CLASS III CULTURAL RESOURCE INVENTORY

FOR PROPOSED REMEDIATION

AT THE

BANDORA, BROOKLYN, FREDA, KOEHLER, AND

JUNCTION MINES

SAN JUAN COUNTY

COLORADO

(USFS #17-43)

April 20, 2018

Prepared for:
U.S. Forest Service
San Juan National Forest
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Durango, CO, 81301

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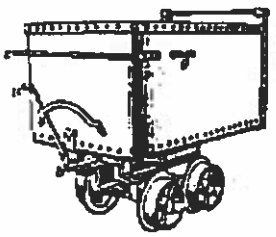
U.S. Forest Service permit CAN449HR, BLM permit C-62281



Colorado Office of Archaeology and Historic Preservation
CULTURAL RESOURCE SURVEY MANAGEMENT INFORMATION FORM

Federal acres of Potential Effect/Project: @ 267.2 Acres surveyed: @ 267.2

State acres of Potential Effect/Project: 0 Acres surveyed: 0

Private acres of Potential Effect/Project: 129.6 Acres surveyed: 129.6

TOTAL: @ 386.8 TOTAL: @ 386.8

Legal Location of Project *(attach additional pages if necessary)*

Principal Meridian: NM Quad map name(s): Ironton (7.5') 1955

County: San Juan

Township: 42 N Range: 8 W Sec.: 13 ¼s: SW, SW

Principal Meridian: NM Quad map name(s): Silverton (7.5') 1955

County: San Juan

Township: 42 N Range: 8 W Sec.: 34 ¼s: SW, SW

Principal Meridian: NM Quad map name(s): Silverton (7.5') 1955

County: San Juan

Township: 42 N Range: 8 W Sec.: 35 ¼s: NE

Township: 42 N Range: 8 W Sec.: 36 ¼s: NW

Principal Meridian: NM Quad map name(s): Ophir (7.5') 1955

County: San Juan

Township: 41 N Range: 8 W Sec.: 30 ¼s: All

Site Number	Site Type				Eligibility							Effect			Treat-ment			Comments
	Prehistoric	Historic	Paleontological	Unknown	Not Eligible	Eligible	Need Data	Contributing	Non-contributing	Supporting	Non-supporting	No HPs* Affected	No Adverse Effect	Adverse Effect	No Further Work	Data Recovery	Archival Doc. †	

Site Number	Site Type				Eligibility							Effect			Treat-ment			Comments
	Prehistoric	Historic	Paleontological	Unknown	Not Eligible	Eligible	Need Data	Contributing	Non-contributing	Supporting	Non-supporting	No HPs* Affected	No Adverse Effect	Adverse Effect	No Further Work	Data Recovery	Archival Doc. †	
SITES																		
5SA.22		X				X							X		X			
5SA. 110.3		X				X							X		X			
5SA. 110.4		X			X								X		X			
5SA. 110.5		X				X							X		X			
5SA. 113.10		X				X							X		X			
5SA.495		X					X						X		X			
5SA.751		X				X							X		X			
5SA.826		X			X							X			X			
5SA.827		X				X							X		X			
5SA.1613		X			X							X			X			
5SA.1616		X			X							X			X			

Site Number	Site Type				Eligibility							Effect			Treat-ment			Comments
	Prehistoric	Historic	Paleontological	Unknown	Not Eligible	Eligible	Need Data	Contributing	Non-contributing	Supporting	Non-supporting	No HPs* Affected	No Adverse Effect	Adverse Effect	No Further Work	Data Recovery	Archival Doc. †	
5SA.1617		X				X							X		X			
5SA.1618		X			X							X			X			
5SA.1619		X			X							X			X			
5SA.1620		X			X							X			X			
5SA.1621		X			X							X			X			
5SA.1622		X			X							X			X			
5SA.1623		X			X							X			X			
5SA.1624		X			X							X			X			
5SA.1625		X			X							X			X			
5SA.1645		X			X							X			X			
5SA.1646		X			X							X			X			
ISOLATED FINDS																		

Site Number	Site Type				Eligibility							Effect			Treat-ment			Comments
	Prehistoric	Historic	Paleontological	Unknown	Not Eligible	Eligible	Need Data	Contributing	Non-contributing	Supporting	Non-supporting	No HPs* Affected	No Adverse Effect	Adverse Effect	No Further Work	Data Recovery	Archival Doc. †	
5SA.410		X			X							X			X			
5SA.470		X			X							X			X			
5SA.471		X			X							X			X			
5SA.1614		X			X							X			X			
5SA.1615		X			X							X			X			
5SA.1626		X			X							X			X			
5SA.1627		X			X							X			X			
5SA.1628		X			X							X			X			
5SA.1629		X			X							X			X			
5SA.1630		X			X							X			X			
5SA.1631		X			X							X			X			
5SA.1632		X			X							X			X			

Site Number	Site Type				Eligibility							Effect			Treat-ment			Comments
	Prehistoric	Historic	Paleontological	Unknown	Not Eligible	Eligible	Need Data	Contributing	Non-contributing	Supporting	Non-supporting	No HPs* Affected	No Adverse Effect	Adverse Effect	No Further Work	Data Recovery	Archival Doc. †	
5SA.1633		X			X							X			X			
5SA.1634		X			X							X			X			
5SA.1635		X			X							X			X			
5SA.1636		X			X							X			X			
5SA.1637		X			X							X			X			
5SA.1638		X			X							X			X			
5SA.1639		X			X							X			X			
5SA.1640		X			X							X			X			
5SA.1641		X			X							X			X			
5SA.1642		X			X							X			X			
5SA.1643		X			X							X			X			
5SA.1644		X			X							X			X			

Site Number	Site Type				Eligibility							Effect			Treat-ment			Comments
	Prehistoric	Historic	Paleontological	Unknown	Not Eligible	Eligible	Need Data	Contributing	Non-contributing	Supporting	Non-supporting	No HPs* Affected	No Adverse Effect	Adverse Effect	No Further Work	Data Recovery	Archival Doc. †	
5SA.1647		X			X							X			X			
5SA.1648		X			X							X			X			
5SA.1649		X			X							X			X			
5SA.1688	X				X							X			X			

*HPs=historic properties; †Doc.=documentation

ABSTRACT

During 2016, the U.S. Forest Service (USFS) commissioned four projects to assess environmental and safety concerns associated with abandoned mines scattered in the greater Mineral Creek drainage, San Juan County, Colorado. Each project designated study areas encompassing specific mines suspected of metals and acidic drainage, as well as access routes, areas for staging equipment, and suitable repositories for relocating waste rock. The Environmental Protection Agency (EPA) and Division of Reclamation, Mining, and Safety (DRMS) are characterizing specific mines in each area under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). In addition to their mines of study, each study area also takes in other resources that might be inadvertently affected by water-quality and safety actions. The study areas were systematically inventoried for all cultural resources (historic and prehistoric), in turn evaluated for significance and impacts of potential actions. The study areas are summarized below. A detailed description of the projects can be found in Chapter 1, while more on the study areas and their resources are in Chapters 6 and 7.

Koehler Junction

Koehler Junction is a colloquially named intersection of gravel roads on the southern side of Red Mountain Pass, immediately east of Highway 550. The junction is center to a study area featuring mines being assessed for water-quality actions, as well as other resources not specifically targeted.

- Study Area Acreage: 13.8 acres
- Resources Involved: 9 (4 archaeological sites, 1 linear resource, 4 Isolated Finds)
- Resource Numbers: 5SA.113.10; 5SA.410; 5SA.495; 5SA.826; 5SA.827; 5SA.1613-5SA.1615; 5SA.1688
- Eligible Resources: 5SA.113.10; 5SA.827
- Need Data Resources: 5SA.495
- Project Effects: No adverse effect.

Freda Mine and Mill

The Freda Mine and Mill are a single archaeological site on the northern wall of Middle Fork of Mineral Creek valley. Worked as recently as the 1990s, the site is involved because the shell of its recent mill building will be dismantled, while a tunnel might be closed and its drainage water treated. In addition, a pile of low-grade ore illegally dumped several decades ago on U.S. Forest Service (USFS) land will be removed.

- Study area Acreage: 1 acre
- Resources Involved: 1 archaeological site
- Resource Numbers: 5SA.1616
- Eligible Resources: None
- Project Effects: No effect

Brooklyn Mine

The Brooklyn Mine was a large silver and gold producer worked as late as the 1980s. The mine's waste rock dumps and mineralized tunnel drainage are being studied for remediation. A large study area was designated around the mine for access routes, equipment staging, and potential waste rock repositories. The area incidentally includes numerous other resources, several of which feature open tunnels that may be closed in the future. Location is on the northern side of Browns Gulch, on the eastern wall of the North Fork of Mineral Creek valley.

- Study area Acreage: 257 acres
- Resources Involved: 31 (7 archaeological sites, 3 linear resources, 21 Isolated Finds)
- Resource Numbers: 5SA.470; 5SA.471; 5SA.751; 5SA.1617-5SA.1644
- Eligible Resources: 5SA.751 and 5SA.1617
- Project Effects: No adverse effect

Bandora Mine

The Bandora Mine was a large silver and industrial metals producer worked into the 1940s, and again during the early 1980s. Several large waste rock dumps and mineralized tunnel drainage are being studied for remediation. A large study area was designated around the mine for access routes, equipment staging, and potential waste rock repositories. The area incidentally includes a few other resources. Location is at the western head of the South Fork of Mineral Creek.

- Study area Acreage: 115 acres
- Resources Involved: 9 (3 archaeological sites, 3 linear resources, 3 Isolated Finds)
- Resource Numbers: 5SA.22; 5SA.110.3; 5SA.110.4; 5SA.110.5; 5SA.1645-5SA.1649
- Eligible Resources: 5SA.22; 5SA.110.3; 5SA.110.5
- Project Effects: No adverse effect

With EPA and USFS involved through funding, land ownership, and project management, the project becomes a federal undertaking. As such, the project requires compliance with Section 106 of the National Historic Preservation Act. USFS secured the services of Mountain States Historical (MSH) to conduct cultural resource inventories because of the firm's extensive experience with mining resources, the project areas, and the history of San Juan County. USFS assigned project number 17-43.

The above-mentioned study areas constitute the Area of Potential Effect (APE). MSH inventoried the study areas and recorded their resources according to, or surpassing, Class III standards defined by USFS. The resources were evaluated for their significance not only in terms of the National Register of Historic Places (NRHP), but also the Colorado State Register of Historic Properties (SRHP), localized historic landscapes, and historic district potential. Although each project area is being studied separately, MSH combined the results into this single report for efficiency.

Combining the four projects, MSH evaluated a total of 50 resources. By type, the resources include 15 archaeological sites, 7 linear resources, and 28 Isolated Finds (IF). One IF

in the Koehler Junction study area is a prehistoric tool made from a projectile point base. Otherwise, all the other resources were historic.

The Koehler Junction study area features two resources determined eligible. The eligible resources include the Million Dollar Highway (5SA.113.10), now recognized as Highway 550, as well as the Longfellow Mine (5SA.827). The Koehler Longfellow Boardinghouse (5SA.495) is determined as Need Data.

The Million Dollar Highway from Silverton to Montrose was recorded under stem number 5SA.113, and determined eligible as a whole in 2002. For this project, MSH documented a discrete segment on Red Mountain Pass, extending through Koehler Junction APE, as 5SA.113.10. The segment has the same characteristics and significance of others already determined supporting/eligible. Segment 5SA.113.10 is therefore logically supporting/eligible as well. Within the APE, proposed actions involving the highway are small soil-sample pits along the eastern shoulder. The pits will be unobtrusive, avoid pavement, and be restored, all without permanent change to the highway. Given this, the pits will constitute no adverse effect to the highway.

The Longfellow Mine was recorded in 2000 and determined eligible under Criteria A, C, and D. The mine was historically important and currently features an intact surface plant built in 1954, qualifying it under Criteria A and C. Site records also note buried archaeological deposits associated with a residential feature, thus invoking Criterion D. The site is largely unchanged since 2000 and is still eligible under Criteria A and C. But residential features and buried deposits are not present. The original site form was in error, probably referring to the Koehler Longfellow Boardinghouse, which offers buried deposits. But, the Longfellow Mine does qualify under Criterion D because its surface plant will contribute information regarding design and engineering of shaft mines. In any case, the area around the Longfellow surface plant might face water-quality actions such as stream redirection and use as a waste rock repository. The surrounding area was heavily disturbed in the recent past and does not contribute to the site's setting, feeling, or association. By completely avoiding the surface plant, water-quality actions will pose no adverse effect to the site.

The Koehler Longfellow Boardinghouse was recorded in 1998, when the site featured a standing boardinghouse, office, and transformer house, as well as privy pits and surface artifacts. The site was determined eligible under NRHP Criteria A and C for its historical significance and standing buildings. In addition, the site was found eligible in terms of NRHP Criterion D because the privy pits and artifact assemblage would have provided archaeological information. The buildings were scraped away by the private land owner in 2002 and their materials removed with little trace, but the privy pits remain intact today. Reevaluated for this project, the site no longer qualifies for Criteria A and C. Eligibility under Criterion D has been changed to Need Data. The site does still feature privy pits, but their information potential is questionable because they are probably shallow, given that bedrock is close to the surface. Testing is required to assess their true depth. Located on flat ground, the site might be used as a repository for waste rock and sediment moved from nearby mines. In this case, the pits would be buried and inaccessible for future studies of their deposits. The action will constitute no adverse effect under two scenarios: 1) if shovel testing reveals that the pits lack meaningful deposits, and hence archaeological information; 2) if testing proves that the pits in fact harbor meaningful deposits, then the deposits would have to be excavated. Assuming that the issue of buried deposits is addressed, use of the Koehler Longfellow Boardinghouse site as a repository would constitute no adverse effect.

The Brooklyn Mine study area features two resources determined eligible. The Brooklyn Mine (5SA.751) was recorded in 1999 and determined not eligible due to insufficient integrity. But the mine was historically significant and includes a standing boardinghouse that is a good example of regional mining industry architecture. The significance determination has been changed to eligible under Criteria A, B, and C. The overall site was heavily bulldozed during the early 1970s, and the disturbed areas are non-contributing, while the boardinghouse and surrounding ground are contributing. Waste rock removal and diversion of tunnel drainage are proposed for the site, and actions will be restricted to non-contributing areas. The boardinghouse will be avoided, and the actions will therefore pose no adverse effect.

The second eligible site in the Brooklyn Mine study area is the Brooklyn Mine Telephone Line (5SA.1617). Mostly intact, the line is a good example of its resource type in terms of Criterion C. The line's eastern-most three poles remain standing on the Brooklyn Mine's waste rock dump, which is proposed for removal. By avoiding the poles, the action maintains the line's integrity and poses no adverse effect.

The Bandora Mine study area includes three eligible resources. The largest is the Bandora Mine itself (5SA.22), recorded in 1974, 1996, and 2013. The current finding is Need Data. The site presents a case very similar to the Brooklyn Mine, in that the Bandora was historically important, and currently features an intact blacksmith shop and an ore bin. The building and structure are good examples of their types, while portions of the greater site have marginal integrity due to bulldozing and natural deterioration. The site's Need Data finding has been changed in this project to eligible under Criteria A and C, with the shop and bin as contributing features. The portions of the site lacking integrity are non-contributing. Proposed waste rock removal and diversion of tunnel drainage will alter the site's non-contributing portions, while avoiding the shop and bin. The actions will thus present no adverse effect.

The Rico-Silverton Wagon Road passes directly through the Bandora Mine study area. The road's general route from Rico to Silverton was registered long ago under stem number 5SA.110, and the official determination was Need Data. The stretch passing through the study area was recorded in three linear resource segments. Segment 5SA.110.3 extends north of the Bandora Mine, and is recommended supporting/eligible under Criteria A and C. The segment will be avoided during water-quality work at the Bandora Mine. Segment 5SA.110.4 contours through the Bandora Mine site, and is non-supporting because previous bulldozing compromised the road's integrity. The segment might be altered during water-quality work, and if so, the action would pose no effect. Segment 5SA.110.5 extends south of the Bandora Mine, and is recommended supporting/eligible under Criteria A and C. The segment will be avoided during water-quality work at the Bandora Mine. Water-quality actions at the Bandora Mine will present no adverse effect because the supporting/eligible segment will be avoided.

All the other resources in the four above-mentioned study areas are recommended not eligible. Unimportance and insufficient integrity are the primary reasons.

Regarding the project as a Section 106 undertaking, the result is no adverse effect on eligible resources. The project will have no effect on the not-eligible resources.

TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

CHAPTER 1: INTRODUCTION and PREVIOUS WORK

Introduction

San Juan County lies in the deepest portion of the San Juan Mountains, in southwestern Colorado. Created by volcanism and glaciation, the San Juans are an impressive group of high peaks, alpine basins, and deep valleys. The mountains were also a treasure trove of mineralized veins offering gold, silver, and industrial metals. For this reason, the county became a center of mining and milling beginning in 1874, and underwent several boom periods until 1920. During this timespan, the industry took on national significance as mining companies grappled with the challenges of extreme topography, climate, and complex ore. Progressive experts repeatedly set precedents in engineering, metallurgy, electrical development, mining operations, and business strategies. The county became known for some of the mining industry's longest aerial tramways and earliest electrical Alternating Current powerplants. Altitude contributed to the county's notoriety, with a substantial number of mines ranging from 12,000' to 13,500' elevation. The American West had seen nothing like it before. The industry declined after 1920, but various companies continued production through the 1970s, with development and underground exploration continuing into the 1980s.

No mines currently operate, but they are still the county's main source of income, constituting a resource base for heritage tourism rather than ore production. The county is known nationwide for its history, and thousands of tourists come during snow-free months for the Durango-Silverton Railroad, Silverton itself, and the historic mining landscape. By no coincidence, the county is also home to the San Juan County Historical Society, an especially progressive and active historic preservation community. Members, some with generations-old roots in the industry, have made the county a nationally known center of stewardship, historic resource management, and well-organized tours. The historical society is directly involved in preserving individual sites, policy among land management agencies, and projects that might affect the resource base.

