

BURLINGTON NORTHERN SANTA FE RAILROAD,
CAJON SUBDIVISION
Between Cajon Summit and Keenbrook
Devore vicinity
San Bernardino County
California

HAER CA-2259
CA-2259

HAER
CA-2259

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
PACIFIC WEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
1111 Jackson Street, Suite 700
Oakland, CA 94607

HISTORIC AMERICAN ENGINEERING RECORD

Burlington Northern Santa Fe Railroad
Cajon Subdivision

HAER
CA-2259

HAER No. CA-2259

Location: The Cajon Subdivision of the BNSF Railway Company (BNSF) Railroad extends approximately 81 miles in a generally southerly direction from Barstow, California (Milepost [MP] 0), to the City of San Bernardino, California. Structures documented in this study are located along an approximately 15.9-mile section of Main Track 1 through Cajon Pass between Cajon Summit (MP 55.7) and Keenbrook (MP 69.5) (Figure 1). The Keenbrook end of the project area is located approximately 15 miles northwest of downtown San Bernardino. The section of Main Track 1 that heads north through Cajon Pass from Keenbrook generally parallels Interstate 15 (I-15), which lies to the east, then turns to the east-northeast and passes under I-15 before continuing on to Cajon Summit.

The section of railroad lies in Township 2 North, Range 5 West, Sections 7 and 19; Township 2 North, Range 6 West, Sections 1, 12, 13, and 24; Township 3 North, Range 5 West, Sections 19, 20, and 29; and Township 3 North, Range 6 West, Sections 22–24, 26, 27, 34–36 on the 1965 Cajon, California (photorevised 1988), and 1966 Devore, California (photorevised 1988), U.S. Geological Survey 7.5-minute quadrangles. Universal Transverse Mercator Coordinates: Zone 11, NAD83, Geodetic Reference System 1980 ellipsoid, 3799509 mN, 458566 mE (Cajon Summit); 3787836 mN, 460318 mE (Keenbrook).

Dates of Construction: 1884–1885, 1912–1913, 1938–1939, 1972, 1977

Present Owner: BNSF

Present Use: This section of track is in use.

Significance: The railroad through Cajon Pass provides a vital link between the greater Los Angeles area and distant markets. In 1998, the California State Historic Preservation Office determined the historic route of the Atchison, Topeka and Santa Fe (now BNSF) Railroad alignment through Cajon Pass to be eligible for listing in the National Register of Historic Places under Criteria a and c. By connecting Los Angeles and San Bernardino to markets throughout the United States, the railroad dramatically affected demographic, commercial, and cultural trends in southern California. Furthermore, construction of the long, winding alignment through rugged and often steep terrain represents a significant engineering feat for its time.

Report Prepared by: Scott Thompson, Senior Historian
John Goodman, Archaeologist
Statistical Research, Inc.
Tucson, Arizona

Date: March 2008

I. DESCRIPTION

The Burlington Northern Santa Fe Railway Company (BNSF) operates a transcontinental railway system that extends from the Ports of Los Angeles and Long Beach, California, east to Chicago, Illinois. Connecting service using other railroads extends throughout the Midwest and to the East Coast. BNSF rail traffic into and out of southern California traverses the Cajon Pass area of San Bernardino County. The northwest-southeast-trending Cajon Pass is situated between the San Bernardino Mountains to the east and San Gabriel Mountains to the west. The southern entrance to the pass is located north of the town of Devore in the San Bernardino Valley. Heading north, the pass becomes narrower and deeper as it increases in elevation. Within the pass, the gradient rises from an elevation of about 2,400' above sea level (ASL) at Keenbrook to approximately 3,800' ASL at Cajon Summit. The topographic low-lying area between the mountain ranges is known as Cajon Canyon, and Cajon Creek, which flows east and south, is the primary drainage through the pass (URS Corporation 2007:3-29).

At present, BNSF maintains two tracks that carry rail traffic through Cajon Pass. Main Track 1 refers to the westerly aligned track, whereas the easterly aligned track is known as Main Track 2. Main Track 2 is the original alignment constructed by the California Southern Railroad in the 1880s. This study focuses on select elements of Main Track 1, which was completed in 1913, although portions of it were modified following a major flooding episode in 1938 and track realignments in 1972 and 1977. There are two tunnels on Main Track 1 through Cajon Pass. Tunnel 1 is west of Cajon Summit, and Tunnel 2 lies west of Tunnel 1 and east of the site known as Alray Station. Heading north from Keenbrook, the two tracks run parallel until they reach the now-abandoned Cajon Station. At that point, the tracks take separate routes before converging at Cajon Summit. The milepost designations for the parallel segments of track are the same. However, milepost locations on the portion of Main Track 1 that diverges from Main Track 2 are designated with an X to differentiate between the nonparallel segments of Main Tracks 1 and 2. Main Track 1 climbs Cajon Pass on a 2.2-percent grade, whereas Main Track 2 has a ruling grade of 3.4 percent between Cajon Station and the summit. Westbound trains descend the steeper Main Track 2, and eastbound trains travel uphill on the less steep Main Track 1 (URS Corporation 2007:1-1).

