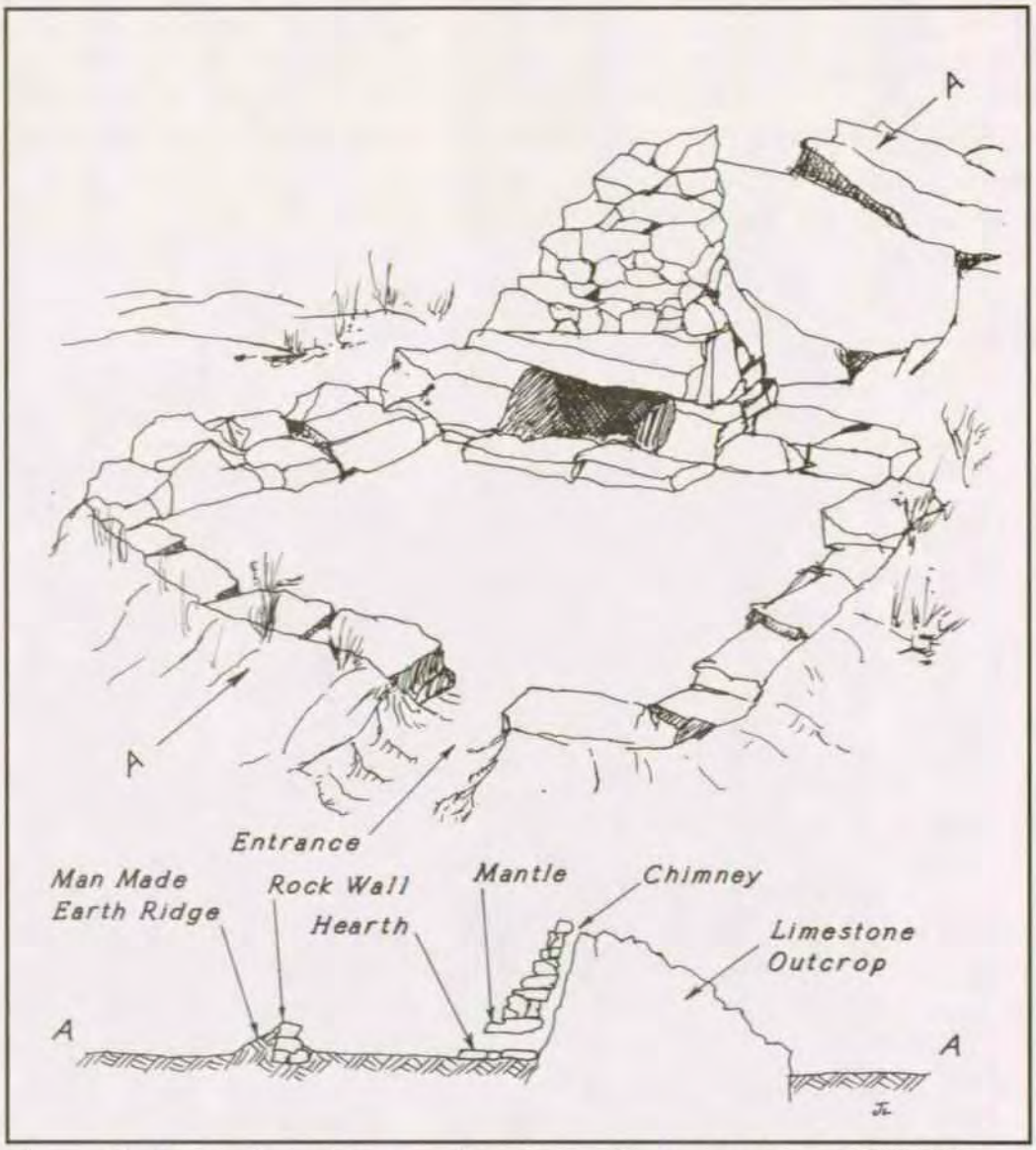

Figure 40. Illustration of masonry foundation. *Source*: Anderson 1983:230

Chapter 4: Analysis and Evaluation

The following analysis and evaluation of the Golden Spike NHS cultural landscape is based upon the results of historical research and the documentation of the existing conditions in the study area. Because the historic site is already listed in the National Register of Historic Places, the purpose of the evaluation is to supplement the existing documentation and to identify the landscape characteristics (and associated features) that contribute to the site's eligibility.

General landscape characteristics important in the historical development of this inventory unit include natural features and systems, land use, circulation, topography, buildings and structures and archaeological sites. Although clustering was an important landscape characteristic at various times during the historical period of significance, this characteristic is no longer manifest within the landscape corridor. Rather, the former clusters of buildings and structures are now represented as archaeological sites. Similarly, the important historic land uses directly associated with the construction and operation of the railroad have become obsolete.

Although railroad operations have ceased, the land uses adjacent to the railroad corridor remain predominantly agricultural, and contribute to the high level of integrity of setting found in most areas of the historic site. A general discussion of views into and out of the NHS, as they pertain to the integrity of setting for this historical property are included in the following text.

The final section of this chapter includes a statement of significance for the NHS and an assessment of its integrity.

Natural Features and Systems

The alignments of the Union Pacific and Central Pacific grades were determined in part by the physiographic character of the area. The level pass at Promontory Summit attracted railroad surveyors as a way through the Promontory Mountains. However, although the summit basin produced few engineering obstacles, the slopes of the mountains on either side, particularly those on the east slope, did challenge the UP and CP engineers. Numerous cuts had to be blasted through the rocky terrain and the deep ravines had to be either filled or bridged with trestles. The steep terrain required that the grade follow the contour of the hill slopes, necessitating the use of numerous sharp curves rather than straight tangents.

As authorized by the 1862 Pacific Railroad Act, the railroad's construction crews made use of any and all available natural materials found within the landscape along the route of the road. Local stone sources were quarried for material to build culverts. The rock rubble blasted from the grade cuts was used at other locations along the line as base course fill, while gravel deposits were excavated for use as ballast along the completed grade. Numerous borrow pits were excavated to provide much needed soil for the extensive fill areas along the route. Water was not readily available, so it was hauled to the construction areas and camps by tank cars and wagons.

The construction crews made use of the landscape's natural features for the siting of their campsites. In some areas hills and rock outcrops were used to shelter campsites from the prevailing winds. A few naturally occurring rock shelters were used as campsites. Locally gathered rocks were used to create low masonry walls for simple dugout structures or for

outlining tent platforms. Ranch families who settled in the area tell of gathering the locally available sagebrush for use as fuel, so it is likely that the construction crews did the same.

Certainly, the workers in their temporary campsites used locally occurring materials to construct shelters for themselves. Photographic images of graders' campsites show men in front of small, sod-covered shelters (Figure 41). Some appear to have been built with the rear of the shelter formed by a hill slope.

Summary

The natural systems and features of the Promontory Mountains had a great influence on the construction of this segment of the transcontinental railroad – influence felt at a variety of levels. At the largest scale, this influence is still apparent – manifest in the location of the grade in relationship to the natural topography of the area. At a smaller scale, the influence of natural features is seen in the use of naturally occurring rock shelters as worker's campsites.

Contributing landscape features include the level basin in the summit area, the steep, dissected hill slopes on the west and east sides of the summit, and the natural rock shelters used as campsites by railroad construction workers.

Figure 41. Photograph of unidentified railroad construction camp showing individual sod-covered shelters. *Source*: Unknown photographer and unknown date, negative #F-14094, on file at the Colorado Historical Society, Denver, CO.

Land Use

The principal historical land uses associated with this landscape are the construction and operation of the nation's first transcontinental railroad. Thus, the landscape features speak to both the construction process, including the use of local materials (as represented by quarries and borrow areas), as well as the condition and character of the workers' campsites. The most active period of construction near the NHS occurred between February and April of 1869 when both companies had men and equipment working in the vicinity. As the various railroad crews moved through the area they established numerous temporary camps where they lived while working on the railroad. The land was surveyed, graded, cut and filled as needed, and the two rival companies constructed parallel grades through the landscape. After completion of the construction in late April and early May of 1869, the last of the workers' campsites became obsolete and were abandoned. Currently, these short-lived settlements are represented within the landscape by archaeological remains.