Besides leaving a particularly good assemblage of historic resources, mining left hazardous openings and waterways affected by metals-rich drainage. But mining is not responsible alone, as naturally occurring weathering of mineralized bedrock in unmined areas contributes as well. Streams in valleys carry acids and metals into the Animas River, which then descends south to Durango and on to New Mexico and Utah.

The U.S. Geological Survey began studying human-caused versus background contamination as early as the late 1970s, and intensified efforts in the 1990s. Projects to address the problem have been spotty since then, as absolutely conclusive study results were elusive. A few sites became the focus of water-quality projects anyway. One of the most prominent was Sunnyside Gold Corporation's cleanup of Sunnyside Mine waste rock in Sunnyside Basin, mill tailings at Eureka, and tailings ponds around the Shenandoah-Dives Mill near Silverton during the 1980s and 1990s. The Sunnyside corporation also built a plant to treat effluent from the American Tunnel at Gladstone, in Cement Creek. Otherwise, studies continued, including water and waste rock testing at many mines.

Project Background

The U.S. Forest Service (USFS) has been evaluating potential metals-rich drainage along the forks of Mineral Creek, which ascend north and west from Silverton. In 2016, USFS selected four study areas featuring concentrations of abandoned mines that might be contributing. The mines of interest feature mineralized waste rock dumps and adits draining water, with potential to reach local waterways. Each study area and its mines is reviewed in greater detail below.

In its on-going studies, USFS has been considering a range of options for addressing mine runoff. Potential solutions include run-on and runoff control ditches, capture-and-treat, settling ponds, in-situ stabilization of waste rock dumps, and even their wholesale removal. Implementation could involve earthmoving and construction using vehicles and heavy equipment. Final decisions regarding most appropriate methods for each mine will be reached after further study, as well as after a review of cultural resource findings.

With USFS involved through project direction, funding, and land, the study becomes a federal undertaking. As a federal undertaking, the project invokes Section 106 of the National Historic Preservation Act. In a broad sense, Section 106 requires an inventory of all cultural resources involved (historic and prehistoric), an evaluation of the resources' significance, and determination of how the project will affect the resources. The process is blind to property ownership, applying to resources on both private and public land. But, private owners must grant permission for work on their property.

USFS contracted with Mountain States Historical (MSH) to guide Section 106 compliance, basing the choice on a number of parameters. Eric Twitty, MSH principal, has conducted Section 106 work with more than 1,000 abandoned mines, and produced archaeological mining contexts (evaluation guides) for various agencies. One context, *Historic Mining Resources of San Juan County* (2010), is the only publication available with comprehensive coverage of the county's history, resource types, and standards for evaluating significance. Related, Twitty has almost twenty years' experience documenting and evaluating mines in the San Juans. Twitty in turn subcontracts with Kristie Arrington of Two Dog Archaeological Consultants for all work with prehistoric resources. Arrington was the Bureau of Land Management regional archaeologist until around 2010, and is a leading expert with decades of experience in San Juan prehistoric resources, culture, and timeline. She also has active relationships with Ute tribal governments and is capable with historic resources.

In conducting Section 106 work, Twitty and Arrington closely coordinate with involved agencies. Julie Coleman, USFS heritage team lead for the San Juan National Forest, provides guidance and reviews products.

Project Study Areas

The USFS is studying metals-rich drainage and mines in four entirely separate areas scattered amid the forks of Mineral Creek. Each area is its own individual geographic entity, but together makeup the overall project's single Area of Potential Effect (APE). USFS assigned project number 17-43 for cultural resource work.

In compliance with Section 106, MSH inventoried the geographic areas, termed study areas, during the summer of 2017. For the inventory, MSH recorded and evaluated all historic cultural resources, while Two Dog consultants did likewise with prehistoric resources. The results of Two Dog's archaeological surveys are included in this report. The four study areas and

a summary of their findings are reviewed below, while more detailed descriptions can be found in Chapters 6 and 7.

Koehler Junction Study Area

Koehler Junction is a colloquial name applied to an intersection of gravel roads immediately south of Red Mountain Pass, and east of Highway 550. The intersection converges in a natural basin approximately 400'x1,200' in area surrounded by compact hills. The Koehler Tunnel (5SA.826) and Junction Mine (5SA.410) are on the eastern side, the Longfellow Mine (5SA.827) is on the northern side, and a pond with metals-rich sediment is at center. USFS designated a 13.8 acre study area within the basin, which includes the mines, potential waste rock repositories, equipment staging areas, and portions of the roads (not historic). Most of the land is private, patented claims. The area specifications and resource findings are summarized below.

- Study area Acreage: 13.8 acres
- Resources Involved: 9 (4 archaeological sites, 1 linear resource, 4 Isolated Finds)
- Resource Numbers: 5SA.113.10; 5SA.410; 5SA.495; 5SA.826; 5SA.827; 5SA.1613-5SA.1615; 5SA.1688
- Eligible Resources: 5SA.113.10 and 5SA.827
- Need Data Resources: 5SA.495
- Project Effects: No adverse effect.

Table 1.1: Koehler Junction Resource Summary

Resource #	Resource Name	Resource Type	Eligibility Status	Ownership	Project Effect
5SA.113.10	Million Dollar Highway	Highway	NRHP A and C	CDOT	No adverse
5SA.495	Koehler Boardinghouse	Workers' Housing	NRHP D Need Data	Private	No adverse
5SA.826	Koehler Tunnel	Tunnel Mine	No; lack integrity	Private	No effect
5SA.827	Longfellow Mine	Shaft Mine	NRHP A, C, D	Private	No adverse
5SA.1613	Workers' Housing Complex	Workers' Housing	No; unimportant	Private	No effect
5SA.410	Junction Mine	Tunnel Mine	No; IF	Private	No effect
5SA.1614	Prospect Cut	Prospect Cut	No; IF	Private	No effect
5SA.1615	Longfellow Mine Utility Pole	Utility Pole	No; IF	Private	No effect
5SA.1688	Prehistoric Tool	Lithic tool	No; IF	Private	No effect
Total: 9			**Total eligible: 2 Need Data: 1**		**No adverse effect**

The Koehler Junction study area features two resources determined eligible. The eligible resources include the Million Dollar Highway (5SA.113.10), now recognized as Highway 550, as well as the Longfellow Mine (5SA.827). The Koehler Longfellow Boardinghouse (5SA.495) is determined as Need Data.

The Million Dollar Highway from Silverton to Montrose was recorded under stem number 5SA.113, and determined eligible as a whole in 2002. For this project, MSH documented a discrete segment on Red Mountain Pass, extending through Koehler Junction APE, as

5SA.113.10. The segment has the same characteristics and significance of others already determined supporting/eligible. Segment 5SA.113.10 is therefore logically supporting/eligible as well. Within the APE, proposed actions involving the highway are small soil-sample pits along the eastern shoulder. The pits will be unobtrusive, avoid pavement, and be restored, all without permanent change to the highway. Given this, the pits will constitute no adverse effect to the highway.

The Longfellow Mine was recorded in 2000 and determined eligible under Criteria A, C, and D. The mine was historically important and currently features an intact surface plant built in 1954, qualifying it under Criteria A and C. Site records also note buried archaeological deposits associated with a residential feature, thus invoking Criterion D. The site is largely unchanged since 2000 and is still eligible under Criteria A and C. But residential features and buried deposits are not present. The original site form was in error, probably referring to the Koehler Longfellow Boardinghouse, which offers buried deposits. But, the Longfellow Mine does qualify under Criterion D because its surface plant will contribute information regarding design and engineering of shaft mines. In any case, the area around the Longfellow surface plant might face water-quality actions such as stream redirection and use as a waste rock repository. The surrounding area was heavily disturbed in the recent past and does not contribute to the site's setting, feeling, or association. By completely avoiding the surface plant, water-quality actions will pose no adverse effect to the site.

The Koehler Longfellow Boardinghouse was recorded in 1998, when the site featured a standing boardinghouse, office, and transformer house, as well as privy pits and surface artifacts. The site was determined eligible under NRHP Criteria A and C for its historical significance and standing buildings. In addition, the site was found eligible in terms of NRHP Criterion D because the privy pits and artifact assemblage would have provided archaeological information. The buildings were scraped away by the private land owner in 2002 and their materials removed with little trace, but the privy pits remain intact today. Reevaluated for this project, the site no longer qualifies for Criteria A and C. Eligibility under Criterion D has been changed to Need Data. The site does still feature privy pits, but their information potential is questionable because they are probably shallow, given that bedrock is close to the surface. Testing is required to assess their true depth. Located on flat ground, the site might be used as a repository for waste rock and sediment moved from nearby mines. In this case, the pits would be buried and inaccessible for future studies of their deposits. The action will constitute no adverse effect under two scenarios: 1) if shovel testing reveals that the pits lack meaningful deposits, and hence archaeological information; 2) if testing proves that the pits in fact harbor meaningful deposits, then the deposits would have to be excavated. Assuming that the issue of buried deposits is addressed, use of the Koehler Longfellow Boardinghouse site as a repository would constitute no adverse effect.

The entire project's sole prehistoric resource was a tool made from a projectile point lying near the Koehler Longfellow Boardinghouse site. Intensive examination of the area demonstrated that the point base was isolated, with no other prehistoric artifacts around. The tool was recorded as an Isolated Find, and is not eligible.

Freda Mine and Mill Study Area

The Freda Mine and Mill were a small operation on a private, patented claim whose elements date to the 1980s and 1990s. The resource resides high on the northern wall of Middle Fork of Mineral Creek valley, accessed via a contemporary bulldozed road. The site is included

in this project for four reasons. First, the shell of a 1980s mill building, and associated junk, are proposed for removal in a bond revocation action. Second, during the 1980s or 1990s, a small pile of low-grade ore was illegally dumped on USFS land northeast of the patented claim, and will be removed. Third, the bulldozed road will be cleared of deadfall and repaired in a few places so vehicles can reach the site. The road ascends through USFS land. Last, an open tunnel might be closed in the future, and its potentially mineralized water diverted. The resource occupies approximately 1 acre and is not eligible because of its recent age. Any actions proposed for the site will therefore pose no effect.

- Study Area Acreage: 1 acre
- Resources Involved: 1 archaeological site
- Resource Numbers: 5SA.1616
- Eligible Resources: None
- Project Effects: No effect

Table 1.2: Freda Resource Summary

Resource #	Resource Name	Resource Type	Eligibility Status	Ownership	Project Effect
5SA.1616	Freda Mine and Mill	Tunnel Mine and Mill	No; less than 50 years	Private	No effect
Total: 1			**None**		**No effect**

Brooklyn Mine Study Area

The Brooklyn Mine was a large silver and gold producer worked intermittently circa 1892-1983. The site was extensively bulldozed during the 1960s and 1970s, leaving only a few historic features amid substantial waste rock dumps. USFS is currently studying the dumps and mineralized tunnel drainage for remediation. In association, USFS designated a 257 acre study area around the mine for access routes, equipment staging, and potential waste rock repositories. The study area is mostly on the northern side of Browns Gulch, which descends the eastern wall of North Fork of Mineral Creek valley. A small portion of the area extends over to the gulch's southern side.

Although the Brooklyn Mine is the focus, the study area incidentally includes numerous other resources, which are summarized in the points below and in Table 1.3. Several of the incidental resources are small mines featuring open tunnels that may be closed in the future.

- Study Area Acreage: 257 acres
- Resources Involved: 32 (8 archaeological sites, 3 linear resources, 21 Isolated Finds)
- Resource Numbers: SA.470; 5SA.471; 5SA.751; 5SA.1617-5SA.1644
- Eligible Resources: 5SA.751 and 5SA.1617
- Project Effects: No adverse effect

Table 1.3: Brooklyn Resource Summary

Resource #	Resource Name	Resource Type	Eligibility Status	Ownership	Project Effect
5SA.751	Brooklyn Mine	Tunnel Mine	NRHP A, B, C	USFS	No adverse eff
5SA.1617	Brooklyn Mine Telephone Line	Telephone Line	NRHP C	USFS	No adverse eff
5SA.1618	Prospect Adit	Prospect Adit	No; unimportant	USFS	No effect
5SA.1619	Gloucester Mine: West Workings	Tunnel Mine	No; lack integrity	Private	No effect
5SA.1620	Gloucester Mine: East Workings	Tunnel Mine	No; lack integrity	Private	No effect
5SA.1621	Prospect Complex	Prospect Complex	No; unimportant	USFS	No effect
5SA.1622	Pack Trail	Pack Trail	No; unimportant	USFS	No effect
5SA.1623	Jessica Prospect Complex	Prospect Complex	No; unimportant	Private	No effect
5SA.1624	Pack Trail	Pack Trail	No; unimportant	Private	No effect
5SA.1625	Winning Prospect Adit	Prospect Adit	No; unimportant	Private	No effect
5SA.470	Venetian Prospect Adit	Prospect Adit	No; IF	Private	No effect
5SA.471	Prospect Shaft	Prospect Shaft	No; IF	USFS	No effect
5SA.1626	Prospect Trench	Prospect Trench	No; IF	USFS	No effect
5SA.1627	Prospect Trench	Prospect Trench	No; IF	USFS	No effect
5SA.1628	Prospect Pit	Prospect Pit	No; IF	USFS	No effect
5SA.1629	Prospect Pit	Prospect Pit	No; IF	USFS	No effect
5SA.1630	Claim Post	Claim Post	No; IF	USFS	No effect
5SA.1631	Prospect Complex	Prospect Complex	No; IF	USFS	No effect
5SA.1632	Prospect Adit	Prospect Adit	No; IF	USFS	No effect
5SA.1633	Prospect Trench	Prospect Trench	No; IF	USFS	No effect
5SA.1634	Jessica Prospect Trench	Prospect Trench	No; IF	Private	No effect
5SA.1635	Winning Prospect Pit	Prospect Pit	No; IF	Private	No effect
5SA.1636	Eleventh Hour Prospect Trench	Prospect Trench	No; IF	Private	No effect
5SA.1637	Prospect Complex	Prospect Complex	No; IF	USFS	No effect
5SA.1638	Prospect Adit	Prospect Adit	No; IF	USFS	No effect
5SA.1639	Venetian Prospect Pit	Prospect Pit	No; IF	Private	No effect
5SA.1640	Prospect Adit	Prospect Adit	No; IF	USFS	No effect
5SA.1641	Venetian Prospect Shaft	Prospect Shaft	No; IF	Private	No effect
5SA.1642	Venetian Prospect Cut	Prospect Cut	No; IF	Private	No effect
5SA.1643	Survey Monument	Survey Monument	No; IF	Private	No effect
5SA.1644	Eleventh Hour Prospect Complex	Prospect Complex	No; IF	Private	No effect
Total: 31			**Total eligible: 2**		**No adverse effect**

The Brooklyn Mine study area features two resources determined eligible. The Brooklyn Mine (5SA.751) was recorded in 1999 and determined not eligible due to insufficient integrity. But the mine was historically significant and includes a standing boardinghouse that is a good example of regional mining industry architecture. The significance determination has been changed to eligible under Criteria A, B, and C. The overall site was heavily bulldozed during the early 1970s, and the disturbed areas are non-contributing, while the boardinghouse and surrounding ground are contributing. Waste rock removal and diversion of tunnel drainage are proposed for the site, and actions will be restricted to non-contributing areas. The boardinghouse will be avoided, and the actions will therefore pose no adverse effect.

The second eligible site in the Brooklyn Mine study area is the Brooklyn Mine Telephone Line (5SA.1617). Mostly intact, the line is a good example of its resource type in terms of Criterion C. The line's eastern-most three poles remain standing on the Brooklyn Mine's waste rock dump, which is proposed for removal. By avoiding the poles, the action maintains the line's integrity and poses no adverse effect

Bandora Mine Study Area

The Bandora Mine was a silver and industrial metals producer worked through six tunnels 1881-1948, and briefly during the early 1980s. The mine lies at the western head of South Fork of Mineral Creek valley, which is a popular recreation destination. USFS, EPA and the State of Colorado are studying the mine's waste rock dumps, mineralized tunnel drainage, and an iron-rich deposit on the valley floor for remediation. Accordingly, USFS designated a 115 acre study area for access routes, equipment staging, and potential repositories. The study area is mostly on the valley's western side, but takes in a portion of the valley floor as well. The area incidentally includes a few other resources and a stretch of the Rico-Silverton Wagon Road (5SA.110). Despite its lengthy history, the Bandora offers only a few features and artifacts from what had been a substantial surface plant. Lacking sufficient integrity, the Bandora and other resources, including the wagon road, are recommended not eligible. Potential environmental actions will therefore pose no effect.

- Study area Acreage: 115 acres
- Resources Involved: 7 (3 archaeological sites, 1 linear resource, 3 Isolated Finds)
- Resource Numbers: 5SA.22; 5SA.110.3; 5SA.110.4; 5SA.110.5; 5SA.1645-5SA.1649
- Eligible Resources: 5SA.22; 5SA.110.3; and 5SA.110.5
- Project Effects: No adverse effect

The Bandora Mine study area includes three eligible resources. The largest is the Bandora Mine itself (5SA.22), recorded in 1974, 1996, and 2013. The current finding is Need Data. The site presents a case very similar to the Brooklyn Mine, in that the Bandora was historically important, and currently features an intact blacksmith shop and an ore bin. The building and structure are good examples of their types, while portions of the greater site have marginal integrity due to bulldozing and natural deterioration. The site's Need Data finding has been changed in this project to eligible under Criteria A and C, with the shop and bin as contributing features. The portions of the site lacking integrity are non-contributing. Proposed waste rock

removal and diversion of tunnel drainage will alter the site's non-contributing portions, while avoiding the shop and bin. The actions will thus present no adverse effect.