This report documents twenty-two features—consisting of twelve culverts, seven bridges, two tunnels, and one limekiln—along an approximately 16-mile section of Main Track 1 through Cajon Pass (Figures 2 and 3). The project area begins at Milepost (MP) 69.5, south of the site of Keenbrook Station, where Main Track 1 enters the lower end of Cajon Canyon on the west side of Cajon Creek. For approximately 6 miles, the track follows the west side of the canyon through Blue Cut—an area on the San Andreas Fault that is incised with steep side slopes—then crosses Cajon Creek and continues along the east side of the creek to the site of Cajon Station (now abandoned). North of Cajon, the two tracks diverge, with Main Track 1 crossing to the west side of Cajon Creek where it continues in a northwesterly direction before turning east and rejoining Main Track 2 near Cajon Summit. As it traverses the upper portion of the pass, the path of the roadbed of Main Track 1 is characterized by a series of deep cuts into canyon walls.

Features that form the track include the roadbed, ballast, rails, ties, tie plates, and rail joints. The roadbed consists of the prepared subgrade on which the ballast, ties, and rails rest. The roadbed is designed to facilitate drainage and provide a smooth, regular surface for the ballast and track sections. Ballast is composed of the crushed stone and gravel that support and anchor the track to true line and grade. In addition, ballast uniformly distributes the load of the track and rail traffic to the subgrade and provides immediate drainage for the track during storms. Culverts are structures that protect the track from erosion by carrying storm runoff safely under the roadbed, and examples along Main Track 1 vary in design and dimensions. Bridges on the rail line carry traffic over small to large drainages and, like the culverts on the system, vary in size and design characteristics. The BNSF line through Cajon Pass is a standard-gauge railroad, meaning the distance between the inside heads of the rails is 4'-8-1/2" (Hay 1953:296, 418; Raymond et al. 1947:140).

Features associated with this section of track remain historically intact and have retained their integrity of location, design, setting, materials, workmanship, feeling, and association, as defined by the National Park Service (NPS) (1997:44–45).

II. HISTORICAL INFORMATION

Cajon Pass has been a major transportation corridor between the high desert and the Los Angeles Basin for millennia. The first Europeans to use the pass were probably a band of Spanish soldiers led by Capt. Pedro Fages. In 1772, Fages, the military commander of the Presidio of San Diego, and a small force of soldiers crossed the San Bernardino Mountains in the vicinity of Cajon Pass in pursuit of deserters. Over the ensuing years, Spanish missionaries and explorers, as well as Anglo-American trappers and traders, used the pass to travel between the Los Angeles Basin and the high desert. Cajon Pass was part of the Old Spanish Trail, a commercial route that connected the Spanish settlement of Santa Fe in present-day New Mexico with Los Angeles. The territory now known as California became part of the newly independent Mexico in 1821, following the overthrow of the Spanish colonial government. Throughout the 1830s and 1840s, raiding bands of Native Americans from the high desert crossed over Cajon Pass to steal livestock from ranches in the San Bernardino and San Gabriel valleys (Robinson 1990:7–11; Walker 1978:1).

By the time of the U.S.-Mexican War of 1846–1848, an Anglo-American presence in California had been firmly established. The war ended in 1848 with the signing of the Treaty of Guadalupe Hidalgo, and Mexico lost its claim to California and much of what is now the U.S. Southwest. Up to this time, the pass was used mostly by Mexican and Anglo-American traders, livestock thieves, and a few settlers. The discovery of gold in California in 1848 resulted in the immigration of thousands of fortune seekers from the eastern states. Miners needed supplies, and Cajon Pass offered a freighting route between Los Angeles and the mining communities to the north. The route was suitable for pack trains, but those in wagons found it difficult to navigate the steep, boulder-strewn trail through the narrow canyons. In 1855, William T. B. Sanford and Phineas Banning, both freighters from Los Angeles, improved the Cajon Pass route by constructing a wagon road with a shallower grade through what is today known as Sanford's Pass. By 1860, wagon traffic had increased, and freighters lobbied local and state officials for a shorter, less steep route over the pass (Hockaday and Hockaday 2007:19, 35; Robinson 2005:203).

With approval from the San Bernardino County supervisors and a charter from the state legislature, John Brown built the first toll road over Cajon Pass in the summer of 1861 to provide wagon access between San Bernardino and the mining communities of Holcomb Valley and Bear Valley to the northeast. The Cajon Pass Toll Road, located to the east of the road through Sanford's Pass, extended from the lower end of Cajon Canyon along Cajon Creek, then continued up Crowder Canyon (then known as Coyote Canyon) to the summit of Cajon Pass and the wagon road's terminus. Brown operated toll houses at the upper narrows of Crowder Canyon and at Blue Cut near the lower end of Cajon Canyon. For \$1.00, a wagon pulled by a pair of animals could drive over Cajon Pass. Toll rates varied for additional spans of animals and loose livestock. Brown held a 20-year franchise for the toll road, after which time the road reverted back to the county for use as a public highway. During the late nineteenth century, other wagon roads were built to link settlements in the vicinity of the pass, although these thoroughfares were less prominent than the toll road. Wagon trains and teams of pack animals provided the only means of hauling freight between communities in the Los Angeles Basin and northern markets by way of Cajon Pass until the 1880s, when a railroad was built through the pass. With the ascendancy of the automobile in the early twentieth century and subsequent road improvements, Cajon Pass became a major trucking route (Beattie and Beattie 1951:336–337; Hockaday and Hockaday 2007:24; Robinson 1990:51–52, 2005:237–238).