After the joining of the rails, the grade incorporated into the transcontinental rail line continued to be improved and maintained, whereas the discarded parallel grade received little attention. It is likely that for a time local materials sources continued to be used in maintenance activities. However, as technology improved, locally available materials decreased in importance. For example, the use of metal pipe culverts eventually replaced earlier culverts made with native stone and even milled lumber. Although isolated from the main line transcontinental route in 1904, the Promontory Branch continued to be used and maintained until the 1942 decommissioning. Today, even railroad operations have become an obsolete land use.

While most of the camps associated with railroad construction were meant for short-term habitation, a small permanent settlement developed in the vicinity of Promontory Station near the Last Spike Site. Even after the transfer point was moved east to Ogden, a few private businesses, provided services to train passengers, railroad employees stationed at Promontory, and area settlers. Wagon roads from nearby towns such as Corinne, probably provided local access to Promontory Station soon after its establishment. A wagon road from the east, paralleling the south side of the railroad, was present at least by 1885, when government surveyors platted the township of T10N/R6W.

By the late nineteenth and early twentieth century the public lands adjacent to the railroad right-of-way had been claimed under the various homestead acts, or sold by the railroad companies, and were being utilized for ranching and agricultural purposes (cattle ranching and some dry land farming). After 1904, Promontory Station was bypassed completely by transcontinental railroad traffic, however, it continued to function as a commercial and community center for local people until 1942, when the Promontory Branch was abandoned completely. In 1968, the park service removed the last of the structural remains associated with the town of Promontory.

Summary

Today, the historical land uses associated directly with railroad operations and maintenance are obsolete. However, although the railroad is no longer operational, the railroad grades and most of their associated features and sites remain visible in the landscape, and the park service manages these resources for their interpretive value. Even though the current land use is

different from the historical uses, it is compatible with preservation of the landscape features associated with the construction process as well as the operation of the transcontinental railroad. The exception to this compatibility is found in the Promontory Summit area. Here all settlement-era buildings and most structures were removed to make way for the park service visitor center and administrative office complex. The only settlement-era improvements that remain are located on private land, outside the existing NHS boundary but within the authorized boundary. These include the Promontory school house and the resources associated with the Snodgrass place, including a windmill, building remains, fencing and clusters of matrimony vine.

Land use in areas outside the NHS boundary remains predominantly agricultural in character – including livestock grazing and dry farming (mostly winter wheat). At present, much of the land surrounding the NHS is in the Conservation Reserve Program (CRP) wherein the farmers are paid by the government not to plant. It is largely owing to the continuation of agriculture in the area that the historic site retains such a high degree of integrity of setting. Indeed, the threats to integrity of setting occur in areas where non-historical land uses have been introduced within the viewshed of the historic site (e.g., the Thiokol / Autoliv plant complexes).

Circulation

The principal contributing landscape features associated with this historic landscape are related to circulation. Of primary importance are the parallel grades of the Union Pacific and the Central Pacific railroads. While the grades were under construction, the two companies moved supplies forward by rail car along completed segments towards the end of the tracks. In the first 6-9 months after the joining of the rails at the Last Spike Site, the grades incorporated into the transcontinental route consist generally of the CP grade to the west of Promontory and the UP grade to the east of Promontory. However, within a year, contractual agreements between the two companies had resulted in the CP assuming responsibility for the segment of railroad between Promontory and the new transfer point at Ogden. One of the consequences of this contractual agreement was that the CP abandoned the section of the UP's grade that included the Big Trestle – a notoriously unstable structure. Instead, the CP rerouted the line over its own adjacent Big Fill (see Figure 16). For the next 36 years, all transcontinental railroad traffic funneled through Promontory Pass over the CP- and UP- constructed grades. The on-line grade received routine maintenance, while the parallel and now surplus grades were left unfinished and allowed to deteriorate.

After completion of the Lucin Cutoff, the segment of the transcontinental line eliminated by the cutoff was referred to as the Promontory Branch. It continued to function as a local, mixed-use line for both freight and passenger traffic, and as an alternative route when the Lucin Cutoff was impassable due to storms or maintenance. As such, after 1904, the Promontory Branch received less attention in terms of maintenance and upgrading than the transcontinental line. However, it would continue to serve local traffic until 1942, when the Southern Pacific Company received permission to retire the line and salvage the rails for reuse at various national defense project sites. The current condition of the two grades reflects this construction history.

Portions of the original transcontinental line on the west and east slopes, have been rehabilitated for use as a vehicular route. "Rehabilitation" has consisted simply of the application of gravel to the grade surface in order to decrease wear and erosion from vehicles. The flat surface of the grade maintains a fairly standard width of between 12 and 16 feet, while

the base of the grade prism varies widely depending upon the character of the underlying landform. Wider portions of the grade are believed to be the locations of former sidings, used for passing trains. Although the transcontinental line has been adapted for a new use, neither the alignment nor the physical dimensions of the grade have been altered.

Conversely, the segments of surplus parallel grades appear in some areas as archaeological sites. This condition reflects the fact that some parts of it were never finished (the Union Pacific grade on the west slope), and that one of the segments that was finished, was used only for a short period of time (the Union Pacific grade on the east slope). In some areas, mostly the level areas in the Promontory Summit basin, erosion and sedimentation has obscured the grade. On the east slope, shrubby vegetation has encroached on the grade making it difficult to distinguish and threatening its integrity.

In addition to the railroad grades, the landscape contains other features associated with circulation, most notably early supply roads (later used as ranch roads) that intersect, and in some places parallel, the railroad grade. Because of the delays incurred by the cut and fill projects in the rugged Promontory Mountains, only a few portions of the rail line could be used for moving supplies to the end of construction. Wagons were used to haul supplies beyond the end of the tracks to the workers along the grade and in the nearby camps. As a general rule, wagon supply roads were established in the immediate vicinity of the railroad grade during construction, to allow for the movement of supplies as well as the periodic maintenance of both the railroad and the telegraph line. However, this was not done on the west and east slopes of the Promontory Mountains, where the rugged terrain and the corresponding high costs of materials and labor prohibited the establishment of a service route alongside the grade. Along this portion of the route, the access "roads" simply crisscrossed throughout the surrounding landscape and accessed the grade at a number of different points (Figure 42). Within the more level summit basin, a wagon road did parallel the south side of the railroad grade. As indicated previously, this road was in place by the time that the township was surveyed in 1885; it likely existed much earlier, since it appears to have connected the town of Corinne with the railroad station at Promontory (Figure 43).

Summary

Circulation is an extremely important landscape characteristic for Golden Spike NHS. The transcontinental railroad is itself a circulation system. Part of the history and character of this resource is the fact that completed segments served to facilitate the completion of other segments under construction. Thus, "circulation" is important not only for the period after completion of the transcontinental line, but as part of the process of construction. For this landscape characteristic, contributing landscape features include the transcontinental railroad grade (later known as the Promontory Branch) and the parallel "surplus" grade. (Figures 44 through 46). Included in this contributing category are the segments of track reconstructed by the park service over the original grade alignments. Noncontributing landscape features under this general characteristic include the pedestrian and vehicular access systems (including the visitor center parking area and auto tour pull-outs) designed and constructed by the National Park Service. The county access road that provides access to park headquarters also would be counted as a noncontributing feature.

Figure 42. Photograph of the UP's Big Trestle and surrounding area showing the access tracks through the sagebrush. *Source*: A.J. Russell photograph, 1869.

Figure 43. Copy of a portion of the 1886 GLO survey plat of T10N, R6W. *Source*: BLM, Salt Lake City, UT.

Figure 44. View to the east of the parallel grades of the CP (left) and the UP (right), east slope. The UP grade was abandoned in 1870. *Source*: HRA 2000.

Figure 45. View to the west of the parallel grades of the CP (right) and the UP (left), west slope. Unfinished UP grade shows stair-step cut. *Source*: HRA 2000.

Figure 46. View to the east along the reconstructed tracks near the Last Spike Site. Main line is to left, reconstructed UP siding to right. *Source*: HRA 2000.