The Rico-Silverton Wagon Road passes directly through the Bandora Mine study area. The road's general route from Rico to Silverton was registered long ago under stem number 5SA.110, and the official determination was Need Data. The stretch passing through the study area was recorded in three linear resource segments. Segment 5SA.110.3 extends north of the Bandora Mine, and is recommended supporting/eligible under Criteria A and C. The segment will be avoided during water-quality work at the Bandora Mine. Segment 5SA.110.4 contours through the Bandora Mine site, and is non-supporting because previous bulldozing compromised the road's integrity. The segment might be altered during water-quality work, and if so, the action would pose no effect. Segment 5SA.110.5 extends south of the Bandora Mine, and is recommended supporting/eligible under Criteria A and C. The segment will be avoided during water-quality work at the Bandora Mine. Water-quality actions at the Bandora Mine will present no adverse effect because the supporting/eligible segment will be avoided.

Table 1.4: Bandora Resource Summary

Resource #	Resource Name	Resource Type	Eligibility Status	Ownership	Project Effect
5SA.22	Bandora Mine	Tunnel Mine	NRHP A and C	Private	No adverse effect
5SA.110.3	Rico-Silverton Wagon Road	Wagon Road	NRHP A and C	USFS	No adverse effect
5SA.110.4	Rico-Silverton Wagon Road	Wagon Road	No; lack integrity	Private	No effect
5SA.110.5	Rico-Silverton Wagon Road	Wagon Road	NRHP A and C	USFS	No adverse effect
5SA.1645	Prospect Complex	Prospect Complex	No; unimportant	USFS	No effect
5SA.1646	Lady Ellen Mine	Tunnel Mine	No; lack integrity	Private	No effect
5SA.1647	Prospect Adit	Prospect Adit	No; IF	USFS	No effect
5SA.1648	Cataract Prospect Cut	Prospect Cut	No; IF	Private	No effect
5SA.1649	Cataract Prospect Complex	Prospect Complex	No; IF	Private	No effect
Total: 9			**Total eligible: 3**		**No adverse effect**

All the other resources in the four above-mentioned study areas are recommended not eligible. Unimportance and insufficient integrity are the primary reasons.

Regarding the project as a Section 106 undertaking, the result is no adverse effect for eligible resources. The project will have no effect on the not-eligible resources.

Previous Cultural Resource Work

San Juan County has been the subject of numerous cultural resource projects within the last twenty-five years. During the late 1990s and early 2000s, BLM, which owns most of the county's public land, commissioned a series of broad inventory projects targeting principal mine and mill sites in the Animas River valley. The sites were recorded and evaluated for historic preservation, management planning, mine closures, and concern over potential water-quality actions. Until now, most of those sites escaped further work.

In its broad inventories, BLM divided the Animas River valley and a few principal tributaries into study units. BLM then contracted with three archaeological firms with experience in mining. BLM granted Steve Baker with Centuries Research two study units. The first was West Cement Creek, where Baker inventoried predetermined sites in 1998. He then published his findings as: *The 1998 Abandoned Mine Land Reclamation Program Recording of Historic Mines in the West Cement Creek Study Area, San Juan County, Colorado (SA.LM.R18).* Baker's second was the Treasure Mountain Study Unit on both sides of the upper Animas valley, from Eureka to Animas Forks. Baker offered the results as *The 1999 Abandoned Mine Land Reclamation Program Recording of Historic Mines in the Treasure Mountain Study Unit of the Upper Animas Drainage, San Juan County, Colorado (SA.LM.R123).*

BLM awarded the Cement Creek East Study Unit to MSH in 1999. Twitty recorded and evaluated numerous predetermined mines and related sites on the eastern side of Cement Creek, and produced the findings as *Mining Cement Creek: A Selective Inventory of Historic Mine Sites on the East Side of Cement Creek Drainage, San Juan County, Colorado (SA.LM.R26).*

Twitty also inventoried the Arrastra Basin Study Unit in 2000. The area encompassed peaks and drainages southeast of Silverton, in between the Animas River and Cunningham Gulch. Twitty published the findings as *Silverton Mining District: Selective Inventory, San Juan County, Colorado (SA.LM.R36).*

In 1999, USFS recorded select sites in the Mineral Creek drainage in advance of both mine closures and potential environmental projects. The results came as the report *Silverton Mine Inventory*, which is germane to the 2017 project. In particular, the Brooklyn was among the targeted sites, recorded as 5SA.751.

Around 1999, Durango Archaeological Consultants inventoried the Galena Mountain Study Unit, on the southeastern side of the Animas valley, between Howardsville and the townsite of Eureka. Ross Curtis and staff conducted the work. Curtis published his findings in the report: *Recording of Historic Mining Properties in the Galena Mountain Study Area, San Juan County, Colorado (SA.LM.R29).* Around this time, Curtis also recorded a few other mining resources on a specific basis for BLM and private interests.

Perhaps Curtis' greatest contribution was a multi-year study of the Red Mountain Mining District. Curtis inventoried most principal mines in the district, on both sides of Red Mountain Pass. Although some work was on a site-specific basis, most was compiled into the 2000 report *A Cultural Resources Survey of the Red Mountain Mining District, Ouray and San Juan Counties, Colorado*. The report officially recognized the mining district in Ouray County as a historic landscape.

Other areas likely to see environmental work have been the subject of cultural resource inventories. In 1987, the Sunnyside Gold Corporation hired Woods Canyon Archaeological Consultants to inventory the principal sites associated with the Sunnyside Mine, in Sunnyside Basin. Jerry Fetterman offered the results as *Final Report on the Cultural Resource Survey of the Sunnyside Basin Access Road, San Juan County, Colorado (SA.LM.R2).*

During the 1990s, DRMS itself recorded a number of mines for closure projects, including a few in the current Brooklyn and Bandora project areas. The Bandora Mine was initially registered in 1974 as 5SA.22, and examined again in 1996 by DRMS for a closure project. Documentation was incomplete in both cases, being limited to a few notes about the site and its history. Lynn Robinson with USFS added to the record in 2013 by describing the site's buildings and a few other features. The net result was an official eligibility determination of Need Data. DRMS also made a few notes on several sites in the Brooklyn area, which are

discussed in Chapter 7. Elsewhere in the county, Twitty completed a number of mine closure projects involving specific sites for DRMS, USFS, and BLM.

In 2009, Twitty and Julie Coleman (at that time heritage team lead for BLM and San Juan Public Lands offices in Durango) designed an archaeological mining context to fulfill several needs. The first was to objectively guide Section 106 resource assessment for pending environmental and closure projects, and second was to provide a foundation for National Register and National Historic Landmark District work. The final product was the 2010 context *Historic Mining Resources of San Juan County*, available at History Colorado, the San Juan National Forest. and the San Juan County Historical Society. The context offers the only comprehensive history of mining (1860-1960) in the central San Juan Mountains. The context also details site types and their eligibility requirements.

CHAPTER 2: PHYSICAL ENVIRONMENT

Famous for its mining history, San Juan County encompasses approximately 753 square miles within the central San Juan Mountains, in southwestern Colorado. Cycles of geological uplift, subsidence, and glaciation contributed to particularly difficult terrain featuring high alpine peaks, arêtes, basins, and deep valleys. The peaks range in elevation from around 11,000' to 14,000', and they separate several distinct drainages ranging from 9,300' to 11,000' elevation.

The Animas River and source glaciers carved the county's principal valley from between towering landforms. Adhering to a cultural-geography pattern common to the greater Rocky Mountains, nearly all the county's principal towns grew in the river valley because of its open ground, water, and transportation routes. The river begins at the confluence of three alpine creeks in the county's northeastern extent. The appropriately named town of Animas Forks lies at the confluence, and from here, the river trends southerly for around three miles to the townsite of Eureka. The valley widens, curves southwest for around two miles to Howardsville, and continues three more miles to the town of Silverton, the county seat. The valley then constricts again and resumes a southward course out of the mountains toward Durango.

Numerous streams descend into the valley from both sides, and they drain basins in between the principal peaks west of the Animas. The principal streams are Mineral Creek, South Mineral Creek and Cement Creek, while northern reaches of the Animas have the Eureka Gulch, California Gulch, and the North Fork of the Animas drainages.

Mineral Creek ascends northwest from Silverton, around 9,300' in elevation, for several miles and then branches. The South Fork curves southwest into a group of peaks and basins forming a divide from the Ophir area in the western San Juans. Ice Lake Basin, near the headwaters, was noteworthy because it was center to the Ice Lake Mining District and a cluster of mines developed during the 1880s. The basin is partially above treeline, features an alpine environment, and, historically, was remote and difficult to access, which confounded mining.

The main fork of Mineral Creek ascends north-northwest several more miles to a historic crossing known as Burro Bridge and branches again. The Middle Fork ascends gently almost due west around two and one-half miles and ends at Paradise Basin. The Middle Fork was at one time an important transportation corridor between Silverton and Ophir, wagons and packtrains crossing Ophir Pass. A multi-peaked mountain known as Lookout Mountain during the 1880s separates the Middle and South forks. The North Fork continues yet another two miles and ends at Red Mountain Pass. Tributary Mill Creek extends west into a group of peaks that were heavily prospected. The historic settlement of Chattanooga grew at the Mill Creek confluence, and was center to a small collection of mines. When the Red Mountain Mining District boomed on the north side of the pass (Ouray County) during the mid-1880s, Mineral Creek became a principal route and Chattanooga served as a gateway. Historically, the Mineral Creek Mining District encompassed Mineral Creek's drainage.

Cement Creek, another principal drainage, ascends north from Silverton and is flanked on both sides by high peaks. Anvil Mountain rises on the west side of the drainage mouth, and Silverton lies at its base. Cement Creek trends north for around six miles, curves northeast, and ends at the townsite of Gladstone, established at a confluence in 1874. Near Gladstone, Prospect Gulch ascends steeply northwest into the Red Mountain peaks, which rise to elevations of more than 12,000'. At Gladstone, the South Fork of Cement Creek branches south, the main fork ascends north, and both end in alpine basins. Most of the drainage is heavily forested. While Cement Creek was heavily prospected during the late 1870s, twenty years passed before the

drainage saw mining of significance. Most substantial operations were relatively close to Gladstone, while a few were in Prospect Gulch. The Gold King, one of the county's most productive mines, was on the eastern edge of Gladstone. The mountains on the valley's eastern side are within the Eureka Mining District.

Poughkeepsie Gulch is north of Cement Creek, over Hurricane Pass. Encompassed by the Poughkeepsie Mining District, the gulch descends north, flanked on the west by Brown Mountain and the Red Mountain chain, and on the east by Tuttle Mountain and highlands around Mineral Point. Half the gulch is above treeline, beginning at 11,400' elevation.

Eureka Gulch enters the Animas valley at the townsite of Eureka, and passes northwest between peaks to Sunnyside Basin, around 12,000' elevation. The gulch saw some of the county's earliest activity, and Sunnyside Basin hosted the Sunnyside Mine, which was one of the most important mines in the county.

The West Fork and the North Fork of the Animas are the last two principal drainages on the northern reaches of the river. They and Cinnamon Creek join at the townsite of Animas Forks, and this confluence serves as the Animas River's headwaters. The West Fork ascends gently west, the North Fork ascends north, and Cinnamon Creek extends east. High peaks rising to elevations of 12,500' to 13,200' surround the confluence, itself a lofty 11,000'. Even though the valleys and confluence are lower than treeline, an extremely harsh climate and thin soils discouraged the growth of anything except alpine tundra, arctic willows, and groves of subalpine fir and spruce trees on some north-facing slopes. Houghton Mountain stands at the northwest corner of the confluence, separating the West Fork and the North Fork drainages. The entire area lies within the Eureka Mining District.

The Mineral Point Mining District encompasses a large glaciated drainage north of Houghton Mountain. The drainage is around one mile wide north-south, three miles long east-west, and descends westerly. High peaks surround the drainage, and besides Houghton Mountain on the south side, Engineer Mountain on the north side is the other major landmark. A cluster of hills rises on the drainage floor, and although they are topographically low, their elevation is around 12,000'. Much of the drainage is carpeted with tundra, while old-growth forest can still be found on north-facing slopes.

The east side of the Animas River valley features almost as many tributary drainages as the west side. The tributaries include Arrastra Gulch, Cunningham Gulch, Maggie Gulch, Minnie Gulch, and Burns Gulch. Extremely steep slopes of talus and bedrock discourage forest, and even tundra in areas.

Arrastra Gulch, location of the first hardrock mine in the San Juans (1871), is relatively short and ascends steeply south to an abrupt headwall bracketed by high peaks. Beyond lies Silver Lake Basin, which hosted several of the county's most advanced mines.

Cunningham Gulch is one of the deepest of the tributaries and in the past featured several of the earliest and longest-lived mines. The drainage extends southeast from Howardsville for one mile and curves south. At the curve, Stony Gulch veers southeast, and while it is a minor tributary to Cunningham, the gulch is noteworthy because it was historically one of the main entry points into the region. Cunningham Gulch continues south for around two miles and branches into several alpine creeks. King Solomon Mountain and North Star Peak form the gulch's western side, and Green Mountain the eastern side. Cunningham and Arrastra gulches are within the Las Animas Mining District.

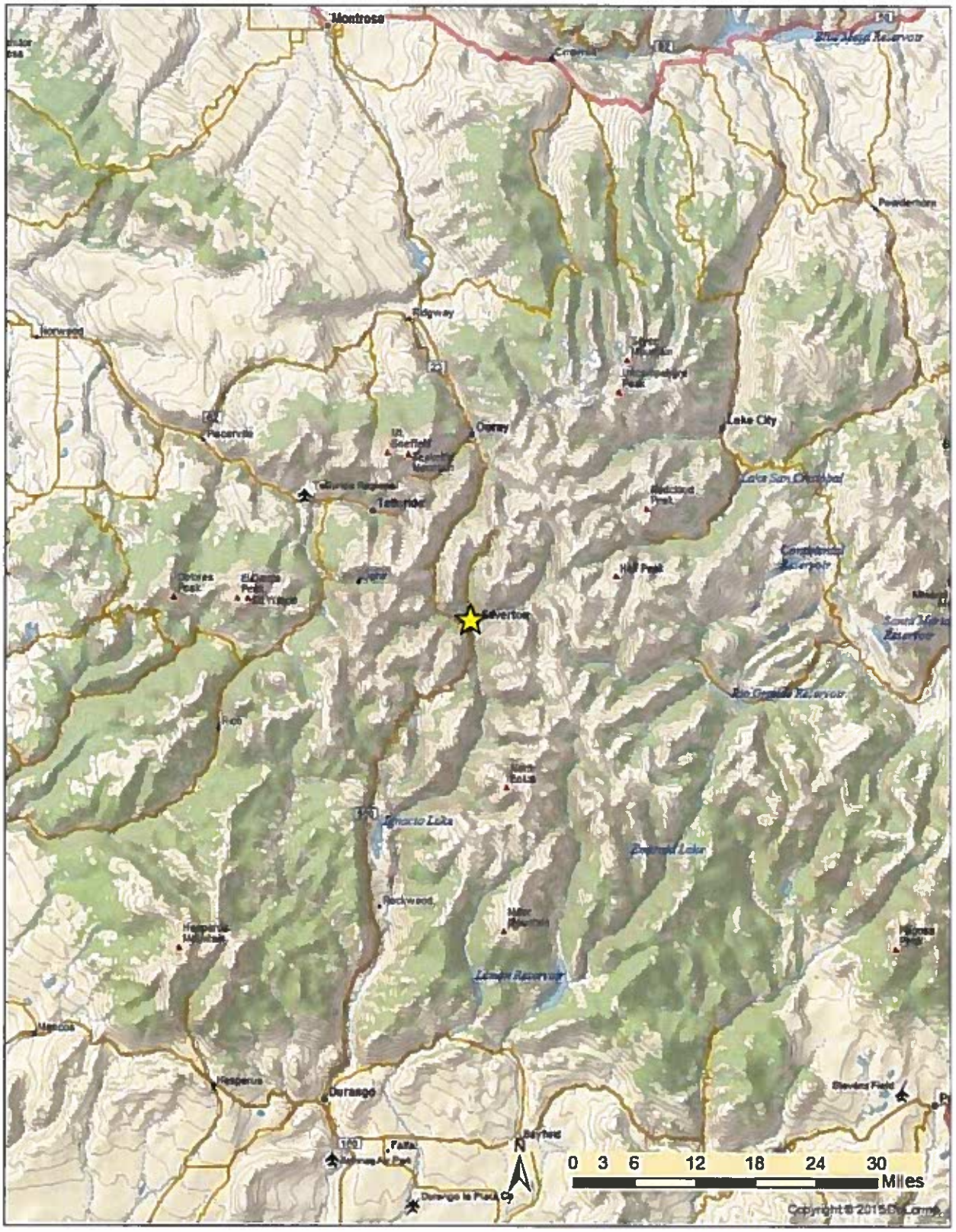


Figure 2.1: General location of Silverton, center, within the San Juan Mountains. Principal towns are shown for geographic context.