Throughout the first decades of the twentieth century, the population of southern California increased steadily, as did the popularity of the automobile, and the demand for better roads grew apace. By 1912, a paved road, which followed the alignment of the existing wagon road, extended from San Bernardino to the Crowder Canyon summit. Between 1914 and 1916, San Bernardino County constructed a new road through Cajon Pass. Topped with macadam pavement, the 16'-wide road generally followed the east side of Cajon Creek and ended at the divide between the Mojave Desert and San Bernardino Valley, about 1 mile west of the old wagon road. The new alignment became known as Legislative Route No. 31, Section B. In the 1930s, route-straightening projects eliminated many of the treacherous curves and steep switchbacks, and the relocation of certain sections along Cajon Creek alleviated the problem of road washouts during periods of heavy storm runoff. The section of roadway through Cajon Pass became part of U.S. Highway 66 in 1926. Numerous light-duty and unimproved roads parallel or intersect Cajon Canyon. These roads probably began as footpaths, following the natural contours. They developed over time with use by horses, wagons, and, eventually, automobiles, connecting farms, ranches, logging operations, and mines to businesses and services in the San Bernardino Valley (Bischoff 2005:123, 127; Hockaday and Hockaday 2007:226–227).

Railroading in Cajon Pass

By the late 1830s, there was widespread interest within the U.S. government and in the private sector in creating a transcontinental railroad. After the acquisition of California in 1848, the federal government commissioned a series of surveys of the West in search of the most suitable route for a transcontinental line. In June 1853, Lt. Amiel W. Whipple led a party of federal surveyors from Fort Smith, Arkansas, to Los Angeles along the thirty-fifth parallel for the purpose of locating a transcontinental rail route to the Pacific Ocean. In California, the survey team crossed the Mojave Desert to Cajon Pass and arrived in Los Angeles on March 21, 1854. Whipple reported on the feasibility of building a railroad along the route that

went through Cajon Pass. However, the impending Civil War dampened federal enthusiasm for a transcontinental line that would best service the South. The debate over the question whether the transcontinental railroad should run through the central or southern part of the United States was decided when the southern states seceded from the Union. President Abraham Lincoln signed the Pacific Railway Act on July 1, 1862, authorizing the construction of a central rail line from Council Bluffs, Iowa, to Sacramento, California. Construction commenced in 1863 and the first transcontinental line was completed on May 10, 1869, when the Central Pacific and Union Pacific lines met in Utah, far to the north of Whipple's route along the thirty-fifth parallel. Sixteen years would pass before the first train lumbered over Cajon Pass (Bain 1999:658; Beattie and Beattie 1951:418; Bryant 1974:83–84).

The first attempt to build a railroad line through Cajon Pass was in 1875, when the Los Angeles and Independence Railroad Company sought to connect the silver mines in central California's Owens Valley to Santa Monica on the Pacific Coast. A 20-mile length of track was completed between Santa Monica and Los Angeles, with plans to extend the line to San Bernardino and lay track up the west side of Cajon Canyon and through the pass. Plans for the route included a 3,700'-long tunnel to carry the line under the ridge at the upper end of the canyon and onto the desert floor. Grading work and tunnel excavation commenced in 1875; however, an end to the mining boom brought construction to a halt soon after it began (Duke 1995:69–70; Hockaday and Hockaday 2007:174; Walker 1978:1, 3).

In September 1883, the California Southern Railroad completed its line from the Port of San Diego to San Bernardino and prepared to extend the line 81 miles north through Cajon Pass, where it would join with the Atlantic and Pacific Railroad at Waterman (present-day Barstow), California. In 1884, the California Southern Railroad, which had been acquired that year by the Atchison, Topeka and Santa Fe Railway (AT&SF) (then "Railroad"—the Atchison, Topeka and Santa Fe Railroad became the Atchison, Topeka and Santa Fe Railway in December 1895), began constructing the line from Waterman southwest to the Cajon Pass summit. South of Victor (later named Victorville), the line began a long ascent from the Mojave Desert to the high mountain divide that separates the desert from the coastal region. Construction of the line from San Bernardino to Cajon Summit began in January 1885. Teams of seasoned Mexican graders began clearing a right-of-way (ROW) at the lower end of Cajon Canyon, and, by July, the workers had graded approximately 19 miles of roadbed. Joined by a large contingent of Chinese laborers, the grading crews launched an assault to clear the ROW up the steepest and most rugged part of the canyon. The grading crews created a serpentine alignment through deep cuts as the roadbed wended up the canyon to the summit. Rather than dig two or more tunnels, the laborers carved out the mountainside and used the dirt from the huge cuts to fill low spots along the alignment. Tracklayers followed the grading crews and laid 61-pound rails through Cajon Pass using ties that were obtained from lumber mills in the San Bernardino Mountains. On November 9, 1885, construction crews joined the two sections of railroad just below Cajon Summit. Two days later, a train carried railroad officials and local dignitaries from San Bernardino to Waterman (Barstow) (Bryant 1974:96–101; Duke 1995:58–59, 70–72; Robinson 1990:34).