Topography

The construction of the railroad resulted in many manmade topographical features within the right-of-way, especially on the eastern slope of the summit. These features include numerous cuts through the rocky hills and the earthen and rock fills placed in low-lying areas, both of which were constructed in an effort to maintain the required grade. Less deliberate types of features resulted from the discard of materials used in the many cuts along the grade. Large mounds of waste line the larger cuts such as the Union Pacific's "Last Cut." On a smaller scale, changes to the topography were also undertaken within the workers' campsites where men constructed numerous trenches, pits, and dugouts, as well as tent platforms.

As indicated above, most of the manmade topographic features date to the construction period and are directly associated with the NHS's primary period of significance. However, the park service is responsible for three modern manmade features, one of which is the berm constructed to shield the engine house and maintenance building from the Last Spike Site. The second modification is the leveling and grading of the ground surface in the area between the Last Spike Site and the visitor center. The third is the pile of topsoil created during the construction of the park ranger's residence. This is located adjacent to the southeast corner of the junction of the maintenance area access road with the road to the park well.

Summary

Next to circulation, "topography" is a principal, character-defining feature of the Golden Spike NHS landscape and relates most directly to the primary period of significance for the site. The manmade topographic features that characterized the construction of the railroad are still evident within the landscape. This landscape characteristic has integrity and contributes to the eligibility of the historic site. Specific contributing topographic features include the Last Cut and associated spoil piles (Figure 47), Carmichael's Cut, Little Mack's Cut, Salsbury's Cut, the Big Fill (Figure 48) and several unnamed cuts and fills. Noncontributing features include the earthen berm constructed by the park service to screen the maintenance area and the park service topsoil pile.

Figure 47. View to the southwest – Union Pacific's "Last Cut." *Source*: HRA 2000.

Figure 48. View to the north – Central Pacific's "Big Fill." *Source*: HRA 2000.

Vegetation

Native Vegetation

A few written descriptions and photographs have been located that describe the vegetation of the NHS at the time of the construction and early use of the transcontinental railroad. Accounts of the area, such as that of Isaac Morris, a commissioner who visited the area in May of 1869 described the summit as "covered with artemisia" or sagebrush. Surveyors' maps of the area give few clues to the distribution of native plants across the landscape other than notations such as "shrubby sage and grease wood" and "fine pasture lands." Historical photographs of the area show mixed stands of shrubby plants (presumably sagebrush and rabbitbrush or broom snakeweed) and grasses.

Construction activities did impact the native vegetation both within and adjacent to the right-of-way corridor as indicated by historical photographs. Photos of the area in the vicinity of Promontory Summit taken soon after completion of the transcontinental line, shows a strip of land almost denuded of vegetation – likely due to trampling by people, wagons and draft animals. Beyond the denuded strips, a low-growing variety of sagebrush is visible, possibly the variety referred to by local ranchers as "horse" sage. However, even in these areas, the grasses that one would expect to see in a mixed sagebrush steppe environment are not apparent in the photographs.

Beyond the railroad right-of-way, one of the consequences to settlement of the area was the introduction of large herds of cattle. By the 1880s overstocking had depleted the native grasses

and an extremely hard winter in 1888 resulted in the loss of several thousand head. Although the number of cattle on the range subsequently decreased, the area continued to be used for grazing through the entirety of the historical period. A consequence of grazing has been a shift in the distribution of native plants. Overall, there appears to be a proportional increase in the density of native shrubs, and a decrease in the density of native grasses.

Ornamental Vegetation

Within the NHS, the introduction of vegetation for ornamental purposes appears to be limited to the Promontory Summit area. During the settlement period, permanent residents of Promontory Station introduced a number of hearty native and exotic plants to the area. Box elder trees were planted to provide shade. In addition, an exotic shrub known by the common name of "matrimony vine" was planted around various buildings and structures at the station. A golden currant bush marks the general vicinity of the Golden Hotel later operated as the Houghton Store.

The most recent introduction of ornamental vegetation occurred during park service tenure of the property. Foundation plantings have been added around the visitor center to soften the edges of the new building, and the asphalt surface of the parking area is divided by planting islands. For the most part, native plants such as sagebrush and juniper were used in the landscaping adjacent to the visitor center and in the planting islands. Exceptions include the strip of grass lawn near the front, rear and east end of the visitor center, and the lawn and gardens surrounding the ranger's residence.

Agricultural Vegetation

By the turn of the century the lands along the railroad were being cultivated for dryland farming. The introduction of this method of farming marks the first deliberate large-scale introduction of non-native plant species into the railroad right-of-way and on adjacent lands. Although the railroad owned all of the lands within the right-of-way, there is no indication that it was fenced. Thus, it was not unusual for adjacent landowners to cultivate right up to the base of the grade. During the historical period, the principal crops grown in the fields adjacent to the right-of-way included wheat and oats, with a little barley.

After the park service acquired the lands included in the NHS, the agency discontinued the practice of letting adjacent landowners farm within the right-of-way boundary. The NHS boundary is now fenced in a few places, and the formerly cultivated areas have revegetated naturally – principally with sagebrush.

Summary

It is difficult to assess the amount of change in the native vegetation within and adjacent to the historic site. Although 69 per cent of the plants inventoried within the NHS boundaries are native to the area, the relative density of native shrubs versus native grasses and forbs has been altered. Today the landscape is no longer dominated by the tall wild grasses that some say characterized the native "sagebrush steppe" present at the time of railroad construction. Numerous exotic plants that have been introduced to the landscape (both intentionally and unintentionally) include cheat grass, Russian thistle, alfalfa, tumble mustard, and crested

wheatgrass. However, although the distribution and density of vegetation has changed, the vegetation can still be characterized as a mix of native grasses, shrubs and forbs.

With regard to the historical ornamental plantings, there are two box elder trees, both in declining health, remaining in the summit area. These are believed to have been planted in the early twentieth century and are associated with the later period of significance for the NHS. Similarly, specimens of the introduced matrimony vine can be found in the vicinity of Promontory. The more modern ornamental plantings around the visitor center are inconsequential when considered within the larger cultural landscape associated with the railroad corridor.

Outside the NHS boundaries, lands continue to be used for agricultural pursuits including crop farming. The principal crops are different from those of the historical period and include winter wheat and safflower. However, the pattern of alternating range and cropland remains, and is an important factor in the integrity of setting for the railroad corridor.

Contributing vegetation features include the native plants located within the boundary of the NHS. In addition, the box elder trees, the matrimony vine and the golden currant in the summit area appear to date to the later historic period and are important reminders of the settlement era. Noncontributing vegetation features include the modern foundation plantings adjacent to park service buildings.

Buildings and Structures

Buildings

Historically, the buildings associated with the construction and operation of the transcontinental railroad were mostly located within construction workers' camps and later, at Promontory Station. Buildings constructed by workers are best defined as "vernacular" or utilitarian, and as meeting the minimum definition of "building" i.e., as an element constructed to shelter human activity. From the images that survive of these shelters it is clear that they were meant to be temporary and were made of locally available materials according to individual skills.

The first permanent buildings were erected after completion of the railroad, during the operational stage. Most were located in the vicinity of Promontory Station, including the depot and associated dining facility on the south side of the tracks, and the private commercial and residential buildings located on the north side of the grade. Initially, many of the buildings were impermanent in character (especially the privately constructed buildings on the north side of the grade) consisting of canvas tents with wooden storefronts. Over the years these temporary materials were gradually replaced with more permanent materials. For the most part the building styles continued to be vernacular, and primarily of wood frame construction. Some of the railroad employee bunkhouses reportedly were constructed with surplus railroad ties. During the height of development, Promontory Station included community buildings, buildings associated with operation and maintenance of the railroad, buildings to house railroad employees, as well as buildings associated with local farm and ranch operations.

In 1969, the park service completed construction of the visitor center, located opposite the Last Spike Site. This is the largest building in the summit area. Other modern buildings include the ranger's residence and those located in the maintenance area and the boneyard.