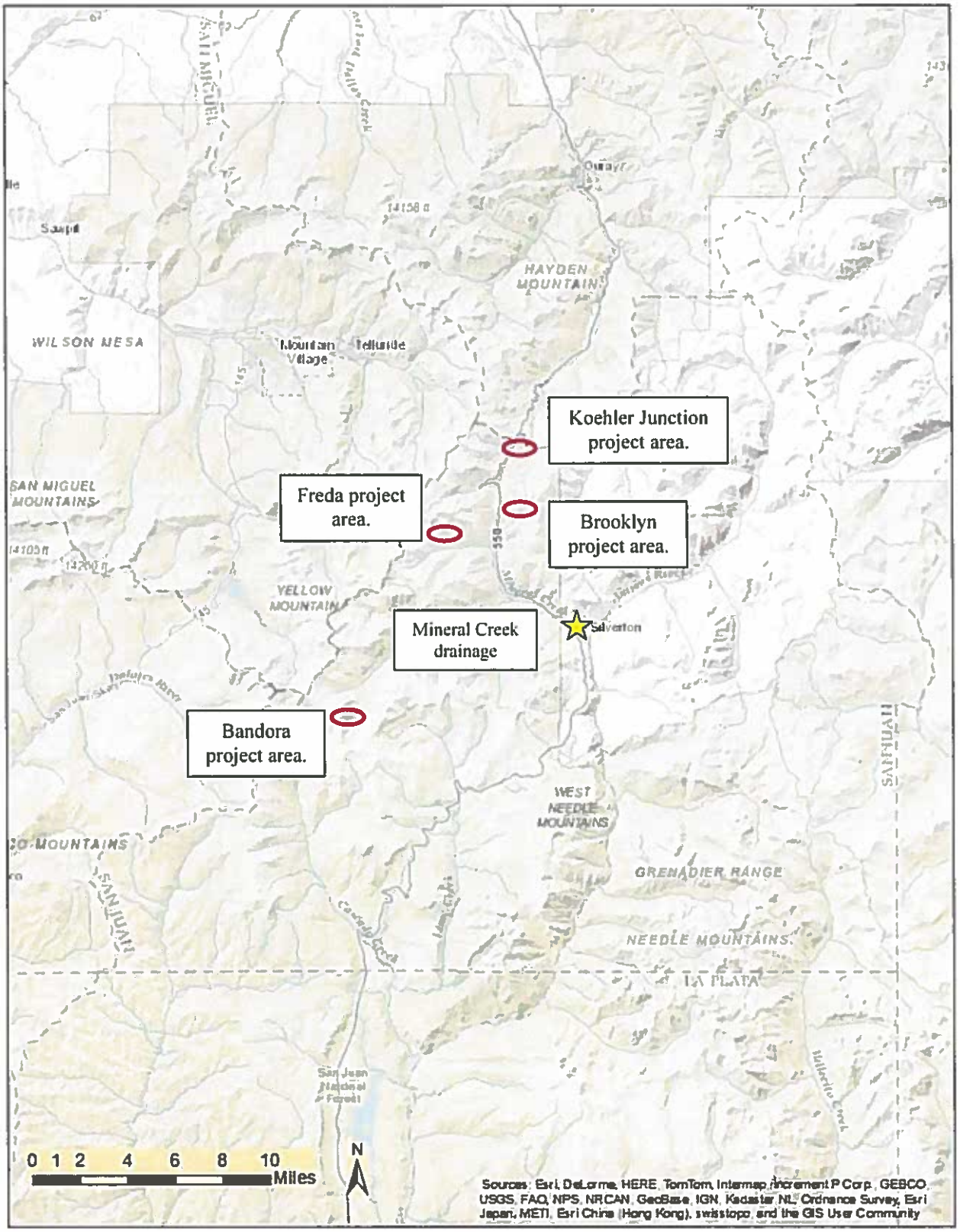


Figure 2.2: General location of Silverton, center-left, and San Juan County, outlined with dashed boundary.

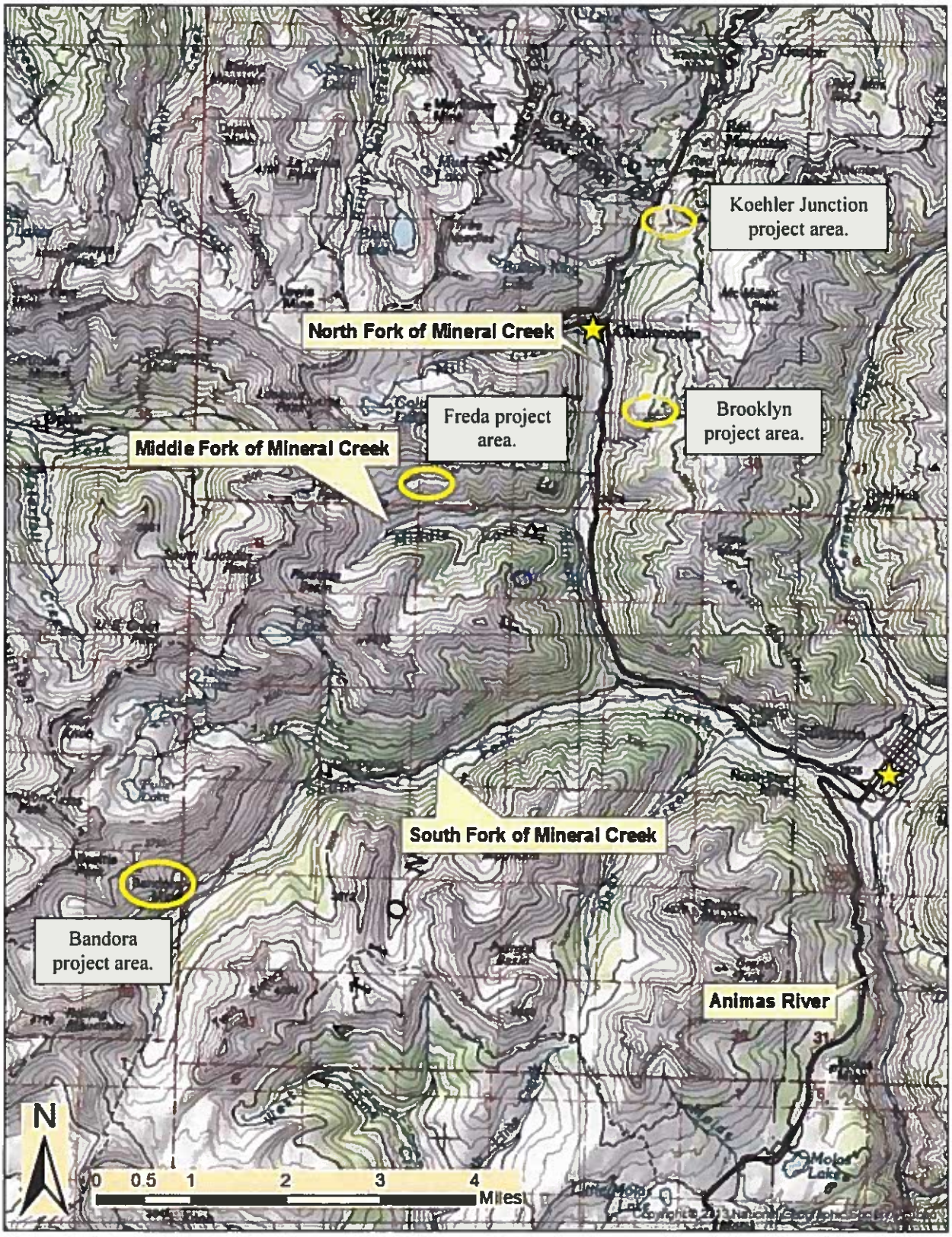


Figure 2.3: General location of Silverton, lower right, and the project areas. The map is a GIS digital version of Silverton, (15'), 1955.

Maggie and Minnie gulches open into the Animas valley relatively close together. Over the course of two miles, Maggie Gulch curves from southeast to south and ends in a glaciated basin. Minnie Gulch is almost as long and follows a similar course. Burns Gulch, which featured several productive mines, lies between Eureka and Animas Forks and follows a short and southeastern ascent into numerous peaks. The gulches are within the Eureka Mining District.

The climate in the San Juans presented the mining industry with conditions that some observed were second in difficulty only to Alaska. The editors of the *Silverton Standard* summed the general weather pattern in a simple sentence: "Snow-banks whiten these upper elevations from January to August, and from August to January. The clouds weep about all the year round."[1] What the editors forgot to mention were the high winds.

The summers were the most important season for activity, and while they tended to be workable, they were remarkably short and cool. Summer began in June when temperatures in the 60s and 70s, Fahrenheit, melted the thick snowpack from lower elevations and improved transportation. June was usually clear and bright, but by July, a regional phenomenon known as the monsoon shrouded the mountains in clammy and rainy weather until September, when reliable warmth and sun returned. With occasional snows, the middle of summer in the San Juans could have been mistaken for mild winter in more temperate climates. The fall began in October, and while it tended to be dry, the weather had an element of unpredictability. At the least, the temperatures during both day and night were cooler, and cold snaps, snow, and prolonged warm weather were all possible through November. Winter set in during November and lasted through April. Powerful Pacific storms blowing in from the west deposited up to several feet of snow at a time and sent temperatures plummeting well below zero degrees. Cold air masses that followed the storms forced the temperatures down as low as minus 40 degrees, although readings in the 30s and 40s were also typical. Because the cold air tended to sink, the mountain canyons, where most of the settlements were located, channeled streams of frigid air, while the areas up on the slopes where the mines lay tended to be much warmer. Despite such conditions, mining thrived in the San Juans by the 1880s and all-year residence became common.

[1] *Silverton Standard* 7/27/95 p1.

CHAPTER 3: BRIEF HISTORY OF MINING IN SAN JUAN COUNTY

San Juan County's history is a rich and complex fabric of events, trends, people, and institutions. The history is not so easily compressed into a handful of pages, and the version offered below is very simplified and generalized. The 2010 context *Historic Mining Resources of San Juan County, Colorado* offers a full account, along with resource types and their eligibility requirements. Although the history below borrows from the context, the reader is encouraged to review the full account for a detailed understanding. The context explains the history in Periods of Significance, which are timeframes defined by important trends and events.

For centuries the San Juan Mountains were the exclusive domain of the Ute Indians. As early as the 1700s, Spanish, and later, American explorers, made forays into the piedmont areas surrounding the range, but few ventured deep into the rugged, remote, and inhospitable mountains. However, in 1860, the Utes saw their isolation and peace begin to erode. A party of prospectors led by Charles Baker penetrated deep into the Animas River drainage in search of placer gold. The party encountered minor amounts of the metal in what they termed Baker's Park, which was the valley encompassing present-day Silverton. While they did not find economically viable quantities of gold, the prospectors' impact was great. The Baker party reported that the San Juan Mountains held great promise for mining, and they proved that the area could be accessed. Other prospecting parties imitated Baker around ten years later, and instead of placer gold, they sought hardrock gold and silver, which the San Juans offered in abundance. Their success in finding riches stimulated mining, which led to the growth of settlements such as Silverton, Howardsville, and Animas Forks. Due to the remoteness of the San Juans, and because of the threat posed by wary Ute Indians, mining developed slowly.

The Utes were not hostile at first. They understood that Whites were interested in minerals and not in extensive settlement, and they permitted prospectors to search the high country unmolested. However, as more Whites arrived, conflict was all but inevitable. When faced with the disaster of another Indian war, the federal government employed the typical strategy in which it coaxed the Indians into signing a treaty. In 1873, Otto Mears and Felix Brunot, President of the Board of Indian Commissioners, held negotiations with Chief Ouray and hammered out the Brunot Treaty. According to the agreement, the U.S. Government paid the Utes $25,000 for 4,000,000 acres of mineral-bearing land, while the Utes retained the right to hunt on the ceded territory. With the treaty in effect and the threat of hostilities mitigated, geographic isolation became the main impediment to mining in the San Juans.

Baker's Park was a natural nucleus for settlement in the central San Juans. The area offered flat land, plenty of water, and timber in the surrounding mountains. In 1870, another party of prospectors returned to Baker's Park and re-inhabited Baker's long-abandoned camp. Other parties followed during the next four years and erected several clusters of cabins along the Animas River, which became crude prospectors' camps and commercial hubs. These temporary camps eventually grew into the towns of Silverton, Howardsville, Eureka, and Animas Forks.

Prospectors based out of these small and simple settlements began investigating the surrounding mountains, and during the early 1870s, they made a number of silver and gold strikes which presented the possibility of profit. Ore lay in the ground, but the region lacked the infrastructure necessary for an inflow of supplies and machinery, and outflow of payrock to railheads. In addition, the Animas River drainage was still largely unknown and unproven to the

investors who were capable of furnishing capital. Because of these factors, mining in the region progressed slowly.[2]

To facilitate the region's development, Colorado road-builder Otto Mears, local capitalists, freight companies, and mining interests all contributed to a network of roads connecting commercial centers with what were tiny and remote settlements in the mountains. Although some of the roads were barely passable even after completion, they were a significant improvement over the pack trails and other routes that some people attempted to drag wagons across. The improved transportation corridors made available supplies for both mining and residence, and reduced shipping costs of ore to smelters. The effect was significant. One result was that developed mines began shipping ore. Even though payrock that assayed less than $100 per ton remained uneconomical due to still fairly high freight costs, some operations began demonstrating profitability. Another result was that living conditions vastly improved with the availability of domestic goods, drawing a greater population and talented workforce. Together, permanent settlement and truly productive mines stimulated a higher degree of confidence among frontier investors. They in turn furnished the capital that the current prospecting movement needed for evolution into an industry.[3]

A few particular investors and promoters did much to legitimize mining during the 1870s. Road builder Otto Mears financed additional toll roads to the principal areas of mining, further improving the transportation network and its benefits. In 1876, Denver & Rio Grande Railroad directors began building a rail line from its growing system toward the San Juans to capture freight business when the region finally boomed.

Another significant group of financiers were the businessmen who built ore concentration mills at various centers of mining in the region. The mid to late 1870s saw a wave of mill construction, indicating that a substantial number of mines were finally producing enough ore. Greene & Company built Silverton's first smelter in 1874, while visionary investors financed two more at Ouray and Lake City several years later. In 1878 and 1879 concentration mills went up on Cement Creek, at Silverton, at Animas Forks, and at Lake City. In general, concentration mills did not refine ore into pure bullion. Rather, the mills separated waste from unrefined metalliferous material, saving mining companies both the costs of shipping waste-laden ore and a portion of the processing fees levied by smelting companies.

That said, millmen realized that processing the San Juan's ores was not a straightforward endeavor. The ores produced by various mines were inconsistent in quality, richness, and complexity. Some ores contained predominantly gold, most were rich in silver, while others were complex blends of the above two metals with copper, lead, and zinc. Geologists found that the ores fell into two categories. The first included payrock that consisted of gold and simple silver-lead compounds, which local mills were able to recover. The second category consisted of payrock with quirky combinations of silver and industrial metals. Even though assaying proved such ores to be high in value, local mills had great trouble concentrating the material, despite much experimentation. The only solution to making this ore pay was shipping it to distant, properly equipped processing plants. Until rail service arrived in the San Juans, mining complex ore was pointless because shipping it by wagon was too costly. Luckily, many nascent mines tapped lodes that contained enough millable ore to permit profitability during the 1870s.[4]

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[2] "San Juan Silver Mines – Review of the Year 1880", Weston, 1878.

[3] Ransome, 1901:22, "The San Juan Mines".

[4] Cross, Howe, and Ransome, 1905:26.

Several events during the early 1880s greatly propelled mining in the Animas River drainage. On a broad scale, mining in the San Juans attained enough legitimacy among capitalists to finally attract serious investment. More money meant expert engineers and metallurgists, a quality workforce, proper mine development, and effective mills, all leading to even more output.

On a more immediate scale, two investors in particular, John Porter and William Jackson Palmer, director of the Denver & Rio Grande, saw opportunity for a powerful transportation and smelting combination. The Denver & Rio Grande was already grading its way toward the San Juans' southern toe, and Porter and Palmer realized that the lower Animas River valley would be an ideal terminus. The valley could serve as rail hub for feeder lines winding into the San Juans, its coal seams were a source of fuel for mines and mills, and its flat land and abundant water made it an advantageous smelting center.

In 1880, Porter and Palmer went into action by platting the town of Durango as a railhead and freight center for the San Juans. Next, they purchased the Greene & Company smelter and organized the San Juan & New York Mining & Smelting Company to incorporate the critical elements into a new plant at Durango. Porter and Palmer understood that their business was dependent on San Juan mines, so they equipped the facility to process the region's rebellious silver ores that had gone untreated until now. Doing so fostered mining, in turn ensuring their own success. Last, Porter and Palmer commissioned the Denver & Rio Grande Extension Railroad, which reached Silverton in 1882, granting a direct rail link with the outside world.[5]

The impact that the railroad and new smelter had on mining throughout the San Juan Mountains was enormous. The rail link drastically reduced the costs of freighting in supplies, and it permitted mining companies to ship ores directly to what became known as the Durango Smelter. Further, mining companies now had the option of sending ores that were either too complex or uneconomically low in value for local treatment, to more efficient plants on the plains. The railroads also brought much needed coal to fuel the mines, mills, smelters and towns.

Mining throughout the mountains attained industrial proportions, with San Juan County becoming second after Ouray County. Silverton rivaled Durango as the principal commercial, financial, and transportation hub. Durango came to play a broad, regional role, while Silverton was the principal mountain center.

San Juan County boomed during the 1880s, as the industry enjoyed reduced costs of mining in conjunction with ore made rich by a relatively high price for silver. Through the 1870s, silver fetched an average of $1.21 per ounce, assured by passage of the Bland-Allison Silver Purchase Act of 1878. The value of silver remained high until 1886 when it slipped to $.94 per ounce, and while the drop in price hurt mining, the industry remained profitable. Western senators, interested in boosting the price for the metal, passed the Sherman Silver Purchase Act in 1890, which inflated silver's price to $1.05 per ounce. The high value enjoyed by the mining industry, however, proved short-lived. In the following two years, silver's value slid to $.87 amid political turmoil, and in 1893 reformists repealed the act, which precipitated the great Silver Crash and the subsequent economic depression. Overnight, the value for the white metal plummeted to $.60 per ounce, wrecking the mining industry throughout the San Juan Mountains, as well as the greater West. Unable to merely break even, most of San Juan County's silver mines shut down, and many gold mines also suspended operations for want of capital.[6]

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[5] Henderson, 1926:11; "Mining News" *EMJ* 12/9/82 p310; "Mining News" *EMJ* 12/30/82 p350; "San Juan Silver Mines – Review of the Year 1880"; Smith, 1982:50, 55.