The original, single-track line through Cajon Pass headed north from San Bernardino for about 2 miles before turning northwest and continuing on a steady 2.2-percent grade. After crossing to the west side of

Cajon Creek, the track entered the lower end of Cajon Canyon and followed the west side of the canyon for several miles. The line passed through Blue Cut, then crossed Cajon Creek and followed the channel's east bank to Cajon Station. Leaving Cajon, the track crossed to the west side of Cajon Creek and continued up the canyon for more than 1 mile, then headed northeast, crossing to the creek's east side. At this point, the rail line passed through deep cuts and over fills through rugged terrain as it climbed to Cajon Summit, 3,822' ASL. The track between Cajon and the summit climbed the pass at a 3.4 percent grade. Keenbrook, Cajon, and Summit were major stations along the rail line and were equipped with train order offices, section gang facilities, signal maintenance personnel, and, at Keenbrook and Cajon, water for the steam engines (Walker 1978:8; 1985:68, 71, 73, 79, 81).

In the ensuing years, freight and passenger trains increased in size and weight. Even with helper engines, the longer, heavier trains moved slowly up the 3.4-percent grade, causing traffic in both directions to bunch up. To complicate matters, in 1905, AT&SF and the Los Angeles and Salt Lake Railroad, a subsidiary of the Southern Pacific (now Union Pacific) Railroad, entered into a trackage-rights agreement that allowed the latter company's trains to operate over Cajon Pass. With this increase in rail traffic, the single-track line through Cajon Pass, even with passing sidings, had become a bottleneck (Bryant 1974:191; Duke 1995:72; Walker 1978:8).

The steep grade between stations at Cajon and Summit created problems for train operations over the pass. In the early 1900s, AT&SF initiated plans and surveys for double-tracking the line from San Bernardino to Cajon Summit on a constant grade of 2.2 percent. Construction out of San Bernardino commenced in 1910, and, by 1912, the new track, which was laid on the existing 2.2-percent grade, extended to Cajon Station. Traveling north from San Bernardino, the two tracks paralleled one another until reaching Cajon Station. To maintain a constant 2.2-percent grade from Cajon to Summit, AT&SF engineers proposed a route that would take the second track west and north of the original line. This meant that eastbound trains ascending the more favorable grade would operate to the left of the original line, a rarely encountered feature in the United States. At the upper end of the Cajon siding, the new track diverged to the west of the original line on a 10° curve and crossed to the west side of Cajon Creek. From there, the track headed west for approximately 1/2 mile, then made a sharp 10° turn to the north and continued in a generally north-northeast direction. The giant curve above Cajon Station was named Sullivan's Curve after Herb Sullivan, a citrus farmer from Placentia, California, who, during the 1930s and 1940s, photographed trains as they rounded the curve. After emerging from Sullivan's Curve, the new line roughly paralleled the original line for about 1 mile (at a slightly higher elevation), headed northwest, crossed to the east side of Cajon Creek, then gained elevation before turning east. The two tracks rejoined their parallel alignment near Cajon Summit. About 3 miles below the summit, construction crews blasted two tunnels. Both tunnels were constructed with timber supports, but were soon lined with concrete after passing locomotives repeatedly set the fire to the timbers. By December 1913, the line was double-tracked all the way to Cajon Summit. This circuitous route made the new line 1.9 miles longer than the original line but provided a constant 2.2-percent grade for trains moving uphill to the summit. Bridges were constructed to carry the second track over roadways and drainages. New sidings were installed at Keenbrook, Cajon, and Summit Stations to provide each main track with side tracks for meeting or passing trains. Sidings were placed at the minor stations of Alray (named after AT&SF employee Al Ray) and Pine Lodge. A 2,200'- crossover near Pine Lodge Station (located on the

eastbound track between Cajon and Alray Stations) allowed movements from the eastbound to the westbound line, or vice versa. The crossover was removed in 1948. Double-tracking the 55 miles of rail line from Cajon Summit to Barstow commenced in November 1923 and was completed in March 1924. For organizational purposes, AT&SF referred to the 81-mile line between Barstow and San Bernardino as the First District of the Los Angeles Division, with mileposts numbered westward beginning with 0 at Barstow (Duke 1995:72–75, 79; Walker 1978:15, 17, 22, 77–78).