Structures

Historically, a variety of structures, some temporary and some permanent were incorporated into the Union Pacific and Central Pacific railroad grades. During the primary period of significance, the period during which construction activity was concentrated in the vicinity of the Promontories, it was not uncommon for temporary structures to be used. Examples include the Big Trestle, built by the Union Pacific and slated for replacement with a more permanent structure after the race for completion of the line was over. Obviously, there are few extant examples of these types of intentionally temporary structures. Those incorporated into the grade selected for the transcontinental line were replaced as the grade was maintained. Those incorporated into the redundant, parallel line were simply left to deteriorate, and are now sometimes represented by archaeological remains.

Not all of the structures built during the final push to complete the line were temporary. The stone culverts incorporated into the grade are more substantial and appear to have been meant to be permanent – to the extent that any structure can be permanent. Most manmade structures will deteriorate over time, and the current collection of culverts incorporated into the grade represents the maintenance efforts of a variety of time periods – the most recent generation represented by metal pipe culverts. Presently, there are two intact trestles and 24 culverts that date to the historical period located within the 15½ miles of railroad grade inside the NHS boundary.

Summary

During the historical period, buildings and structures represented a small but important component of the cultural landscape associated with the construction and operation of the railroad. Although none of the historical buildings remain, a number of structural components of the railroad grade remain and are counted as contributing landscape features. These include:

1. LCS #54526 Wood Trestle No. 2	14. LCS #54517 Stone box culvert
2. LCS #54527 Wood Trestle No. 1	15. LCS #54518 Stone box culvert
3. LCS #54500 Wooden box culvert/remnants of stone box culvert	16. LCS #54519 Partially buried stone box culvert
4. LCS #54501 Stone Box Culvert	17. LCS #54524 Corrugated metal pipe culvert
5. LCS #54502 Stone Box Culvert	18. LCS #54525 Partially buried stone box culvert
6. LCS #54503 Wood Box Culvert	19. LCS #63255 Wood Box culvert
7. LCS #54504 Stone Box Culvert	20. LCS #63256 Wood Box culvert
8. LCS #54505 Stone Box Culvert	21. LCS #63257 Wood Box culvert
9. LCS #54506 Stone Box Culvert	22. LCS #63258 Wood box culvert
10. LCS #54507 Wood stave Culvert	23. #13 Stone Box Culvert
11. LCS #54511 Dual wood box culvert	24. #16 Unfinished stone culvert
12. LCS #54514 Partial stone box culvert	25. #17 Unfinished stone culvert
13. LCS #54516 Stone box culvert	26. #18 Unfinished stone culvert

Noncontributing buildings and structures include:

1.	Visitor Center	6.	Wooden benches in the vicinity of the Last Spike Site
2.	Ranger's residence	7.	N 769.17 Non-historic corrugated metal pipe culvert
3.	Engine house	8.	N 772.74 Non-historic corrugated metal pipe culvert
4.	Maintenance building	9.	N 777.39 Non-historic corrugated metal pipe culvert
5.	Pump house	10.	N 777.40 Non-historic corrugated metal pipe culvert

Cluster Arrangement

The importance of clustering varies from one period of significance to the next. All of the historical clusters correspond to areas of concentrated human activity. During the period of intense construction, clustering occurred in the form of numerous campsites, supply camps and temporary townsites such as Dead Fall, all of which contained a variety of temporary shelters used to house and feed workers as well as draft animals. Along the segment of railroad bracketed by Golden Spike National Historic Site, archaeological evidence indicates that campsites were located in close proximity to long-term construction projects such as in the vicinity of the Big Fill and the Big Trestle. Today, the remains of these clusters occur as archaeological sites.

After completion of the transcontinental railroad, the only permanent buildings were located at Promontory Station. When the last spike was driven on May 10th, 1869, the area contained about a dozen canvas wall tents on the north side of the railroad grade. Within months however, a series of small buildings – some little more than tents with wooden storefronts – had been established on the north side of the transcontinental line. Over time, the character of the town changed, from a large number of semi-permanent buildings during the first several years after completion of the railroad, to fewer buildings of a more permanent nature in later years. Included in the cluster were community buildings such as the school and commercial buildings such as the Golden Hotel (later used as the Houghton Store). For the majority of the historic period, however, Promontory Station represented the single major settlement cluster directly associated with the railroad.

On adjacent lands outside the railroad right-of-way, the clustering of buildings and structures occurred in association with farming and ranching. Generally, farmstead complexes consisted of a dwelling and a variety of outbuildings usually to store equipment and shelter livestock. During the first decades after completion of the line, the area contained relatively few ranches and few ranch headquarters complexes. These early ranches were dependent upon use of the open range to support their ranching endeavors. However, this settlement pattern gradually changed as more and smaller ranch operators and farmers gradually bought railroad property or claimed homesteads on open and unclaimed lands. The numbers of small subsistence homesteads increased during the first two decades of the 1900s when dry farming was promoted throughout the West. However, the drought and depression of the 1920s and 1930s drove many people from their small farms and resulted in a reduction of number of farm and ranch complexes within the viewshed of the NHS.

Summary

Although clustering was an important landscape characteristic at various times during the historical period, the historic clusters are no longer readily evident within the landscape. Today, most are represented as archaeological sites (discussed below). The only building cluster currently present within the NHS is the modern noncontributing park service administrative/interpretive complex at the Last Spike Site.

Small-Scale Features

The importance of small-scale features during the intensive construction period is poorly understood. It is likely that many such features would have been present at campsites, including enclosures for livestock, platforms for activity areas, benches and tables for use by construction crews. Although historical photographs illustrate some of these types of resources, none remain visible in the landscape today.

Small-scale features associated with the operation of the railroad would have included switches and signals as well as railroad milepost markers. In addition, as the lands adjacent to the railroad were settled, private landowners erected fences to demarcate private property boundaries, fields and pastures. Historical photographs and remnant fences show that juniper post and barbed-wire fences were commonly used in the vicinity of the NHS.

The most recent small-scale features added to the NHS during the historical period are those associated with memorializing historical events, including signs and monuments. Both the concrete monument erected by the Southern Pacific Railroad Company and the replica sign marking the end of the ten miles of track laid in a day, date to the later historical period.

Summary

With the exception of a few segments of fencing erected by private landowners, none of the small-scale features associated with either the construction or operation of the railroad are present today. However, the two features associated with memorialization of historical events do remain and can be counted as contributing landscape features. These include the Southern Pacific Monument (LCS #63254) and the "Ten Mile" sign (LCS #100540).

Noncontributing small-scale features present in the landscape today include the interpretive and traffic signage and the post and wire and electric fencing used in some areas to mark the boundary of the NHS.

Archaeological Sites

Many of the historical land uses and activity areas originally associated with the construction and operation of the transcontinental railroad are currently manifested as archaeological sites. These include the Last Spike Site; Promontory Station; the town of Dead Fall; workers campsites; Hall's camp; and a number of smaller, isolated features including what may be the remains of blacksmithing areas.

The locations of most of the archaeological sites have been identified and over half have been intensively investigated and mapped. It is estimated that each of the campsites contains between 40 and 50 features, including the remains of pit houses, dugouts, lean-to shelters, rock chimneys, trash pits and middens. Additional research is needed to aid in the interpretation of variability within and among the sites. It is anticipated that the information derived from archaeological investigations will contribute to our understanding of the cultural traditions of the railroad workers and of the gender of the sites' occupants. For example, the historical documentary record indicates that the primary ethnic and cultural groups working on the construction of the railroad were Mormons, as well as numerous Irish and Chinese laborers from the east and west coasts, respectively. The information obtained during archaeological research will assist in the interpretation of the role of cultural traditions in the design of the campsites, as well as the interpretation of land use patterns and cluster arrangement as it related to the overall spatial organization of the historic railroad landscape. Research may also reveal information concerning the involvement of other ethnic groups, such as African Americans and American Indians, which is not well documented in the historical record.

In addition to the archaeological remains of the human activity centers discussed above, the historic telegraph line also occurs as an archaeological manifestation within the landscape. Construction of the telegraph line proceeded apace with the railroad grade and was important to the communications among the workforce. Today, the only remains of this mechanical engineering system are the rock piles that mark the former locations of poles and, in some instances, the remains of the base of the poles themselves.

Summary

The archaeological sites associated with this cultural landscape are principally significant for their potential to yield information regarding the character and composition of the activity areas associated with the construction and upgrading of the transcontinental railroad grade and with the growth of the town of Promontory. In addition, the historical telegraph system is also represented archaeologically (Figure 49).