[6] Henderson, 1926:216, Saxon, 1959:7, 8, 14, 16; Smith, 1982:59, 92.

Silver mining remained torpid during the mid-1890s, but investors optimistically renewed their interest in gold, in part because of its constant value. As the economy began recovering, mining investors at first funded a number of major gold mining projects, gradually followed by silver. By the late 1890s, silver mining resumed in the Animas River drainage with vigor due to a synergy of crucial factors. Some historians claim that the drainage's mining activity reached its zenith during the 1880s, but it really reached its crescendo circa 1900.

Investors again were willing to furnish capital for mining ventures, while at the same time the markets for metals improved. Advances in mining technologies and engineering reduced production costs, and equipment and supplies were more affordable than before. Better milling methods recovered a greater proportion of metals from ore, rendering ever lower grades profitable to produce. Mine and mill owners were unwilling to let their properties remain idle, and made every effort to see them generate income. Last, the success of the Silver Lake, Iowa, and Sunnyside mines lent legitimacy to the resources that the Animas River drainage had to offer, inspiring investor confidence in other operations.

Perhaps one of the most important factors that influenced the Silverton area's second boom was the strategy of mining and milling ores in economies of scale. The practice was simultaneously pioneered by Edward Stoiber, owner of the Silver Lake Mine, and John Terry of the Sunnyside. Economies-of-scale relied on mechanization to produce, handle, and mill notably low-grade ore in volume. Engineering and capital were the resources that made this strategy work, and in this context large-scale production remained the domain of large, well-financed mining companies.

Other companies followed Stoiber and Terry's example in a wave of heavily capitalized mining and milling operations during the late 1890s and 1900s. In Cunningham Gulch, the Gold Tunnel & Railway Company developed the Highland Mary Mine through at least three tunnels and built an advanced concentration mill and other facilities. In Little Giant Basin the Black Prince Mining Company erected a particularly well-equipped surface plant to serve its mine. The Smuggler-Union Mining Company's investors purchased the North Star, Shenandoah-Dives, and Big Giant properties and assembled them into a complex mining and transportation system. In the Cement Creek drainage, the Gold King Mine improved its mill and other facilities. The Silverton district's greatest large-scale mining endeavor, however, came about when Edward Stoiber, his brother Augustus, and Augustus' associates cooperated in the development of the Iowa, Royal Tiger, and Silver Lake mines. These operations shared basic services such as compressed air, transportation, electrical, and milling systems, and generated the greatest tonnages of ore in the district.

A few mining outfits without access to abundant capital practiced an alternative strategy to mining in economies of scale. They remained profitable given silver's low value by simplifying and investing little money on their infrastructures. By nature, these outfits were small, relied on hand-labor, and produced limited quantities of payrock.

In their efforts to employ engineering for economies of scale, the Silverton area's mines became a proving ground for flashy and innovative technological systems. One engineering strategy was to erect dedicated ore concentration mills that separated metalliferous material from waste in large volumes. In so doing, mining companies saved money by shipping only metalliferous materials and no wastes, and carried out steps that smelters charged for. Because most of the ores were complex and low in grade, companies had to employ advanced methods to recover enough metalliferous material.

Another strategy was designing surface plants capable of moving ore in volume while sustaining intensive activity underground. Aerial tramways offered a solution to the transportation problem, delivering ore in a continuous flow from mine to mill in all weather. The Silver Lake, Iowa, Gold King, Mogul, North Star, and other mines became proving grounds for innovations in tramway engineering.

Engineers also harnessed electricity to power mine and mill machinery. During the Gilded Age, steam was the conventional power source used by the minerals industry. Steam required a costly boiler plant and a constant supply of either cordwood or coal, and the boilers had to be located near the point of use. Electricity, while in an experimental state, held great appeal to mining engineers because it could theoretically power machinery at locations distant from the generation source. In reality, electrical technology as it existed during the late 1880s and 1890s held limited potential for applications to mining. The efforts made to employ electricity in the Animas River drainage at this time are historically important, because they constitute some of the earliest attempts at generating and applying the power source on a broad scale to mining, and to industrial purposes in general.

Mining engineers had been experimenting with electricity in the Animas River drainage as early as 1888, when the Sunnyside Extension Mining Company erected a hydropower plant near Eureka. In 1889, two more powerplants went on line in the Red Mountain Mining District and at the Virginius Mine. Additional plants were built to serve Telluride mines in 1890, followed by the Silver Lake and Gold King mines in 1891.[7] After engineers improved electrical technology during the 1890s, the power source, while still experimental, became an attractive means of reducing the costs of running a mine. When the mines in the Silverton area prepared to produce ore in economies of scale, many of the large operations there employed electricity. At this time, engineers experimented with AC and DC currents, and found both to possess inherent flaws. Although DC motors were able to meet the rigors of mining, such as stopping and starting under load, DC current could not be transmitted far without a debilitating power loss. On the other hand, AC current could be transmitted for miles, but AC motors could not stop and start under load and were incapable of running machinery that came under sudden drag. As a result, DC current found limited favor, but was used only close to the point of generation.

In 1895, Stoiber's Silver Lake company set precedent by installing the second AC powerhouse in the San Juan Mountains, and then successfully harnessing AC current for industrial use. The Silver Lake company at first distributed the power to its mine in Silver Lake Basin, miles from the powerhouse, and extended service to local customers. As other large mines began large-scale developments, the Silver Lake company then made its electricity available to them as well.[8]

The business generated by mining in the Animas River drainage, especially freighting in supplies and shipping out ore, was brisk and profits were there for the taking. That was the motivation that drew the Silverton Northern Railroad up the Animas River in 1895. The railroad connected Silverton with Howardsville and Eureka, and provided freight service to principal mines in between. The Silver Lake, Sunnyside, North Star, and other operations enjoyed even lower transportation costs, and increased output in response.

During the 1900s, the county's mines maintained high levels of production, and some of the large operations aroused accolades from the greater mining industry for their application of advanced engineering. But by the early 1910s, the mining industry began a pronounced decline

[7] "Mining News" *EMJ* 12/29/88 p551; Smith, 1982:98.

[8] "Mining News" *EMJ* 4/26/90 p479; Rickard, 1903:68.

and most of the small operations went idle. The main reason was that thirty years of production exhausted the minor ore veins. Those companies that survived into the mid-1910s, however, were rewarded for perseverance when the value of silver and industrial metals rose dramatically. World War I stimulated a heavy demand for industrial metals, while European governments tried bolstering their failing economies by purchasing American silver. The value of silver thus surpassed $1 per ounce by 1917, a value not seen since the Silver Crash of 1893. San Juan County's existing companies increased production as best they could to maximize profits, gutting their properties of even the lowest grades of ore. The World War I era mining revival came to an abrupt end in 1920 as the ore ran out, metals prices collapsed, and the nation entered a post-war depression. All but a handful of the largest operations fell silent.

Through the 1920s, a few ventures fitfully attempted to reopen the district's formerly productive mines, and only a few proved successful. Charles Chase was behind the most important one. In 1926, he began examining the mines around Little Giant Peak and Silver Lake Basin on behalf of a group of Missouri lead mining investors, and determined that profitable ore still existed at great depth. Within a short time, the investors empowered Chase to begin driving the Mayflower Tunnel in Arrastra Basin to undercut the anticipated ore systems, and almost immediately his miners struck ore. As they pushed the underground workings, not only did the miners penetrate veins that Chase already knew of, but also found new ones. The onset of the Great Depression in 1929 snuffed out the few mining ventures remaining in the Silverton area, except for Chase's Mayflower operation, due in part to its abundance of low-grade ore.

The victory of Franklin Delano Roosevelt over Herbert Hoover in 1932 for U.S. President set in motion a chain of events that spelled a small revival of mining in San Juan County. In an effort to devalue the U.S. dollar, in October of 1933 Roosevelt enacted a plan in which the federal government bought gold at prices above market value. The gold mining industry showed a measurable response, and Roosevelt and Congress formalized the policy as the Gold Reserve and Silver Purchase acts early in 1934. The acts set the minimum price for gold at $35.00 per ounce and silver at $.70 per ounce, stimulating a limited amount of new activity in the Animas River drainage. Investors and local individuals examined the principal mines and considered reopening some, but most were truly exhausted and had little ore to offer. A good number, however, were rehabilitated and brought back into production.[9]

Rehabilitating a mine that had been idle for up to several decades was not an easy task, nor was it without significant expense. Structures and machinery that had been removed from the old operations had to be replaced, and the mine workings required new timbering and rail lines. During the capital-scarce times of the Great Depression, mining companies attempted to accomplish these tasks with a minimal capital investment, and mining in the Silverton area was on a smaller, less glamorous scale than in decades past. Regardless, a few companies were highly profitable and invested in mechanized operations.

World War II fostered a heavy demand for industrial metals, which mines in the county had produced in the past. Meeting the wartime demand was an excellent opportunity not only for those companies that weathered the Great Depression, but also for individuals interested in reopening long-abandoned properties. Some mines continued production and a few new ventures got underway, but nearly all of the county's mines remained idle. The ore simply was not there, having been exhausted long ago.

During the 1950s, the county saw the inevitable end to substantive production. Several factors were to blame. First, the demand for metals increased during the prosperous post-war

[9] McElvaine, 1993:164.

economy of the early 1950s, but their values remained static. At the same time, inflation increased the costs of production. Second, the nation's interest began shifting away from heavy industry and manufacturing to business, commerce, and finance, and mining was no longer emphasized. Last, under the Eisenhower Administration, the Paley Commission promoted the acquisition of metals from foreign nations to strengthen economic and political ties in an effort to thwart the spread of communism.[10] As a result, the prices of some metals remained artificially low, while the values of silver and zinc actually fell. Under these circumstances, most of the county's remaining mines suspended operations.

Still, a demand for industrial metals continued into the 1960s, and improved technology permitted the extraction and concentration of greater tonnages of low-grade ores than in decades past. In addition, advances in drilling technology facilitated prospecting for mineral bodies through deep core-sampling instead of the traditional and costly method of driving underground workings. A few mining and exploration companies in the county prospected by examining old workings and deep core-sampling, but most efforts proved unsuccessful, and activity tapered off during the 1970s. Several mines in the Silverton district, however, were found to contain ore and were brought back into limited production. Through close examination and sampling, Standard Metals found ore in the Titusville Mine, which lay idle since around 1890. The company already worked the depths of the Sunnyside property through the American Tunnel, located at Gladstone in Cement Creek valley. Another company reopened the Mayflower Mine and extracted ore for several years. Within ten years, however, the costs of underground mining exceeded the value of the ore brought to daylight, and these last three operations were forced to close in 1992. This ended mining in the Animas River drainage, and the region came to depend on tourists interested in an industry that had been the economic foundation for more than a century.

[10] Bunyak, 1998:79.

CHAPTER 4: OBJECTIVES AND RESEARCH DESIGN

Objectives

Two broad objectives shaped cultural resource work in San Juan County. The first is specific to environmental and safety projects as federal undertakings, and their requirements to comply with Section 106 regulations. The second umbrella objective recognizes the need to preserve if not benefit involved historic resources and their physical setting as much as possible, while still achieving environmental and safety goals.

Following are points that cultural resource work strives to meet regarding Section 106 compliance. In particular, the points are:

- Thoroughly inventorying project areas for all types of cultural resources (historic and prehistoric).
- Recording or documenting resources in a manner surpassing Class III standards defined by the U.S. Forest Service (USFS) and the Office of Archaeology and Historic Preservation (OAHP).
- Re-evaluating previously documented resources, and gathering more than enough information to fill data gaps in site records.
- Objectively evaluating the significance of all resources in terms of the National Register of Historic Places.
- Assessing the impacts of project actions on all sites, and providing guidance recommendations.
- Producing the above in a detailed report and OAHP site forms.

Cultural resource work in the county also recognizes that water-quality and safety actions will involve historically significant sites and even their surrounding historic landscapes. Property owners and the local community place a premium on sites and landscapes for two basic reasons. One is that the community cares about its nationally important history, and the other is that the county's economy is now dependent on the resource base. Preserved historic sites in larger landscapes have made the county a nationally known heritage tourism destination. Given this, cultural resource work emphasizes achieving environmental and safety goals while minimizing disruption to individual sites and their landscapes. Avoidance of historic sites and features is the preferred alternative. Special guidance points are listed below. They are not intended to be options for mitigating adverse effects that disturbance causes to sites determined to be significant. Cultural resource mitigation can only be resolved by consulting with USFS. That said, general guidance emphasizes:

- Reducing the scale, visual presence, and overall impact of disturbance.
- Restricting disturbance to non-contributing portions of sites (areas with no historical integrity).
- New water-quality structures (sheds, retaining walls, flumes, etc.) compatible with period appearance, construction methods, materials, and workmanship as much as possible, for minimal visual presence.
- Leaving waste rock dumps and other large-scale landscape features in place or replacing or covering them with similar yet inert materials where possible.
- Actively stabilizing significant historic buildings and structures when possible.
- Considering interpretive signs providing historic mining information and encouraging preservation among the public.

Research Design

A research design outlines courses of action to fulfill the objectives noted above. Regarding Section 106, the overall Area of Potential Effect (APE) must be defined in order to

assess project effects. An APE definition relevant to this project includes any areas that have the potential for land disturbing activities.

Second, Isolated Finds and sites must be defined and distinguished. In terms of mining resources, an Isolated Find (IF) is usually limited to individual prospect pits, adits, or shafts, and their waste rock dumps. An IF can also include an additional surface prospect or platform lacking evidence of structures or buildings. Artifact assemblages will be sparse, if any exist at all. Anything more qualifies as a site. Packtrails, roads, rail grades, etc. are documented as linear resources. A prehistoric IF is limited to a single projectile point, tool, or small concentration of reduction flakes representing brief and single-episode activity. Features in any number, extensive concentrations of lithic flakes, or combinations of flakes and tools qualify as prehistoric sites.

Third, historical context is essential for understanding resources and evaluating their significance. Chapter 3 provides a very broad account of the county's history, adapted from the more comprehensive *Historic Mining Resources of San Juan County, Colorado*.[11] Readers should consult the latter context for a full understanding of the county's history, its Periods of Significance, and how they apply to today's resources. On a more localized scale, an individualized history is also necessary for each resource involved in the project. An accurate history can only come from research in primary sources, trends discussed in the above-mentioned context, and general knowledge of the county's history. An objective significance evaluation depends on a good history.

Another step in the overall research design is gathering enough information to evaluate the significance of resources in terms of two designation programs. One is the National Register of Historic Places (NRHP) and the other is the parallel State Register of Historic Properties (SRHP). Both have similar criteria. Section 106 requires evaluation in terms of the NRHP, while evaluation under the SRHP is done for this project in the interest of historic preservation. The evaluation is also required on OAHP site forms.

Resources are evaluated under NRHP and SRHP Criteria A and B to determine whether they are directly associated with significant events, trends, and persons. Evaluation requires site-specific archival research to identify the events and persons. Evaluating resources in terms of NRHP and SRHP Criterion C requires documentation according to Class III standards and an analysis of the data. The information is necessary to determine whether resources are good examples of specific site types, whether they possess important attributes, and whether they retain sufficient integrity. Regarding NRHP Criterion D and SRHP Criterion E, resources are assessed for their potential to offer additional, meaningful information through further study. Information can come from surface features and artifacts, buried archaeological deposits, and even intact underground mine workings. For eligibility, the researcher must explain why the potential information is important and the areas of research it can address. NRHP Criterion Exception G applies to resources less than fifty years old. They must, however, be exceptionally important in type, events, or historical trends.

A fifth step in the research design provides meaningful interpretations of the resources, even though this surpasses basic Section 106 compliance. Analysis of material evidence is combined with archival information, when available, to draw detailed conclusions regarding sites and their people. By itself, archival information tends to be incomplete and is usually limited to the events, persons, and organizations that the records-keepers of the past thought important at the time. Archaeological evidence holds the capacity to address many issues that escaped

[11] Twitty, 2010.

documentation such as workers' health, diet, and demography, but such evidence often lacks the information provided by archival sources.

The last step is examining the resources in the context of proposed environmental and safety actions, and considering their potential effects. Addressing mines and tailings deposits as sources of metals presents challenges. Project managers consider cost, property ownership, hydrologic conditions, equipment access, and the nature of contamination itself. But one of the most important is Section 106 compliance and the project's effect on resources. Sometimes, mine drainage and waste rock can be addressed with inexpensive, low-tech methods such as run-on/run-off control ditches, limestone fields, and small settling ponds. Ditches prevent surface water from percolating through dumps, or direct contaminated effluent into ponds or limestone fields for passive treatment. Simple methods are preferable where possible because their impact on historic resources is low.

Water-quality actions can have direct, indirect, and cumulative effects on resources. As the term suggests, a direct effect is usually a physical change or presence of some sort, but not necessarily a detrimental one. An indirect effect tends to influence the intangible qualities of a site such as feeling, association, or setting. Examples include changes to the immediate landscape, incompatible auditory or visual disturbances, and greater access leading to site deterioration. Cumulative effects reference minor changes and impacts that might not compromise a site's integrity outright, but rather are factors in its gradual, incremental erosion.

For sites determined eligible, low-impact water-quality actions can be compatible with integrity and pose no adverse effect. This can be achieved when alterations are restricted to non-contributing elements such as previously disturbed areas, or are temporary and reversed.