Heavy rains in February and March 1938 resulted in major flooding along Cajon Creek and its tributaries. The floods washed out tracks and bridges, halting all rail traffic through the pass. Following the flooding episode, AT&SF rebuilt bridges (using construction techniques to prevent scouring around and under the piers), constructed culverts to carry storm runoff under the tracks, protected sections of the roadbed with riprap, and realigned the Cajon Creek channel. The flooding caused so much damage that, in 1939, an approximately 2-mile section of the double-tracked line below Cajon Station was relocated to the west side of Cajon Creek, necessitating the construction of a three-span, steel-plate girder bridge at MP 63.1 (Duke 1995:76; Walker 1978:122).

By 1945, only Ono, Devore, Cajon, and Summit remained as stations on the line between San Bernardino and Victorville. Water stops at Keenbrook and Cajon Stations were discontinued in the early 1950s after AT&SF phased out the steam locomotives in favor of diesel-powered engines (Walker 1978:15, 48–49).

The Southern Pacific Company (now Union Pacific) completed a 78-mile bypass route from Palmdale to Colton in June 1967. Known as the Palmdale Cutoff, the tracks roughly parallel the AT&SF (now BNSF) alignment through Cajon Pass on a ruling grade of 2.2 percent (Duke 1995:79).

In 1972, AT&SF realigned the 10° curve at the south end of Summit Station to eliminate derailments and turnovers, which had become all too frequent with long trains. At the same time as the realignment, AT&SF installed a centralized traffic control system over the entire section between San Bernardino and Barstow. The reverse-signal system allowed trains to travel in either direction on the two tracks. The new traffic control system and radio communication eliminated the need for stations, train order offices, and passing sidings, all of which were subsequently removed. Following the line change at Summit, AT&SF initiated a series of minor line changes to reduce maximum curvature from 10° to 6°. In 1977, the realignment project in the vicinity of Sullivan's Curve required the construction of a new bridge over Cajon Creek (Duke 1995:79–80; Walker 1978:253).

In July 1994, AT&SF and the Burlington Northern Railroad filed papers with the Interstate Commerce Commission (ICC) indicating their intent to merge. The ICC approved the merger, and on September 22, 1995, the two became BNSF (Kaufman 2005:300, 309).

III. PROJECT INFORMATION

A. Project Purpose

Since 1913, AT&SF (now BNSF) has maintained two rail lines through Cajon Pass, but because of expanding commerce and the difficulty and steepness of the terrain, the pass has become a bottleneck for train traffic. In response to the needs of commerce, BNSF is proposing to construct a third main track through Cajon Pass. The third track will closely parallel the existing Main Track 1 as it winds approximately 15.9 miles through hilly to steep terrain between Keenbrook and Cajon Summit. This long, winding alignment was previously determined eligible for listing in the National Register of Historic Places in 1998 and is recorded as NHRP-E-98-031, with the California Historical Resources Information System site designation CA-SBR-6793H. The BNSF undertaking requires a permit from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (33 U.S. Code 1344) and a special use permit from the U.S. Forest Service, San Bernardino National Forest. Because the proposed track addition will adversely affect many of the bridges, culverts, and other structures on the existing Main Track 1, mitigation measures are required to comply with the Section 106 process outlined in the National Historic Preservation Act, as amended. Stipulation III (B) of the Memorandum of Agreement for the BNSF Cajon Third Main Track Project requires Historic American Engineering Record (HAER) documentation of selected elements before construction activities commence (USACE 2007). In May 2007, BNSF contracted with Statistical Research, Inc. (SRI), to record twenty-two elements within the project area in accordance with NPS standards for HAER documentation (NPS 2003). Twenty-one of the elements—consisting of twelve culverts, seven bridges, and two tunnels—are associated with the railroad. One element, a stone-and-mortar limekiln, is outside the proposed ROW; however, it is included for documentation, because it is likely that vibrations from construction activities will adversely affect the resource.

B. Report Preparation

In May, August, and September 2007, SRI Senior Historian Scott Thompson contacted or visited the following agencies and repositories to obtain historical and engineering data on the segment of BNSF railroad (Main Track 1) between Keenbrook and Summit: A. K. Smiley Public Library, Redlands, California; Armacost Library, University of Redlands, Redlands, California; California State Railroad Museum, Sacramento; Kansas State Historical Society, Topeka; Main and Science Libraries, University of Arizona, Tucson; Pomona Public Library, Pomona, California; San Bernardino Archaeological Information Center, San Bernardino, California; San Bernardino Public Library, San Bernardino, California; and Structures Department, BNSF, Kansas City, Kansas. In addition to the documentary research, Thompson performed a pedestrian survey of the railroad-related features documented in this study. Data collection included obtaining measurements and locational coordinates.

Mr. Thompson and SRI Archaeologist John Goodman wrote and compiled this report. David G. De Vries, of Mesa Technical (under contract to SRI), completed the large-format photographic documentation of the bridges, culverts, tunnels, and limekiln. Views obtained by Mr. De Vries show the structural and design elements of the features and their relationships to the railroad and surrounding landscape.