Views and Vistas

As stated above, views into and out of the NHS are important in terms of the manner in which they affect the setting of the site. During the primary period of significance (1869 to early 1870), the views from within the NHS to outlying lands would have been practically devoid of cultural modifications or improvements. This is especially true of Promontory Summit, which is indicated in historical accounts of the Last Spike ceremony as being extremely remote and offering few amenities, with the exception of the hastily constructed tents erected by private citizens. The same could be said of the views from the east and west slopes. With the exception of the construction camps located close to the grade, the lands beyond the railroad right-of-way would have held few manmade improvements.

During the later periods of significance, i.e., during the operational period of the railroad, the character of the surrounding lands changed. At the summit, a of number buildings constructed by the railroad and by local settlers clustered in the vicinity of Promontory Station, and ranch headquarters complexes were sparsely scattered across the viewshed of the NHS. Livestock grazed the hill slopes surrounding the railroad. Later still, the homestead shacks of dry-land

farmers dotted the landscape, and former stands of native vegetation were cleared, plowed, and planted with agricultural crops.

Figure 49. Detail of the remains of a square telegraph pole – east slope of the Promontories. *Source*: HRA 2000.

Summary

Today, the views into and out of the NHS approximate the later historical period (1869-1904), after construction but before the intensive development of the dry farm era. On the west and east slopes, the views from the NHS incorporate an agricultural landscape consisting of cultivated fields in the level drainage bottoms and livestock grazing on the hill slopes. On either end of the NHS far distant views of the surrounding valleys and of the Great Salt Lake remain relatively unchanged. One exception to this rule is at the east end of the site, where the Thiokol / Autoliv plant represents a modern intrusion to the historical character of the views from the NHS.

At the summit, views into the Last Spike Site have been altered. All of the improvements associated with the later historical periods have been removed or moved to new locations. However, these historic buildings have been replaced with the modern visitor center complex so that the early historic scene – one devoid of improvements – has been lost (Figures 50 and 51).

Figure 50. View to north – contemporary scene at Last Spike Site Visitor Center.
Source: HRA 2000.

Figure 51. View to southwest - from Last Spike Site to Visitor Center.
Source: HRA 2000

Statement of Significance

The landscape associated with the construction and operation of the transcontinental railroad is nationally significant under National Register criteria A, C, and D.[23] According to Utley and Ketterson (1969), the railroad furnished quicker and cheaper transportation for government supplies and the mail and permitted a vast and profitable commercial trade to develop between East and West. The transcontinental line brought in its wake immigration, settlement, and industrial and agricultural development, mass transportation, and forever altered American Indian lifeways.

The extant landscape features within Golden Spike National Historic Site illustrate the process by which the transcontinental railroad was constructed, including the competitive nature of the venture, which was actively encouraged by the federal government. The competition or the "race" to finish the line is dramatically illustrated by the parallel grades within the railroad corridor. The engineering feats accomplished in the construction of the transcontinental railroad represent state-of-the-art skills developed during the Civil War.

With regard to the site's national significance, the contributing landscape features within Golden Spike National Historic Site reveal the story of the construction and operation of the transcontinental railroad. They assist the park visitor in understanding and appreciating the history of the railroad construction, including the contributions made by various ethnic and cultural groups. In addition, the current isolated nature of the site, surrounded by scattered ranch headquarters and agricultural land use, speaks to the importance of the railroad to the local population, which continued through 1942.

Three periods of significance are proposed for this landscape. The first corresponds to the period between February of 1869 and the first months of 1870. This represents the period of intensive construction activity through the Promontories, initiated with the CP's beginning work on the Big Fill and ending with the formal changing of the transfer point from Promontory to Ogden. Within this period, May 10, 1869, the day that the last spike was driven in the transcontinental line, is considered a date of primary significance for the historical site. The Last Spike Site possesses its own unique significance, as the location of the formal joining of the UP and CP lines, and the symbolic completion of the transcontinental railroad.

The second period of significance extends from May 10, 1869 through September 18, 1904, when this segment of the railroad grade was part of the main transcontinental line. Although the construction crews were gone from the scene, the town of Promontory Station had developed in

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[23] National Register Criteria: The quality of significance in American history, architecture, archeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of persons significant in our past; or

C. That embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded, or may be likely to yield, information important in prehistory or history.

the vicinity of the Last Spike Site, and major improvements were completed on the grade. For nearly 35 years, all passenger and freight traffic on the transcontinental railroad funneled through Promontory Summit – the only natural gap in the rugged Promontory Mountains. The steep grades leading to the pass required special procedures, including the use of helper engines. However, with the completion of the Lucin Cutoff in 1904, the segment of the line through the Promontory Mountains, past the Last Spike Site, was downgraded to a local branch line. This downgrading of the rail line marks the end of national significance for the historic site.

The third period of significance encompasses the period between 1904 and 1942. During this time the line became known as the Promontory Branch or the Promontory Line, and was generally used for local traffic only. Although no longer a component of the transcontinental railroad, the branch line continued to be important to local residents, who depended upon it for both passenger and freight service.

The National Historic Site as a whole possesses integrity of location, setting, feeling and association. Although there has been some deterioration of materials in the grade and its associated structures, it possesses integrity of materials, workmanship and design. In addition, the archaeological remains of the former activity areas (e.g., workers' campsites and the town of Promontory Station) possess depositional integrity and have the potential to contribute significant information regarding site function, and the range of activities that occurred at the various sites. In addition, they may yield information regarding the age, gender and ethnic/cultural origin of site occupants.

Part Two

Treatment

Part Two of the CLR outlines the general management philosophy and a primary treatment strategy for Golden Spike NHS. The management philosophy and treatment strategies take into consideration the management goals as outlined in previous planning documents, such as the 1978 GMP, and current issues identified by NHS and Intermountain Support Office personnel including NHS Superintendent, Bruce Powell; NHS Chief Ranger, Rick Wilson; Archaeologist, Adrienne Anderson; and, Historical Architect, Sayre Hutchison. Landscape character areas, which, in this instance, correspond with management zones, are also identified, based upon the information presented in Part I, including the comparison of the historical patterns of landscape development with the existing conditions in the NHS. (Appendix A contains a list of past park service actions that have affected various aspects of the Golden Spike cultural landscape.)

Cultural Landscape Character Areas

For purposes of this landscape analysis, Golden Spike NHS has been treated as a single cultural landscape. However, specific areas within the landscape exhibit distinct landscape character and varying levels of historical integrity. The primary distinction is drawn between Promontory Summit, which contains park headquarters and the Last Spike Site, and the railroad corridors that extend east and west from the summit along the slopes of the Promontory Mountains.

The Last Spike Site is perhaps the most important location within the NHS and in the past has been the focus of park service "reconstruction" efforts.[24] It was also selected as the location for park headquarters and, as such, contains the most modern development of any location within the NHS boundaries. On the whole, the 160-acre parcel of fee simple land at the summit has less historical integrity relative to its level of historical significance than either the east or the west slopes. This is due to the 73 years of operation and maintenance of the railroad at Promontory Station, dry farming and grazing within the 160-acre headquarters parcel, and National Park Service activities. In its rush to develop the site for the 100th anniversary of the driving of the last spike, the park service removed all above-ground evidence of Promontory Station and of the

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[24] Four levels of treatment have been identified for cultural resource properties. These include:

Preservation. The act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. Includes initial stabilization work, where necessary, as well as ongoing preservation maintenance and repair of historic materials and features.

Rehabilitation. The act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values;

Restoration. The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in history and reconstruction of missing features from the restoration period; or

Reconstruction. The act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

long-term operation and maintenance of the railroad. Also, in keeping with then-existing design practice, a visitor center was built extremely close to the park's prime resource – the Last Spike Site. Since that time, however, awareness of the later periods of historic significance of the site has resulted in an understanding of the need to protect the archaeological resources associated with the town of Promontory Station, as well as the more intangible cultural landscape features important to the site. Furthermore, the partial reconstruction of the May 10, 1869 scene, including the relaying of track on the mainline grade, the reconstruction of the UP wye and siding, and the reestablishment of telegraph poles have restored some of the historic feeling associated with the Last Spike Site.