In some instances, however, environmental problems can only be addressed with considerable disturbance. Highly mineralized waste rock dumps, for example, might be contoured and revegetated, while others in wet conditions need be removed altogether to dry repositories. Tunnel drainage, as another example, may require bulkheads, concrete structures, and water treatment plants. Such work is usually conducted with bulldozers, front-end-loaders, back-hoes, and trucks, which require staging areas, space to maneuver, access roads, and land for repositories. As can be surmised, aggressive action can change both targeted sites and the surrounding landscape. Invasive actions have no effect on historic properties when a site has been determined not eligible. In contrast, when a site is eligible, invasive projects usually pose an adverse effect, unless the site's character and integrity can be maintained. When an adverse effect on an eligible resource is unavoidable, resolution will be sought with USFS and OAHP through cultural resource mitigation.

Several disclaimers regarding management recommendations need be introduced here. In general, the recommendations outline the project's potential effect on sites as historic resources, and in light of cultural resource compliance. The recommendations are advisory and seek a balance between the client, project needs (budget, workable methods, etc.), and best outcome for inventoried resources. MSH is not specifying binding engineering solutions to the environmental and/or safety hazards presented by inventoried sites. Final decisions of project implementation and outcome rest with the project lead agency. MSH provides guidance regarding appropriate treatment of involved resources and effects of a project in terms of cultural resource compliance. But the project lead agency bears responsibility for the project's impacts in all regards.

CHAPTER 5: RESEARCH METHODS

Archival Research

Archival research is essential for objectively evaluating the significance of historic resources, and drawing meaningful interpretive conclusions. Old records regarding mining resources are notoriously incomplete, but a good research strategy can recover enough information to meet needs. Mountain States Historical (MSH) devised a four-tiered research strategy in the interest of efficiency.

1. Some resources have been recorded and researched in detail, and require no new archival work.
2. Other resources have been previously recorded, but their archival information is incomplete and has major data gaps. In these cases, research consults select sources in an attempt to provide the critical information.
3. Some resources have never been recorded or researched, requiring work anew. Research for these resources is extensive.
4. Heavily damaged resources lack integrity and therefore will not qualify for the National Register of Historic Places (NRHP). Detailed archival research becomes an unnecessary use of time, and so information is only cursory.

In its research campaigns, MSH consults a large number of primary and secondary sources in institutions known for mining archives. The principal institutions are: Colorado School of Mines; Division of Reclamation, Mining, and Safety; Colorado State Archives; Denver Public Library; University of Colorado at Boulder; and Bureau of Land Management land office in Lakewood. For a list of sources, see the bibliography. The archaeological mining context noted in Chapter 1 provides sufficient history of the region, and research regarding greater San Juan County was thus unnecessary. The statewide context *Mining Industry in Colorado* provides additional information.

It should be noted that relatively little archival information exists for minor resources such as prospects and small mines. Several factors explain this. In general, prospects were numerous, small, unimportant, and failed to stimulate interest among past records-keepers. Further, the period press tended to dedicate its limited print space to the more prominent operations. Claim information is often unavailable for resources on public land because the General Land Office expunged their records after activities on the properties ended. As a result, the small operations received little notation.

Archival research includes consulting OAHP's Compass database and the Forest Service Columbine District Office's cultural files to determine whether any resources have been previously recorded. The results are summarized in Chapter 1.

Field Methods

Field methods can be broken into three task groups. First is defining the Area of Potential Effect (APE), conveyed from project managers either in the field, through maps, or UTM coordinates. According to Section 106, the APE may include private lands if the federal undertaking has the potential to impact resources on those lands. Land owner permission is

required to conduct archaeological survey on private lands. When examining the APE, MSH sometimes provides suggestions for expansion or deletion to include or entirely avoid certain resources, for better project planning.

Second is inventorying study areas through pedestrian survey. Study areas are covered on foot in transects 10 meters wide, while access routes are inventoried as corridors 100' wide. Wetlands, slopes steeper than 30 degrees in pitch, and heavily logged areas are surveyed more broadly. These areas are subject to inspection of flat ground, favorable travel routes, and mineralized formations, with guidance from aerial imagery. All historic and prehistoric resources are then recorded according to or surpassing the Class III procedures defined by USFS and OAHP. The information is compiled on OAHP site forms.

Isolated Finds are documented with a text description and one or two photographs.

Sites, in contrast, are recorded more intensively, gathering enough information to evaluate significance in terms of the NRHP, and to interpret their histories.

The first step is to define a site's boundaries, which typically encompass all directly associated features and artifacts. In the second step, all features and important physical aspects are mapped with a pocket transit, or GPS for extensive sites and linear resources. Each feature is assigned a number, described with text, and inventoried for associated artifacts. An artifact inventory by feature is essential for determining feature dates, function, changes in use over time, and, in terms of residences, aspects of the occupants. Overview photographs are taken for context, and most features are photographed individually. It should be noted that lack of vantage points, dense vegetation, and poor weather preclude some photography.

CHAPTER 6: STUDY AREA SURVEY AREA DESCRIPTIONS

Between 1874 and around 1920, prospectors closely examined the Mineral Creek Mining District along with the rest of San Juan County. The name Mineral Creek might suggest that they in fact found rich ore, but exploration revealed that the district did not offer as many veins as the county's other drainages. The Mineral Creek district thus hosted fewer productive mines, which were concentrated in specific areas around the forks of Mineral Creek. The U.S. Forest Service (USFS) chose three sites with the most potential to contribute metal loading into the Animas River. A fourth site was chosen because associated ore had been illegally dumped on USFS lands and modern mine buildings were slated for removal by the Colorado Division of Reclamation, Mining, and Safety. At each of the four, USFS designated project areas specifically to take in mines under study, space for moving materials, equipment staging areas, access routes, and potential waste rock repositories. Chapter 1 of this report provides a cursory review of the four study areas, and they are explained in greater detail below.

Koehler Junction Survey Area

U.S. Highway 550 crosses northeast-southwest over Red Mountain Pass, which is a boundary separating San Juan and Ouray counties. The Red Mountain Mining District lies mostly on the Ouray County side, but also extends over into San Juan County. Originally, U.S. 550 was known as the Million Dollar Highway, possibly because its construction may have cost $1 million. Alternatively, waste rock was taken from district mines as a road-base, and only later proven to be low-grade silver-bearing ore.

On the highway's eastern side, and a mere 500' south of the pass, is a small drainage basin featuring Koehler Junction, which is an intersection of gravel roads. The basin is elongated northeast-southwest, and approximately 400' wide and 1,200' long. The roads, all fairly recent, radiate west and north to the highway, and northeast and south to other portions of the mining district. The basin is 11,150' elevation. Abrupt hills around 100' high form the northwestern and southwestern boundaries, while a higher mountain is the eastern boundary. In the southwestern portion is a pond featuring mineralized sediment from local mine drainage and probably natural sources. The pond's outflow trickles west along one of the access roads and ends in a colluvial fan on the highway's eastern shoulder.

Preparing for an environmental evaluation, USFS designated a 13.8 acre study area around the basin. The area is 1,200' long and 650' wide, extending east from the highway to the basin's eastern edge. The boundaries were intended to include soil sampling locations, several mines, the pond, potential waste rock repositories, and travel routes. Most land is private, patented claims, although USFS owns several public fractions in the area's northeastern end. The main access points are the gravel roads connecting the basin with the highway.

The claims were patented in association with three substantial mines in the basin, all of which yielded ore at one time. The Koehler Tunnel (5SA.826) is on the eastern edge, the Junction Mine (5SA.410) is another tunnel a short distance north, and the Longfellow Mine (5SA.827) is farther north still. The workforce lived in several cabins (5SA.1613) on the basin's southwestern side, but mainly in the Koehler Longfellow Boardinghouse complex (5SA.495) on the western side. A segment of the highway passing along the area's western side was recorded as linear resource 5SA.113.10.

The basin exhibits subtle characteristics of an area subject to decades of mining, recently followed by additional claim development, waste rock removal, and extensive bulldozing. The disturbance long predates the project discussed here. The basin's surface is a mix of barren ground, sheet-wash sediment, bulldozed earth, talus, and patches of meadow. Stands of second-growth spruce and fir trees are higher on the surrounding slopes.

Regarding inventory methodology, the mines and highway were recorded first, since they occupy a substantial proportion of the study area. Afterward, the remainder of ground was surveyed in 10 meter transects, with only several additional resources being found on the hills.

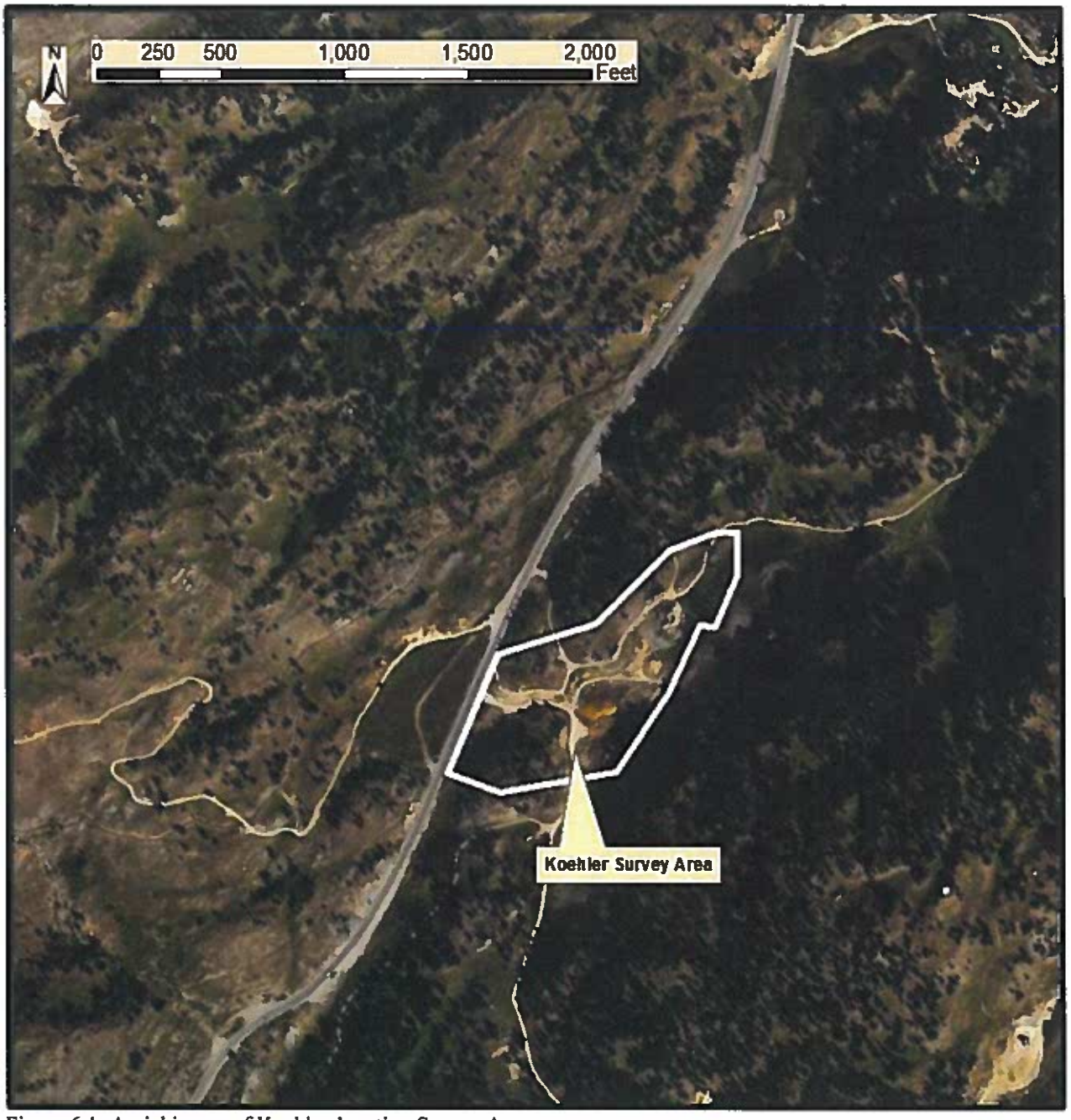

Figure 6.1: Aerial image of Koehler Junction Survey Area.

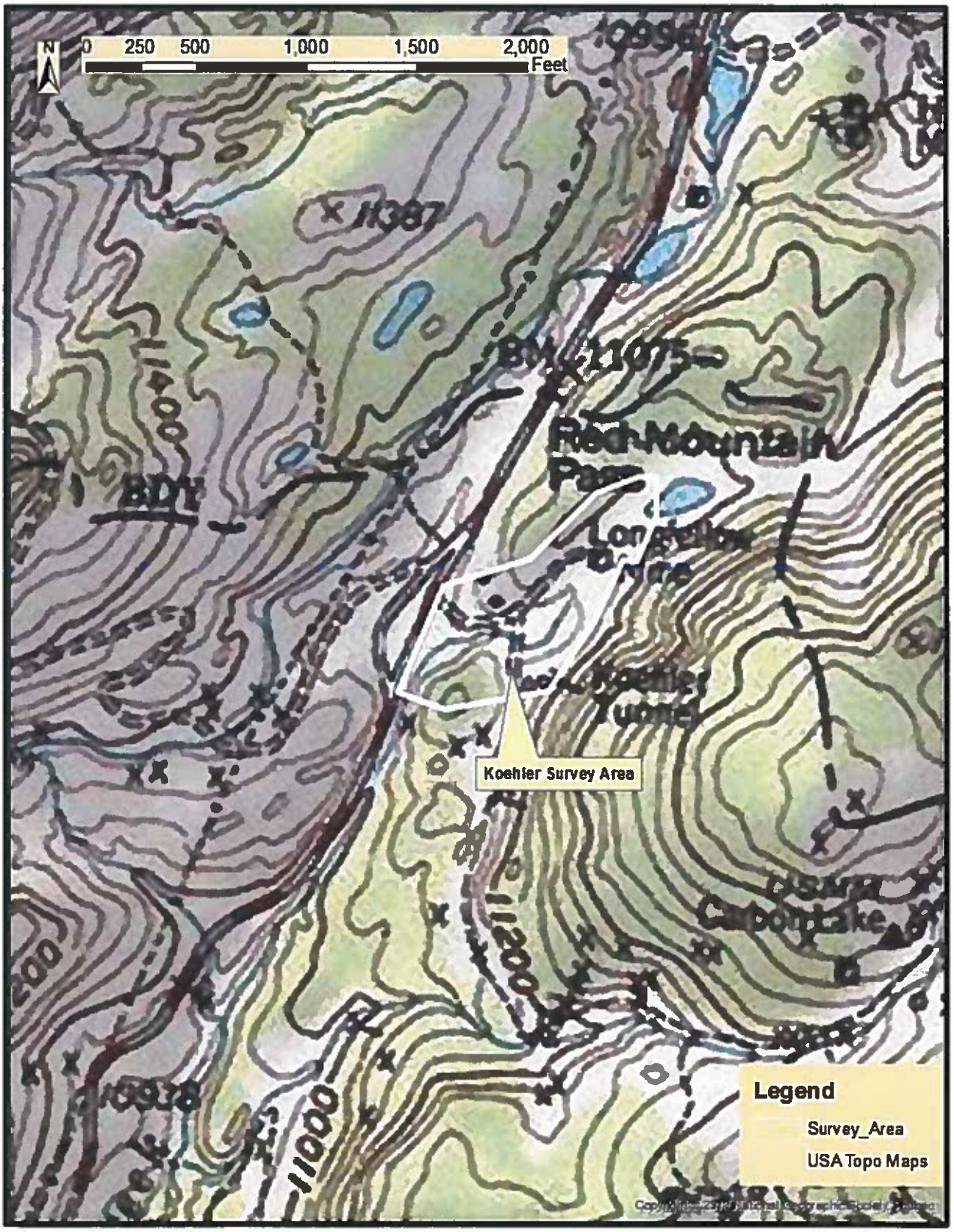

Figure 6.2: Topographic map of Koehler Junction Survey Area.

Figure 6.3: Aerial image of Freda Mine and Mill Survey Area.

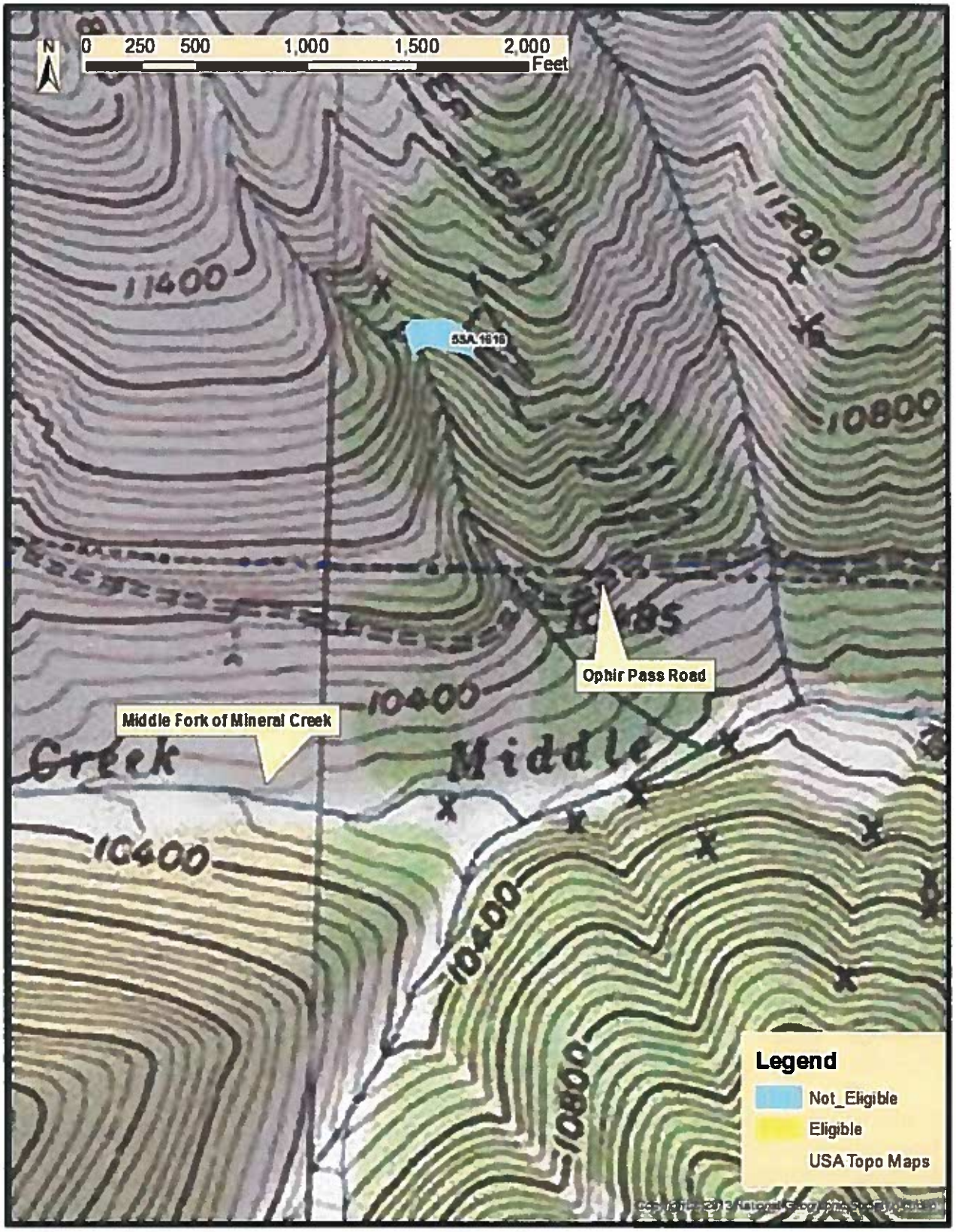

Figure 6.4: Topographic map of Freda Mine and Mill Survey Area.