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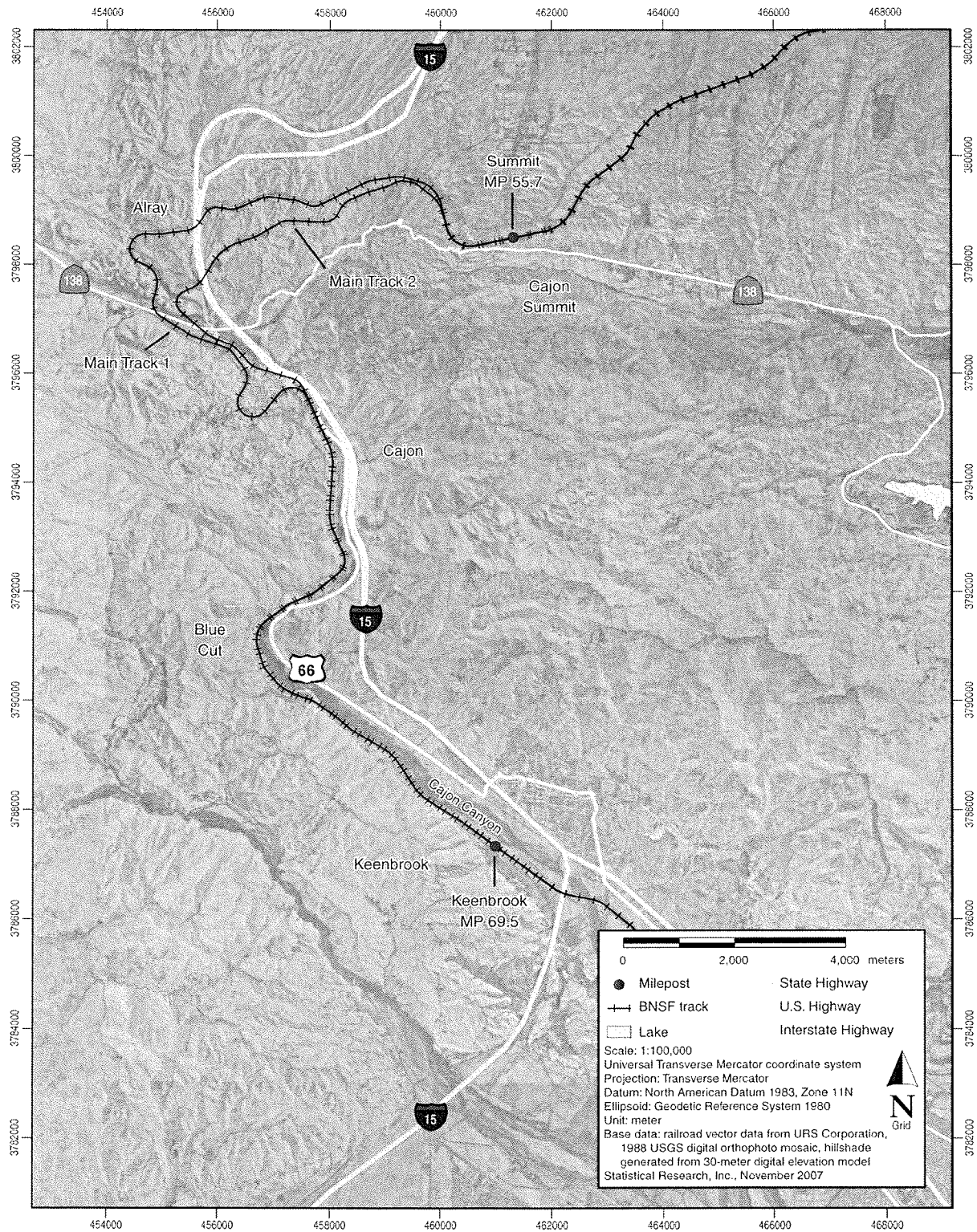


Figure 1. Location of the BNSF Cajon Subdivision between Cajon Summit and Keenbrook.