In contrast the east and west slopes have been modified little since removal of the ties and tracks in 1942. Other than the addition of gravel to the grade surface and the addition of a few interpretive waysides, the railroad grades and associated structures retain historical integrity. Prior park service treatment strategies on the east and west slopes fall under the general category of "preservation" including both stabilization and preservation maintenance.

Based upon the above discussion, two management zones are identified for the park. Zone 1 corresponds to the summit area, including park headquarters development and the Last Spike Site. This area has high historical significance but less physical integrity than the east and west slopes because of the historical operation of the railroad, activities associated with Promontory Station, and National Park Service management decisions and development. Zone 2 includes the east and west slopes, where significance is also high and the cultural resources retain a high degree of integrity.

Management Philosophy

Golden Spike NHS is a nationally significant resource that interprets the events leading to completion of the Pacific Railroad, the "Wedding of the Rails" ceremony and the changes that resulted from the completion of the railroad. Since the establishment of the NHS, the primary management goal has been to manage the "historic scene and cultural resources, as closely as practical, in keeping with their character and appearance in 1869." This has resulted in laying track on the historical alignments, installing historically correct telegraph poles, erecting portions of the May 10, 1869 "tent city," and creating replica locomotives of the historic Central Pacific's Jupiter and the Union Pacific's 119. At times this goal has been at odds with the need to provide interpretation and visitor services and to fulfill administrative and maintenance responsibilities. This conflict is most apparent at the summit, where a park service visitor center/administration building and associated parking area was constructed adjacent to the Last Spike Site. The addition of these facilities in 1969 severely impacted the physical character of the site and eliminated the opportunity to fully reconstruct the landscape to the May 10, 1869 scene. As a result of these impacts to the site, the current overall philosophy for management of the cultural landscape focuses on ways to enhance the interpretive environment surrounding the Last Spike Site through the use of compatible site features (materials and finishes), protection of viewsheds, selected screening of visually intrusive development, and addition of non-historic, but contributing elements, such as the reconstructed track, wye, and locomotives. The scene of May 10, 1869 will be further enhanced through the addition of some of the temporary site features (tents, appropriate rolling stock, wood piles, carts and wagons), present at the time of the driving

of the last spike. The few above-ground features remaining from the late historical period (the box elder trees, matrimony vine and golden currant) will be maintained.

Efforts at maintaining the historic scene along the east and west slopes have been more successful because these areas have remained largely undeveloped by the National Park Service and undisturbed by general operation of the rail line or by agricultural activities. Adaptive reuse of the railroad grade to accommodate self-guiding auto tours has only slightly impacted the cultural resource. Routine grade maintenance practices (such as yearly clearing of the grade culverts) and stabilization of grade structures such as culverts and trestles along with careful monitoring will protect the grade from deterioration. In addition, although integrity of setting is also important for the west and east slopes, the viewsheds in these areas are extensive – in some areas incorporating miles of agricultural lands to the shores of the Great Salt Lake. Expansion of the NHS boundaries on the west and east slopes should be contemplated only for protection of structural and archaeological resources, not to protect historical setting. The preferred treatment for the east and west slopes continues to be "preservation" including stabilization and preservation maintenance.

Recommendations for Treatment

Zone 1: Promontory Summit

1) Funding for a vegetation management study for the NHS has been approved, and development of a Vegetation Management Plan is underway. This study will provide information about the historic appearance of area vegetation through an environmental history and will result in development of a plan to guide the park in appropriate vegetation management. One goal of this study is the identification of appropriate plant materials for the visitor center landscaping in order to enhance the historic character of the site. Consideration should be given to removing the lawn in the vicinity of the visitor center and replanting the area with more appropriate native vegetation, similar to plant materials used in the parking area.

   The Vegetation Management Plan will also address the restoration of more appropriate vegetative cover surrounding the Last Spike Site, such as the mixed stands of native grasses reported to be present in the summit basin in 1869 (as indicated on the 1868 railroad survey maps), and the sagebrush and other shrubs appearing in the 1869-1879 photographs.

2) Consideration should be given to moving the temporary trailers, 4 storage buildings, and the trailer pads for volunteers, currently located west of the administrative offices, to the vicinity of the maintenance building, east of the earthen berm. These structures are physically and visually intrusive and incompatible with the historic character of the site. Each addition to this area contributes to the growing mass of the visitor center and the cumulative adverse visual effects to the Last Spike Site.

3) No new development should be allowed in the summit area. If new development is needed for park operations or administration, all buildings and associated structures should be sited in the existing maintenance area behind the earthen berm.

4) Design guidelines for the historic site should be developed to provide guidance on the character and materials appropriate for any development within the site. Guidelines could address a variety of resources including structures such as culvert headwalls, roads and trails, vegetation, utilities, site furniture, signage and interpretative materials.

5) In order to mitigate the visual impact of the visitor center and other modern additions on the Last Spike Site, surface materials (roofing, paint) that are nonreflecting and that blend with and complement the colors found in the surrounding environment should be selected. The development of an appropriate color palate for improvements at Golden Spike NHS should be part of the design guidelines prepared for the site.

   All existing buildings, structures, utilities, and other features should be evaluated to determine whether or not their exterior appearance (paint color, material surface) is compatible with the historic scene.

6) In order to protect critical views and the larger setting of the Last Spike Site, consider ways to protect additional lands at the summit basin. Expansion of the authorized NHS boundary to the 5000-foot contour interval within a mile east and west of the Last Spike Site (Figure 52) would incorporate most of the viewshed that is susceptible to development. By expanding the authorized boundary, park managers will have the authority to either purchase lands outright or to negotiate scenic easements with private landowners. In general, the negotiation of easements is preferred over purchasing lands in fee simple. In addition, NHS staff can work with Box Elder County officials to investigate protective zoning that would encourage agricultural land use and limit development.

   One priority for land purchase is a ¼-mile-wide strip of land immediately adjacent to the west boundary of the 160-acre headquarters area. The current NHS boundary is extremely close to the Last Spike Site, and the archaeological remains of Promontory Station buildings are known to be located in this area. Fee simple ownership of this parcel of land would facilitate protection of the historic resource.

7) Continue routine maintenance of the reconstructed grade in the summit area.

8) When possible, replace the existing NHS boundary fences (metal post and wire) with materials that are more appropriate to the historic period. Juniper posts would be more compatible with the historic scene.

9) Plans are in preparation to reestablish the canvas wall tents and other temporary site furnishings in the vicinity of the Last Spike Site according to the May 10, 1869 configuration, as a means to enhance the interpretive environment. The park has recently finalized an Implementation Plan for the Reconstruction and Interpretation of the May 10, 1869 Last Spike Site Historic Scene that addresses not only the tents, but the entirety of what is most reasonable for a partial reconstruction of the historic scene. Once completed, this partial reconstruction should be maintained according to the May 10, 1869 scene as outlined in the NHS Interpretive Plan, and not expanded to encompass the development associated with the later historic periods.