Freda Mine and Mill Survey Area

During the 1980s, Triple L Mines Incorporated developed the Freda, completed a few surface improvements, and erected a small and simple mill. The Red Arrow Gold Corporation took over in 1988, probably as a lessee, but went bankrupt in 2014. The site is proposed for general cleanup, removal of ore illegally dumped on USFS land, and possible closure of an open tunnel. The mine is on the northern wall of Middle Fork of Mineral Creek valley, around one mile west of its confluence with main Mineral Creek. The valley descends east between peaks 12,000' and 13,000' high, possesses a glacial U-shaped profile, and is narrow. The northern wall is extremely steep with around 3,000' vertical relief, mostly overgrown with old- and second-growth spruce forest. Minor drainages plummet straight down and act as avalanche chutes, and are thus fairly scoured of trees and even brush. Soil consists of medium-brown loam 5-15 cm thick over a mix of silt, sand, and gravel as deep as 30 cm, on volcanic bedrock.

With proposed activity limited to the mine and mill, the survey area is the same as the site's footprint. Recorded as 5SA.1616, the site is 330' east-west, 145' north-south, and 0.9 acres. Surrounding slopes are 30-45 degrees in pitch, and even steeper in a drainage to the west. Survey around the site's edges found no other resources. The mine itself is privately owned, but its access road crosses USFS land, and the low-grade ore pile is on USFS land as well. The pile dates to the 1990s and was not recorded because of its recent age.

Brooklyn Mine Survey Area

The study area is named for the Brooklyn Mine (5SA.751), a large silver and gold producer discovered during the 1880s and worked as late as the early 1980s. The mine is on the northern side of Browns Gulch, which is a deep drainage dropping down the main fork of Mineral Creek valley's eastern wall. Discovery of the Brooklyn drew a small wave of wealth-seekers to the gulch, who then developed a number of prospects mostly on the northern side. In digging pits, trenches, and adits, they determined that the Brooklyn Vein and smaller, parallel formations trended northeast-southwest across the area.

USFS designated a 257 acre study area around the Brooklyn for environmental evaluation. The area is irregular in footprint, 4,600' long north-south, and 4,000' wide east-west. Most of the area is on Browns Gulch's northern side, a portion is on the southern side, and elevation ranges from approximately 10,600' to 12,000'. Ownership is mixed, with numerous prospects lying on two groups of patented claims roughly 70 acres in area. USFS owns the rest of the area, including the Brooklyn.

Access is via County Road 14, a bulldozed road switching back up the gulch's southern side, and crossing over to the Brooklyn. The road replaced other routes bulldozed during the 1960s and 1970s. USFS Road 825 continues northeast from the mine, and out of the project area. The various roads have erased the mine's original access, which was a switchback pack trail.

The survey area can be divided into five general zones based on topography. First is the southern zone, an extremely steep slope on the gulch's southern side. The zone is roughly 2,000' long northeast-southwest, and ascends 1,000' from the gulch floor to the study area's southeastern boundary. Slopes are 30-50 degrees in pitch and thickly forested with mature spruce trees. The area was spot-checked and examined in zigzags and 50 meter transects. Inventory found no cultural resources. The county road climbs through the zone past settling ponds dating to the 1970s. The ponds were not recorded because they are less than fifty years old.

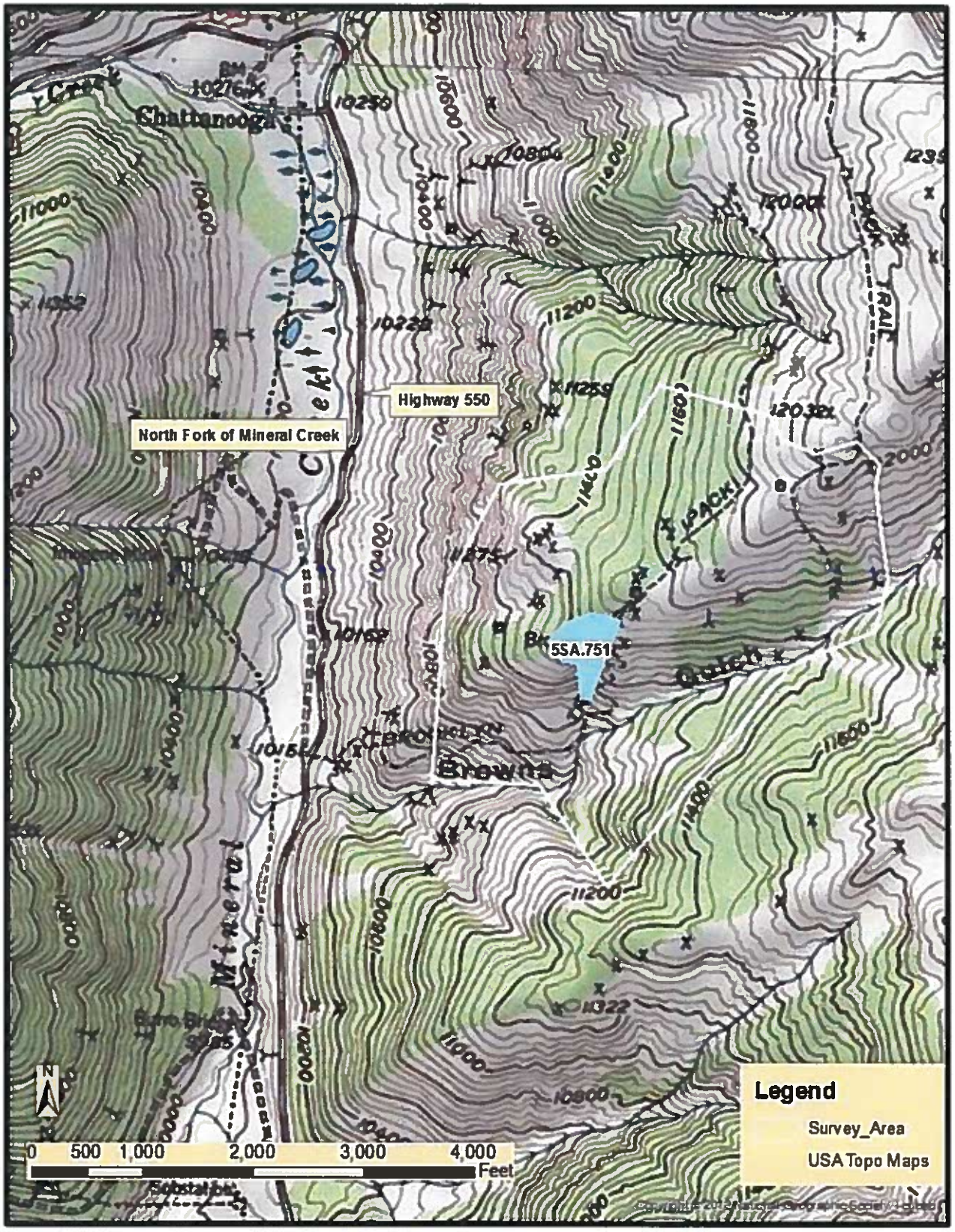

Figure 6.5: Topographic map of Brooklyn Mine Survey Area.

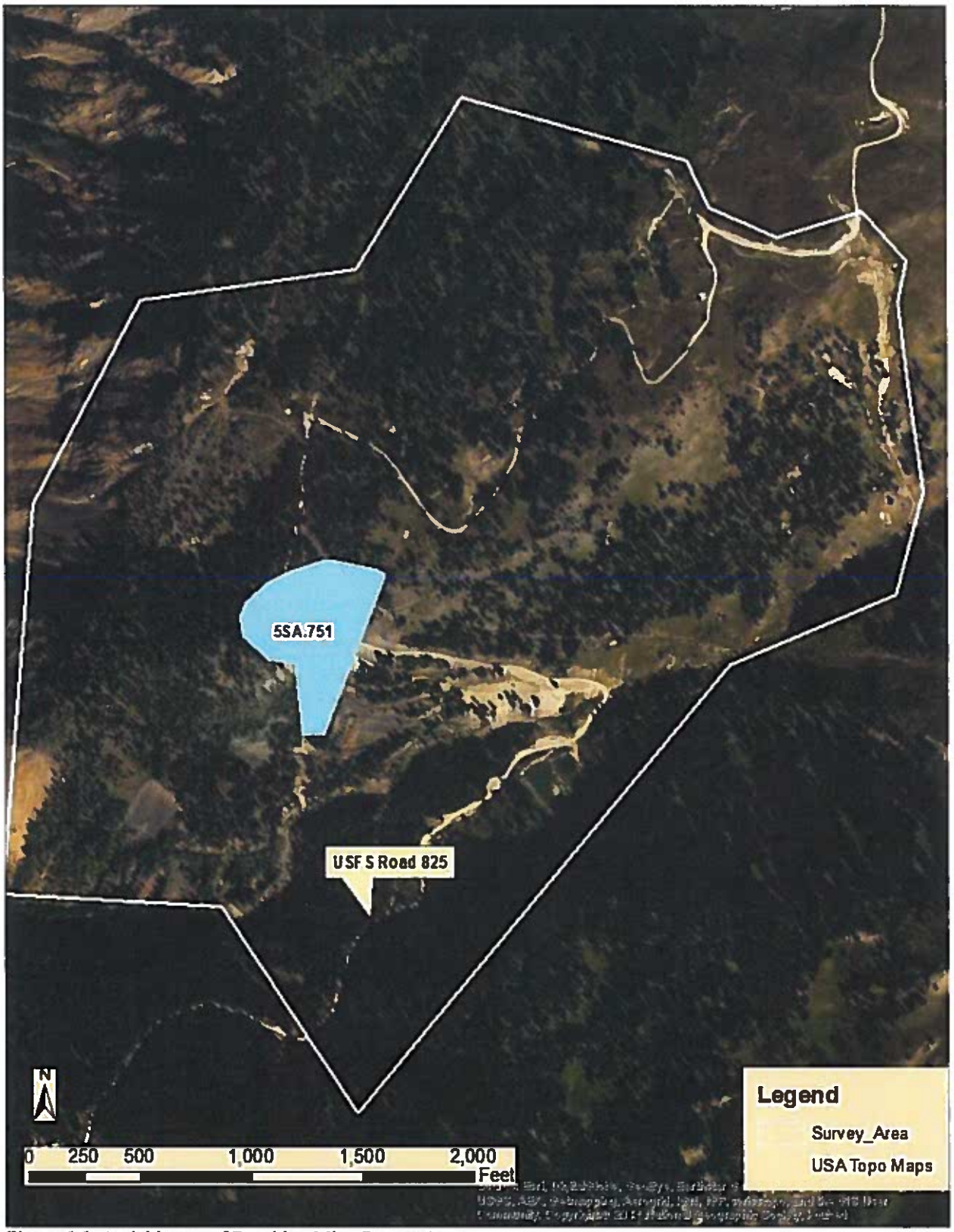

Figure 6.6: Aerial image of Brooklyn Mine Survey Area.

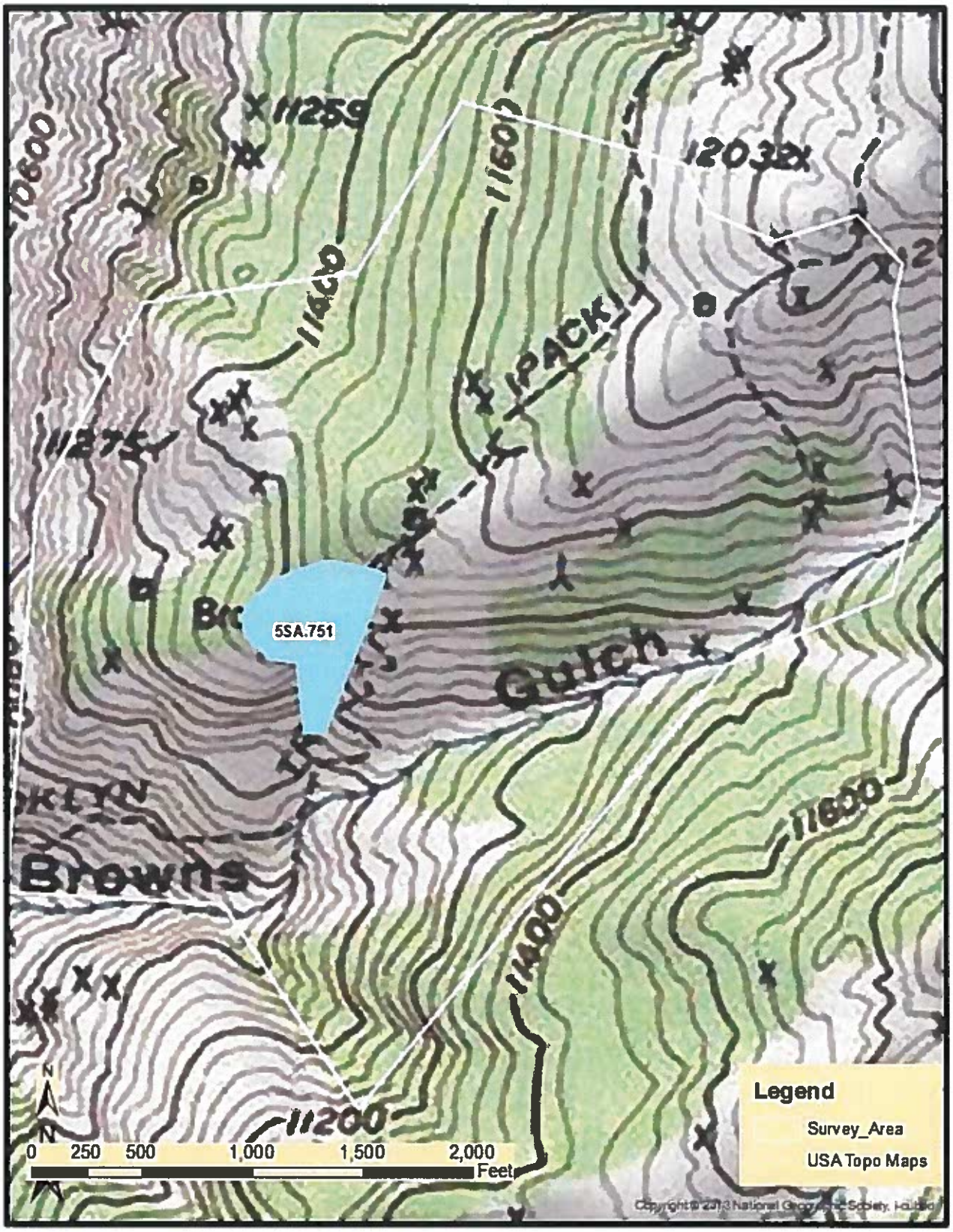

Figure 6.7: Topographic map of Brooklyn Mine Survey Area. All symbols for adits, shafts, and prospects were field-checked, and all associated resources recorded.

The second zone includes the northern wall of Browns Gulch, and wraps around north over Mineral Creek valley. Width is around 900' while length is 2,600'. Terrain is a mix of very steep slopes, talus, and crumbling cliffs of friable, volcanic rock. With safety an issue, the zone was spot-checked and examined in 50 meter transects, leading to discovery of several prospects and a telephone line. Originally, a packtrail ascended through zone's southern portion on its way to the Brooklyn, but was replaced with a bulldozed road during the 1960s.

The third zone is an area of more moderate slopes and flat terraces north of the Brooklyn. Aspect is west-facing, and Mineral Creek valley is far below. The zone is 2,100' long, 1,400' wide, bounded on the south by the Brooklyn, on the west by cliffs, on the north by the study area's edge, and on the east by a logging road. Much of the zone was heavily logged during the 1960s and 1970s, and numerous haul roads cut through what had been old-growth spruce forest. Tangles of deadfall discouraged neat 15 meter transects, the zone instead being inventoried in meandering paths. All flat benches were carefully examined, and several small mines and prospects were recorded. Soil in undisturbed areas was mostly dark-brown loam 5-15 cm thick over medium-brown silt with sand and gravel 10-20 cm thick, on decayed volcanic bedrock.