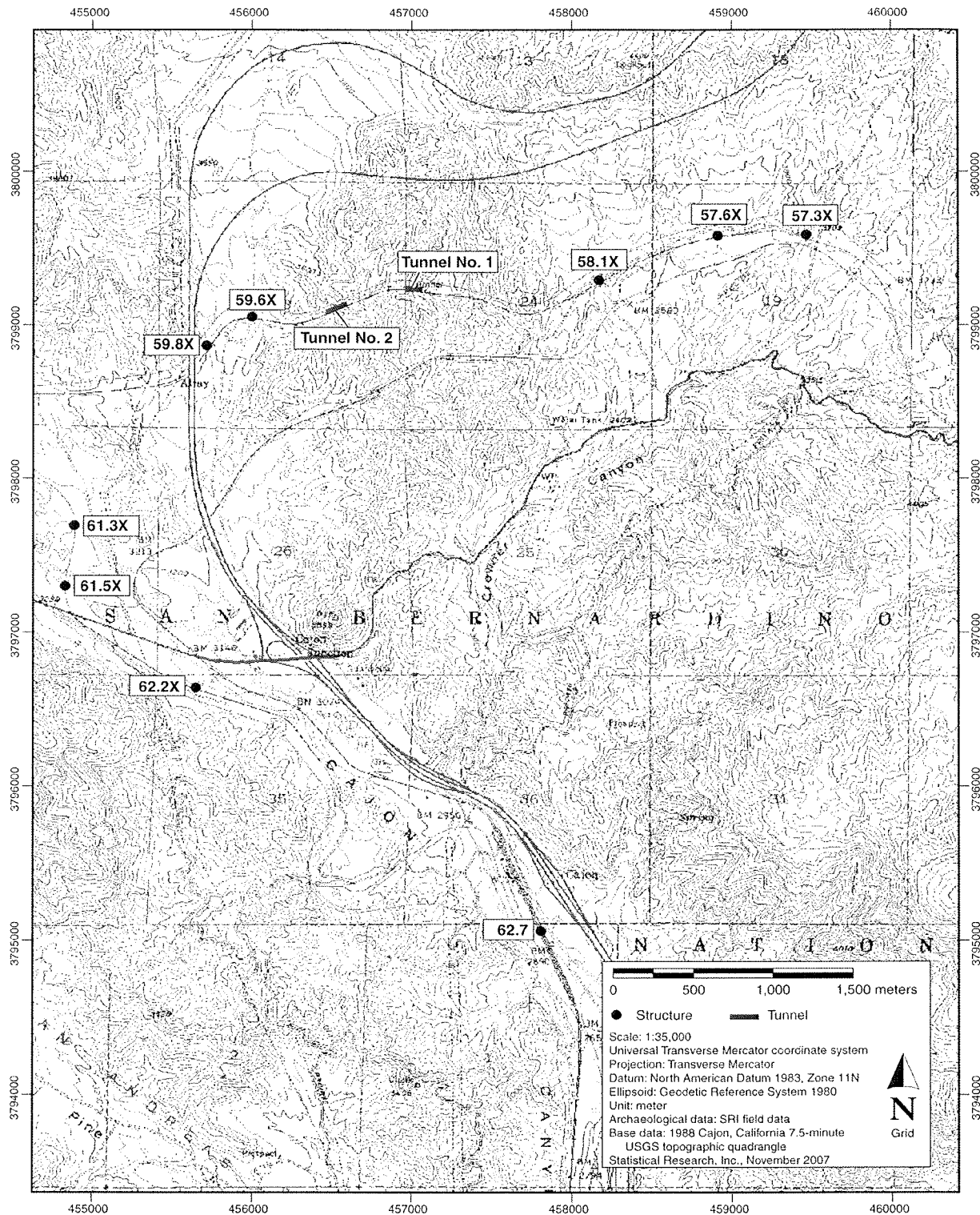


Figure 2. Map showing locations of documented features, north portion of project area (1956 Cajon, California 7.5-minute U.S. Geological Survey quadrangle [photorevised 1988]).