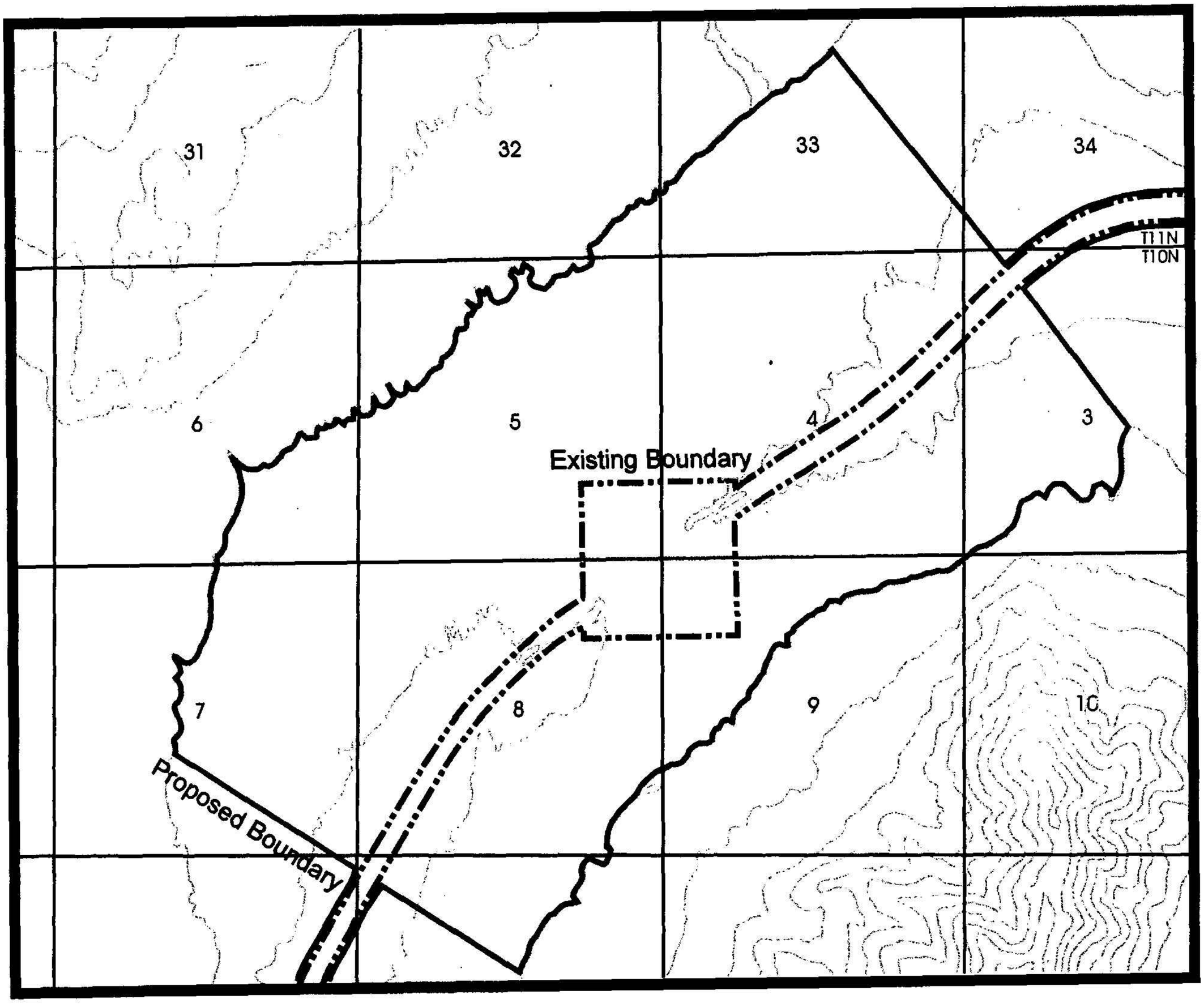

Figure 52. The summit area showing the suggested authorized boundary expansion.

10) Consider stabilization of the windmill located on the 15-acre parcel of private land owned by Johnson, east of the park's storage facility and formerly part of the historic Snodgrass property. Evaluate the National Register eligibility of the Promontory School, also located on the private parcel. Although these resources are located outside the current NHS boundary, they are within the authorized boundary. Other than archaeological resources, the school, the windmill, and the historic vegetation are the only extant reminders of the built environment of the later period of historical significance.

12) Maintain (prune and water) the two remaining box elder trees and the Golden currant. Manage the matrimony vine remaining in the vicinity of the visitor center parking lot (the former Houghton Store area), immediately northwest of the Last Spike Site in the area of the Promontory Station Section House and tie houses, and on the historic Snodgrass property.

Zone 2: West and East Slopes

1) Purchase lands already within the authorized boundary to ensure protection of the portions of the parallel grades and the archaeological remains of workers' campsites that they contain. Further expand the authorized NHS boundary to include additional lands that contain segments of the Union Pacific railroad grade and that contain the archaeological remains of workers' campsites. (Completion of the multi-year archaeological inventory of the NHS and adjacent lands known to contain evidence of construction workers' campsites should help to identify the areas that should be included in the expanded NHS boundary.)

The park should consider a boundary study to assess acquisition of other remaining segments of the Promontory Branch line. This would include the 14-mile segment between the east end of the NHS and Stinking Springs, and the 70-mile segment between the west end of the NHS and Lucin, Utah. Currently all of this land is in federal ownership, managed by the Bureau of Land Management (BLM). Extending the boundary to include the entire branch line would follow through with original historic research suggesting preservation of the entire Promontory Branch. It would benefit the historical resource by consolidating management of the entire line under one federal agency, resulting in a more standardized approach to protection and treatment. (This recommendation is consistent with proposed legislation for the Golden Spike/Crossroads of the West National Heritage Area, proposed to extend from Evanston, Wyoming, to Lucin, Utah along the historic railroad alignment).

2) Develop a plan to systematically identify, document, and monitor impacts to the historic railroad grades as a result of the auto tours. This includes not only direct impacts to the historic grade but indirect impacts on the associated resources and impacts resulting from pedestrian as well as vehicular traffic.

3) Continue preservation of structural components of the grade (culverts and trestles) as needs arise and continue to mitigate adverse impacts resulting from use of the railroad grade as an interpretive corridor.

4) Manage shrubby vegetation that threatens the structural integrity of the grades and associated archaeological sites. In the past two years, prescribed burns have been used to remove shrubby plants from the grade and from archaeological sites. [25] This method has been preferred over manual or mechanical removal, since the grade materials and the ground surface are not physically disturbed. In areas outside the grade, burning should be followed by reseeding, since burned areas are susceptible to invasion by noxious weeds. Recommendations regarding the composition of the seed mixture will be part of the vegetation management plan.

6) Consider replacing metal post and wire NHS boundary fencing with juniper post and wire fencing. Alternatively, the electric fence used in some parts of the east and west slope could also replace the metal fencing.

7) Continue annual grade maintenance procedures including clearing culverts and mowing vegetation (See Appendix B).

8) Continue to maintain the electric fence and stock crossings established along the west grade to help preserve the grade and associated features and to protect them from trampling, denuding, and erosion. The stock crossings were established in locations believed to be the least susceptible to livestock damage and were developed in consultation with the Utah State Historic Preservation Office.

9) Carefully evaluate the stabilization needs and implement necessary treatments to ensure long-term preservation of the many partially standing archeological structures and other archeological features remaining in the historic workers' campsites.

NOTE: As the treatments outlined above are completed, documentation should be appended to this cultural landscape report as Part III.

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[25] A "Wildland Fire Management Plan" was completed for the NHS in 1998.

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Appendix A

List of prior actions that have affected cultural resources within Golden Spike National Historic Site

Appendix A

List of prior actions that have affected cultural resources within Golden Spike National Historic Site

A. HQ/Summit area

1. The Golden Spike Association did a very limited "reconstruction" of the Last Spike scene during the 1950s – probably after 1957 when the area became an Historic Site not in Federal ownership. This consisted of installing some telegraph poles and laying several lengths of track on the 1942 mainline at what was believed to be the Last Spike site.
2. The NPS's 1968-1969 reconstruction following Ketterson's 1969 base map. This included reconstructing the UP siding grade; laying track on the siding and 1942 mainline, erecting the UP and CP-style telegraph poles. Erecting the various tents and other features on his base map was actually done sometime in the 1970s.
3. The NPS's 1979 reconstruction, which corrected the UP siding alignment errors in Ketterson's map, and upgraded the 1942 mainline and the UP wye (which was not previously used) to industry standard for supporting the two steam locomotives. The telegraph poles were kept, but the tents removed and replaced with the beginnings of a "false front" town, such as sprung up at Promontory Summit after May 10, 1869. Interpretation of the Last Spike site at this time included some living history activities, including baking bread and cookies in one of the establishments.
4. Archeological test excavations by LeFevre in 1974.
5. Archeological Inventory and documentation by Ayers in the early 1980s (report dates 1982).
6. In 1999 the "false fronts" were removed anticipatory to creating a partial reconstruction of the May 10, 1968 Last Spike scene to the extent possible given the other historic resources and modern structures in the area.