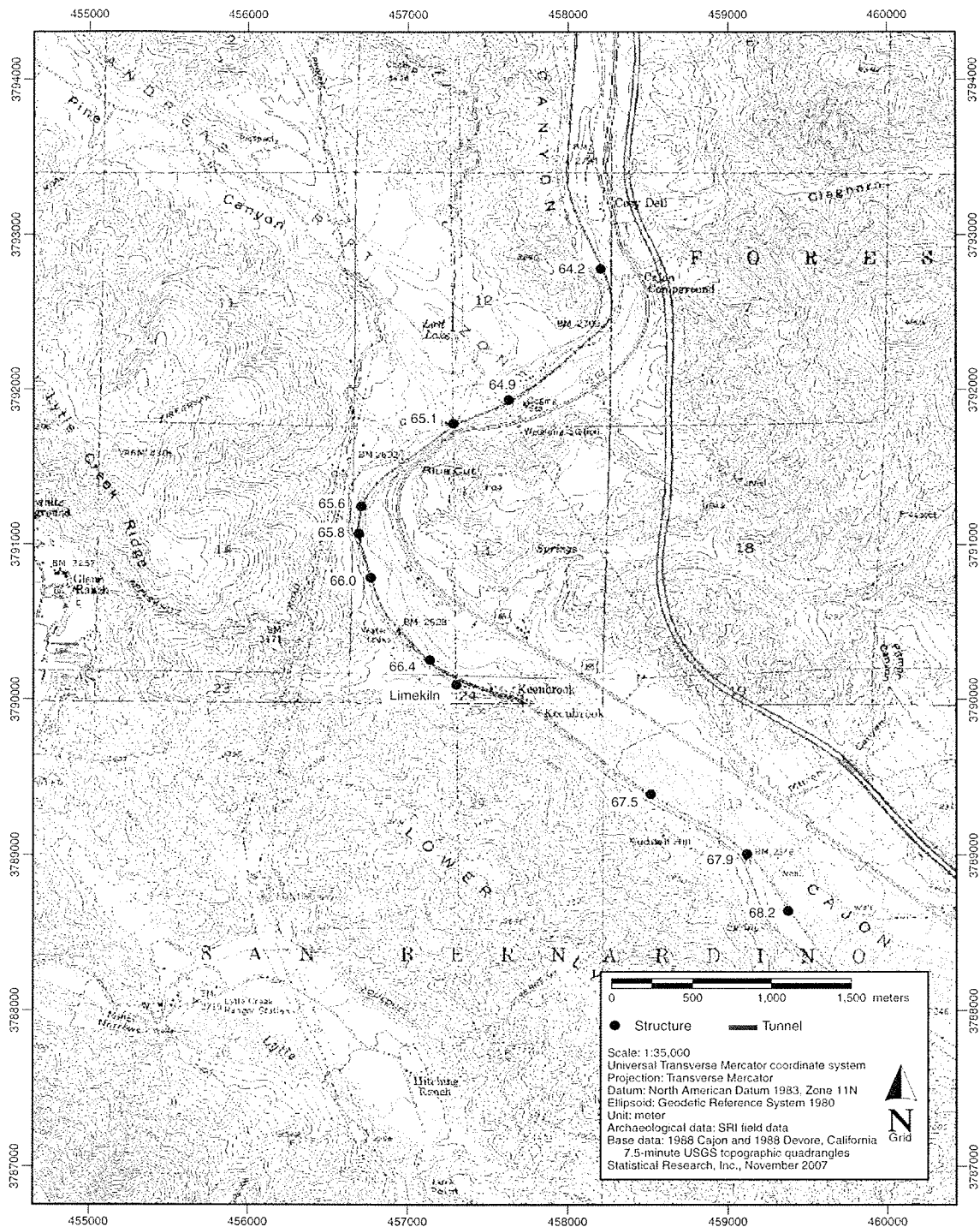


Figure 3. Map showing locations of documented features, south portion of project area (1956 Cajon, California, and 1966 Devore, California, 7.5-minute U.S. Geological Survey quadrangles [both photorevised 1988]).

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David G. De Vries, photographer

June 2007

Note: All references to the BNSF Railway Company have been abbreviated to BNSF in the following captions.

CA-2259-1 A VIEW TO THE SOUTHWEST TOWARD MT. SAN ANTONIO FROM THE UNION PACIFIC RAILROAD TRACK NEAR CAJON PASS. VISIBLE FROM LEFT TO RIGHT ARE THE SANDSTONE OUTCROPS AT SULLIVAN'S CURVE IN THE FAR LEFT DISTANCE; BNSF RAILROAD MAIN TRACK 2 CURVING THROUGH THE HILLS IN THE LEFT DISTANCE; HILL 58.2 AT CENTER, MARKED BY AN ISOLATED STAND OF TREES; BNSF RAILROAD MAIN TRACK 1, RUNNING STRAIGHT THROUGH THE CENTER OF THE PHOTOGRAPH; AND THE UNION PACIFIC TRACK AT THE FAR RIGHT. [123]

CA-2259-2 VIEW TO THE EAST FROM HILL 58.2 ALONG BNSF RAILROAD MAIN TRACK 2 TOWARD CAJON PASS. THE TRACKS CROSS THE PASS THROUGH A CUT IN THE MOUNTAIN IN THE FAR RIGHT DISTANCE. [23]

CA-2259-3 ANOTHER VIEW FROM HILL 58.2, SHOWING BNSF RAILROAD MAIN TRACK 1 AND THE UNION PACIFIC TRACK ABOVE AT RIGHT PASSING THROUGH THE HIGH DESERT LANDSCAPE. VIEW TO THE WEST. [22]

CA-2259-4 VIEW TO THE NORTH ALONG BNSF RAILROAD MAIN TRACK 1 TOWARD THE INTERSTATE 15 AND HIGHWAY 138 INTERCHANGE. BNSF RAILROAD MAIN TRACK 2 IS VISIBLE AT RIGHT. [104]

CA-2259-5 VIEW TO THE SOUTH AT BNSF RAILROAD MAIN TRACK 1 AT LEFT AND THE UNION PACIFIC TRACK AT RIGHT, HEADING INTO SULLIVAN'S CURVE. [103]

CA-2259-6 BNSF RAILROAD MAIN TRACK 1 AND THE UNION PACIFIC TRACK CUTTING THROUGH BEDROCK AROUND SULLIVAN'S CURVE. VIEW TO THE WEST. [102]

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CA-2259-7 AN OVERVIEW OF SULLIVAN'S CURVE, WITH BNSF RAILROAD MAIN TRACK 1
IN THE FOREGROUND. VIEW TO THE SOUTHWEST. [101]

CA-2259-8 VIEW TO THE SOUTH OVER CAJON CANYON THROUGH BLOOMING YUCCA,
TOWARDS THE BNSF RAILROAD TRACKS. [124]

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