B. Grades

1. From the 1970s on there has been sporadic maintenance of historic grade, mainly by "pulling the shoulders," as the route gradually deteriorates through vehicular and foot traffic.
2. In the late 1990's a several year effort was made to gravel the surface of the entire route (similar to applying new ballast) that was deteriorating through vehicular and foot traffic.
3. Stabilization and/or repair of historic stone culverts began in the 1970s and have continued as needed. However, only in the late 1990s did this effort have benefit of input from a Historical Architect and an archaeologist.
4. Repair/stabilization/reconstruction of historic wood culverts, including the stave culvert. This work, similarly, has been ongoing sporadically since the 1970s, although only recently did this have benefit of input from a Historical Architect and an archaeologist.
5. Stabilization of two historic trestles occurred in 1971 and 1986, based upon a Historic Structures Report prepared by Dave Battle.

6. In 1986 the drainage that was eroding these two historic trestles was diverted back to its original channel with the use of large rock-filled gabions, and a large concrete box culvert was placed in the grade to facilitate drainage. Over the many years of operation of the railroad, this drainage had gradually filled in the historic culverts and diverted its channel to the east, eroding the grade there, and resulting in the Southern Pacific's construction of the two trestles.
7. Rebuilding sections of grade after washouts and addition of non-historic culverts in some places.
8. Major erosion control effort in the 1970s that included support from the Soil Conservation District and emplacement of numerous rock-filled gabions along the walls of several actively eroding drainages.
9. Removal by hand of some dense vegetation, mainly sagebrush and rabbitbrush, along the grade just east of the Surbon area as a "test" to determine if this stopped deterioration of the grade and enhanced its visibility from the county road.
10. Installation of an electric fence and specific stock crossing areas in 1997 to keep livestock off of the historic grade and out of the shady culvert areas.
11. In the later 1990s the grades in the summit area began to be mowed as a routine maintenance activity both to keep down the shrubby vegetation and enhance visibility.

C. East and West Slopes

1. Archeological inventory and condition assessment.
2. Prescription burns in 1998 and 1999 as prescribed in the park's 1998 Wildland Fire Management Plan. Three sections of the grade were burned, along with some additional areas on the east slope, to remove the woody vegetation that was damaging the historic features.
3. In 1968-1969 the NPS fenced its east slope and summit lands west to the King's Pass area.

Appendix B

Annual Maintenance of Railroad Grade

Annual Maintenance of Grade Resources

GOLDEN SPIKE Policy 504

Golden Spike National Historic Site

Bruce M. Powell

Superintendent

6/12/98

Date

United States Department of the Interior

NATIONAL PARK SERVICE
Golden Spike National Historic Site
P.O. Box 897
Brigham City, UT 84302-0923

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

(GOSP)

June 10, 1998

To: All Employees

From: Superintendent, Golden Spike National Historic Site

Subject: GOSP Policy 504 Bruce M. Powell
Annual Maintenance of Grade Resources

For many years, maintenance and management of cultural resources has been inconsistent and not in full keeping with the mission of the National Park Service as well as the fundamental management objectives for Golden Spike National Historic Site. Now that the Resources Management Program has been established, it is imperative that the cultural resources at Golden Spike National Historic Site be adequately maintained and preserved for future generations. To achieve this objective, the following Policy has been developed for the annual maintenance of grade resources.

General Grade Maintenance

1. (April) Remove rocks along the Auto Tours and along the U.P. and C.P. grades of the Big Fill Hiking Trail

2. (April) Gentle blading with the Road Grader of the Historic Grade along the Auto Tour routes, following the approved 1989 preservation procedure for the Historic Grades. Ensure that there is sufficient depth of Material on top of each culvert (generally, this should be at least 12-16 inches of material).

3. (April and again in September) Assess extent of burrowing activity in grades by marmots, badgers, etc. Take necessary control actions.

4. (April and again in September) Inspect all washes leading into culverts. Ensure that culverts are not plugged. Ensure that there is positive drainage flow and an adequate drainage channel.

5. (November through May) Monitor the electric fence on the west grade.

6. (Late May and again in July) Mow the grade between the two auto tours to keep weeds below 12 inches in height. This mowing regimen is also needed between the Big Fill and the east end of the Historic Site near Thiokol. (A more continuous maintenance regimen for mowing is necessary along the tracks at the Last Spike Site area).

7. As needed, control the growth of sunflowers along the auto tours, along the Big Fill Hiking Trail, and on the grade between the Big Fill and Thiokol.

8. Approximately every five years, the auto tour routes should be resurfaced with road base material.

Maintenance of Culverts, Trestles, Abutments, and related features

1. (April and again in September) Clear brush, silt, debris, etc. to within six feet of each culvert. Similarly, clear brush and debris out of the drainage channels.

2. (April and again in September) Make a structural inspection of each culvert.

3. (April and again in September) Inspect drainage and assess erosion patterns of each culvert.

4. (April and again in September and also following any major storm event) Record a maintenance record form for all of the above assessments.

5. (April and again in September) Maintain Trestle 2.
   - Inspect erosion patters. Direct any surface flow away from structure.
   - Replace rotted wood riprap
   - A liberal coating of creosote should be applied every other year, or as needed.

   (The entire Preservation plan for Trestle 2 is listed in the 1986 document: "Trestles Preservation Plan," pages 43 and 44)

Long Term Maintenance and Preservation Issues

1. Need to determine an appropriate solution to controlling marmot and badger burrowing in the Historic Grades.

2. Need to determine how best sagebrush should be removed from the Historic Grades.

Selections from the Division of Cultural Resources

Rocky Mountain Region, National Park Service

No. 1 **Cultural Resource Inventory and Testing in the Salt Creek Pocket and Devils Lane Areas, Needles District, Canyonlands National Park, Utah** by Betsy L. Tipps and Nancy J. Hewitt; 1989.

No. 2 **Gateways to Commerce: The U.S. Army Corps of Engineers' 9-Foot Channel Project on the Upper Mississippi River** by William Patrick O'Brien, Mary Yeater Rathbun, and Patrick O'Bannon; 1992.

No. 3 **The Archaeology of Beaver Creek Shelter (39CU779): A Preliminary Statement** by Lynn Marie Alex; 1991.

No. 4 **Archaeological Investigations at Two Sites in Dinosaur National Monument: 42UN1724 and 5MF2645** by James A. Truesdale; 1993.

No. 5 **The History of the Construction of the Road System in Yellowstone National Park, 1972-1966. Historic Resource Study Volume I** by Mary Shivers Culpin; 1994.

No. 6 **The Obsidian Cliff Plateau Prehistoric Lithic Source, Yellowstone National Park, Wyoming** by Leslie B. Davis, Stephen A. Aaberg, and James G. Schmitt; 1995.

No. 7 **Holocene Archaeology near Squaw Butte, Canyonlands National Park, Utah** by Betsy L. Tipps; 1995.

Cultural Resources Selections

Intermountain Region, National Park Service

No. 8 **Cultural Landscape Report: Fruita Rural Historic District, Capitol Reef National Park** by Cathy A. Gilbert and Kathleen L. McKoy; 1997.

No. 9 **Ethnographic Overview and Assessment of Devils Tower National Monument** by Jeffry R. Hanson and Sally Chirinos; 1997.

No. 10 **A Classic Western Quarrel: A History of the Road Controversy at Colorado National Monument** by Lisa Schoch-Roberts; 1997.

No. 11 **Cultural Resource Investigations Near White Crack, Island-in-the Sky District, Canyonlands National Park, Utah** by Betsy L. Tipps, Andre D. La Fond, and Robert I Birnie; 1996.

No. 12 **Barrier to Crossroads: An Administrative History of Capitol Reef National Park** by Bradford Frye; 1998.

No. 13 **Archeology at the Fort Laramie Quartermaster Dump Area, 1994-1996**, edited by Danny N. Walker; 1998.

No. 14 **Cultural Landscape Report for Hubbell Trading Post National Historic Site, Ganado, Arizona** by Peggy Froeschauer-Nelson; 1998.

No. 15 **Cultures at a Crossroads: An Administrative History of Pipe Spring National Monument** by Kathleen L. McKoy; 2000.

No. 16 **Cultural Landscape Report, Golden Spike National Historic Site, Box Elder County, Utah** by Carla Homstad, Janene Caywood, and Peggy Nelson; 2000.