The fourth zone ascends 1,600' east from the third, and is also west-facing. Slopes are steeper overall, while terrain is more undulating with natural benches and even a few small tarns. The zone saw little logging and is largely in its original state, except for scattered prospect cuts bulldozed during the 1960s and 1970s. As elevation rises above 11,600', spruce forest gives way to alpine tundra, and soil thins to as little as 5 cm of loam over 10-20 cm of silt-sand-gravel. Slopes less than 30 degrees were inventoried in 10 meter transects, with a number of prospects being recorded mostly as IFs.

The fifth zone encompasses Browns Gulch east of the county road. The zone is around 2,400' long east-west, and 400'-1,200' wide north-south. Slopes are extremely steep and mostly forested with mature spruce and fir trees, while soil features 5-10 cm of dark-brown loam over 10-25 cm of silt-sand-gravel, on decayed volcanic bedrock. With prospects fairly numerous, the zone was transected in 10 meter swaths despite pitches greater than 30 degrees.

Bandora Mine Survey Area

The Bandora Mine Survey Area is at the South Fork of Mineral Creek's head, west of Silverton. As its name implies, the area is based on the Bandora Mine (5SA.22), which the USFS is studying in terms of environmental remediation. Historically, the Bandora was center to one of the South Fork's few concentrations of mines. The South Fork meanders northeast through a fairly broad valley, in turn curving east and joining main Mineral Creek after 5 miles. The valley exhibits classical characteristics of glaciation including a U-shaped profile, steep walls, and thin soil, all bordered by pyramidal 13,000' peaks. The southwestern wall is still a source of avalanches.

The Bandora Study Area is a parallelogram 115 acres in area, 2,840' long, and 2,000' wide. The area also ascends from 10,600' in elevation, up the valley's southwestern wall to 11,400' elevation. Ownership is mixed, with the Bandora and Lady Ellen lying on a group of patented claims roughly 44 acres in area crossing north-northwest through the valley. USFS owns the rest of the study area. County Road 7, also known as USFS Road 585, passes directly through the area. Improved with a bulldozer, the road was originally the Rico-Silverton Wagon Road, and the segment within the area was recorded as linear resource 5SA.110.3.

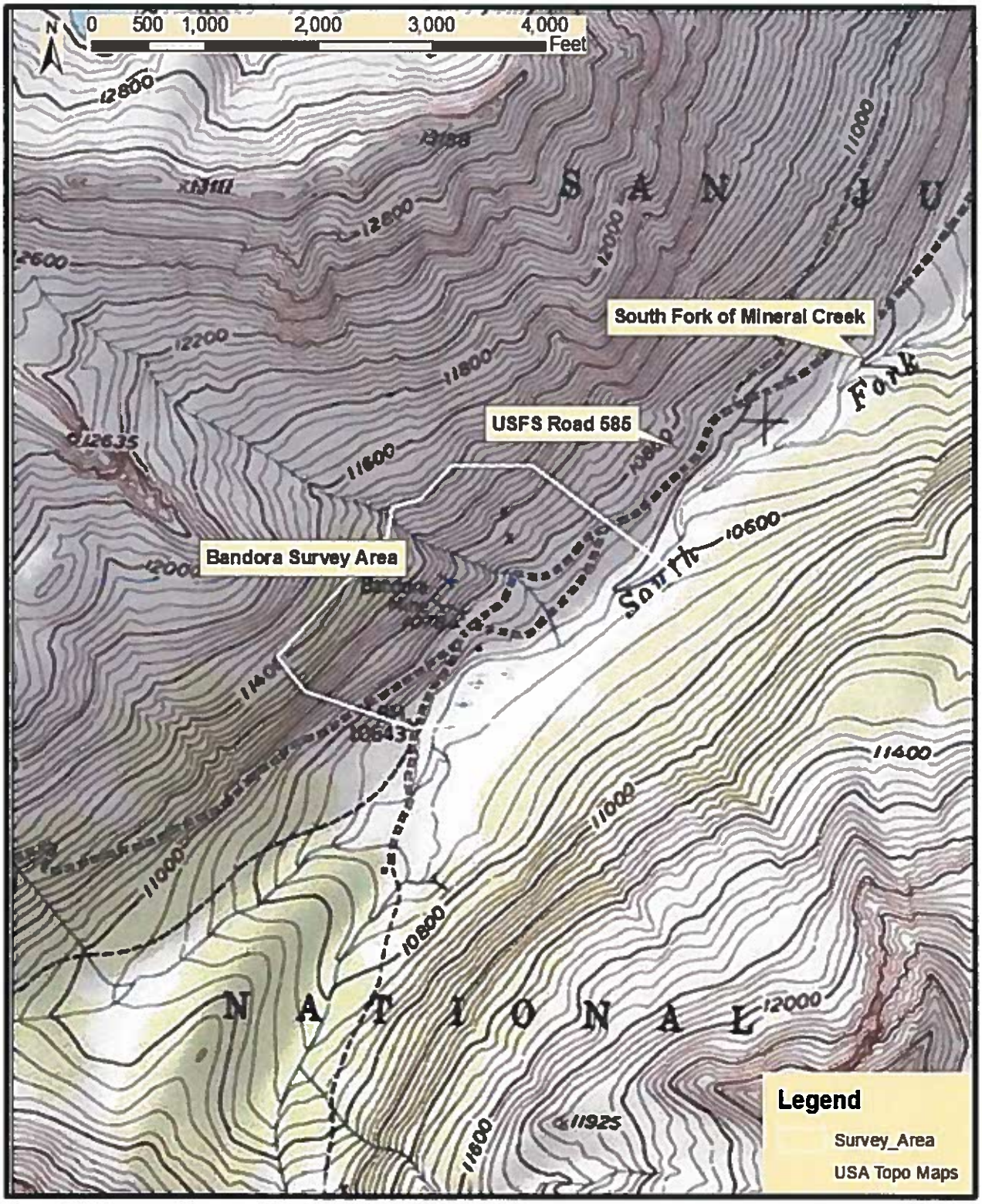

Figure 6.8: Topographic map of Bandora Mine Survey Area.

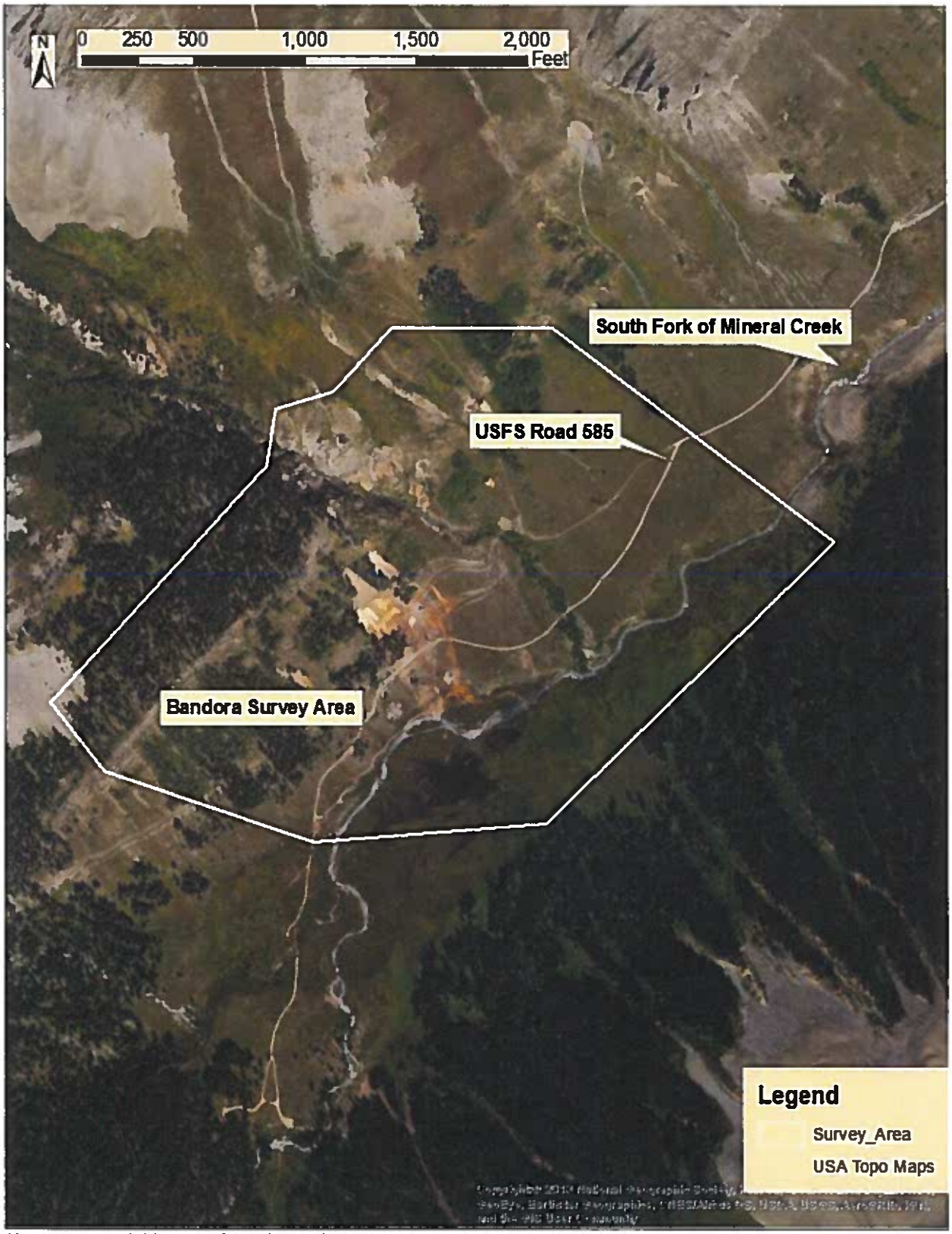

Figure 6.9: Aerial image of Bandora Mine Survey Area.

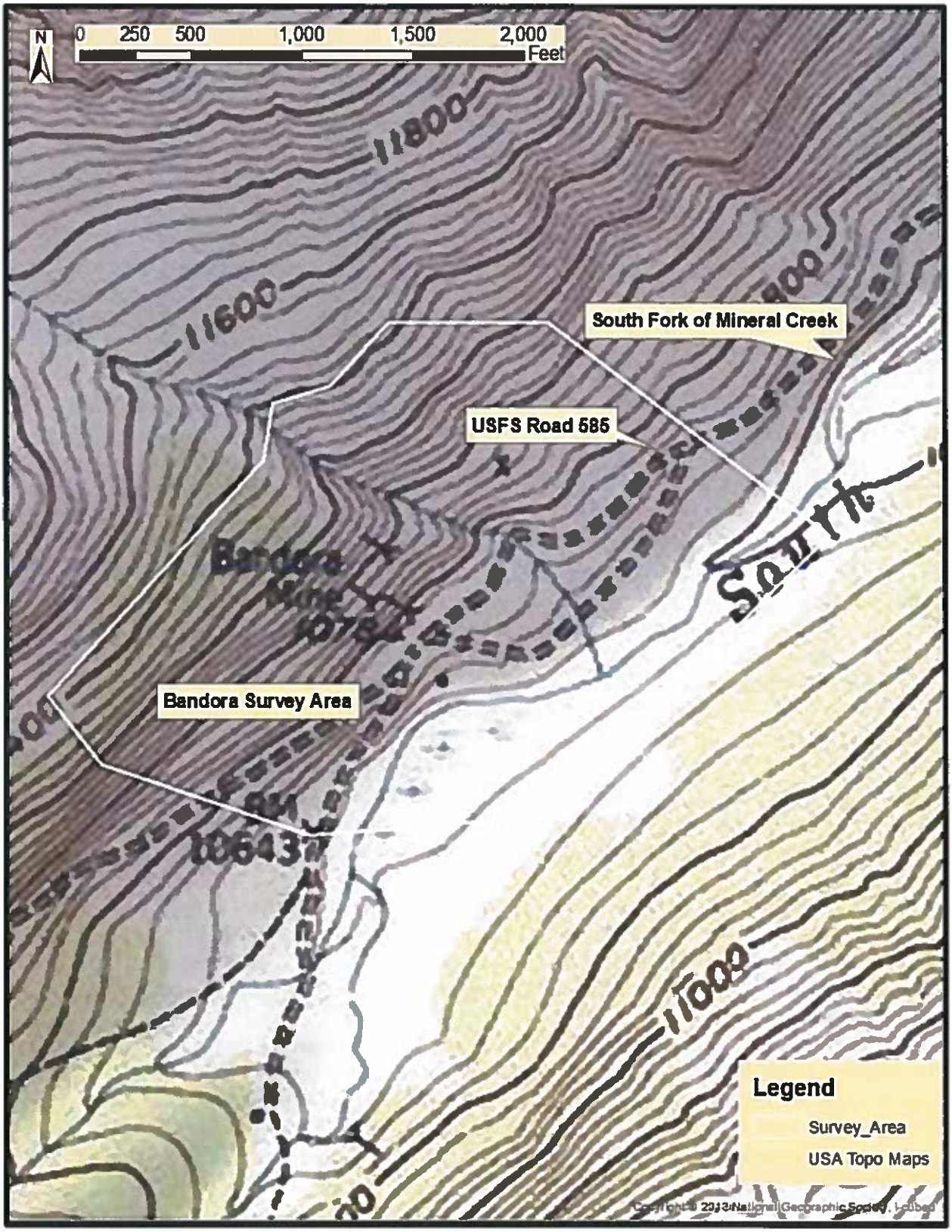

Figure 6.10: Topographic map of Bandora Mine Survey Area.

The survey area can be divided into five general zones based on characteristics. First is the southeastern region, a skirt of gently sloped and open terrain on the valley's southeastern floor. The strip is 270'-680' in width, 2,350' long, and bracketed by the South Fork and thick spruce forest. The stream-front is a mix of wetland and willow thickets totally covering dark-brown humus and loam 20-30 centimeters (cm) thick, over deep glacial till and colluvium. Slightly upslope is meadow abruptly transitioning into steep mountainside and spruce forest. Soil consists of dark-brown loam 15-25 cm thick over glacial till and sandy silt. The meadow portion was surveyed for all resource types in 10 meter transects, while the wetland was spot-checked and examined in 50 meter transects. Inventory found no cultural resources.

The second zone is a much narrower skirt along the stream channel's northwestern side. Ground undulates in glaciated hummocks carpeted with thick meadow and willow clusters, in a strip 40'-100' wide. The strip is native and unaltered with dark-brown loam 10-25 cm thick over glacial till and sandy silt as deep as 80 cm. Cultural resource survey in 10 meter transects revealed nothing.

The third zone is a slope rising abruptly from the valley floor and ascending from 10,600' to 11,100' elevation. The slope begins at a 20-degree angle and gradually increases to 30 degrees at the northern end and even 45 degrees at the southern. In the northern half, the slope is thickly vegetated with meadow and forbes concealing a surface of angular cobbles and small boulders in a matrix of gravel and medium-brown loam. The area is a runout for avalanches, which scattered dead wood and some cobbles throughout the meadow. Width is around 1,000'.

The zone's southern half, around 700' wide, features a mix of medium-brown loam and almost trapezoidal cobbles prone to shifting and creep, encouraged by ever-steepening slopes. The slope is overwhelmed with young aspens and stands spruce trees, many of which have been bent by soil movement.

Despite this, prospectors somehow unearthed several mineralized veins from underneath the soil and cobbles. Accordingly, most of the survey area's resources are almost evenly distributed along the third zone. The resources include several prospects recorded as IFs, as well as the Bandora Mine, Lady Ellen Mine, and a prospect adit. The Rico-Silverton Wagon Road (5SA.110) traverses the zone, while several bulldozed roads provide access to the Bandora Mine. Slopes less than 30 degrees were inventoried in 10 meter transects, while steeper slopes were sampled but not systematically surveyed due to safety problems presented by loose and shifting footing.

The fourth zone is a series of broken cliffs and prominent bedrock outcrops along the overall study area's northwestern boundary. The cliffs range from 30'-60' high and consist of loose, blocky, and friable volcanic rock, which is the source of the rubble extending down to the valley floor. The cliffs were not intensively surveyed, but rather sampled due to safety hazards. Inventory found no resources.

The Bandora Mine survey area was given special consideration for its early history. In his 2017 context on prehistoric travel corridors *Historical Research on Ute Trails in the Bandora Mine Area in the San Juan Mountains near Silverton, San Juan County, Colorado*, Anglo-Indian contact expert Jon Horn notes that the valley was a route for both Ute Indians and early 1860s gold rush participants. The Bandora study area was thus carefully inventoried for prehistoric and early historic resources, with nothing found.

CHAPTER 7: RESOURCE DESCRIPTIONS AND EVALUATIONS

The four study areas designated by the U.S. Forest Service (USFS) vary widely in size, complexity, resource density and distribution, and possible project effects. For these reasons, inventory results are best relayed separately for each of the four areas. Resource findings and locations are summarized in tables and maps within each area subsection. In the results, each resource has a history (where information is available), physical description, interpretation, significance evaluation, and recommendations regarding project effects.

That said, a few generalized observations should be noted about the project as a whole. In terms of statistical information, a total of 50 resources were recorded and evaluated. Of these, 49 were historic and associated with mining, while 1 was a prehistoric lithic tool documented as an Isolated Find (IF). Parsing out the historic resources, 15 were archaeological sites, 7 were linear resources, and 28 were IFs. Almost all the archaeological sites are mines, prospects, and related camps. The linear resources include a segment of Highway 550, a wagon road, a telephone line, and several packtrails. The IFs are mostly simple prospects, except for a prehistoric lithic tool made from a reworked projectile point base.

Seven resources are recommended eligible, and one is Need Data for its buried archaeological potential. Further explanations can be found in their individual site descriptions. All the other resources are recommended not eligible. The larger sites suffer from insufficient integrity, which was compromised by natural deterioration, heavy soil creep, and bulldozing in the past. Smaller sites have integrity deficiencies as well, and also are historically unimportant.

Koehler Junction Survey Area

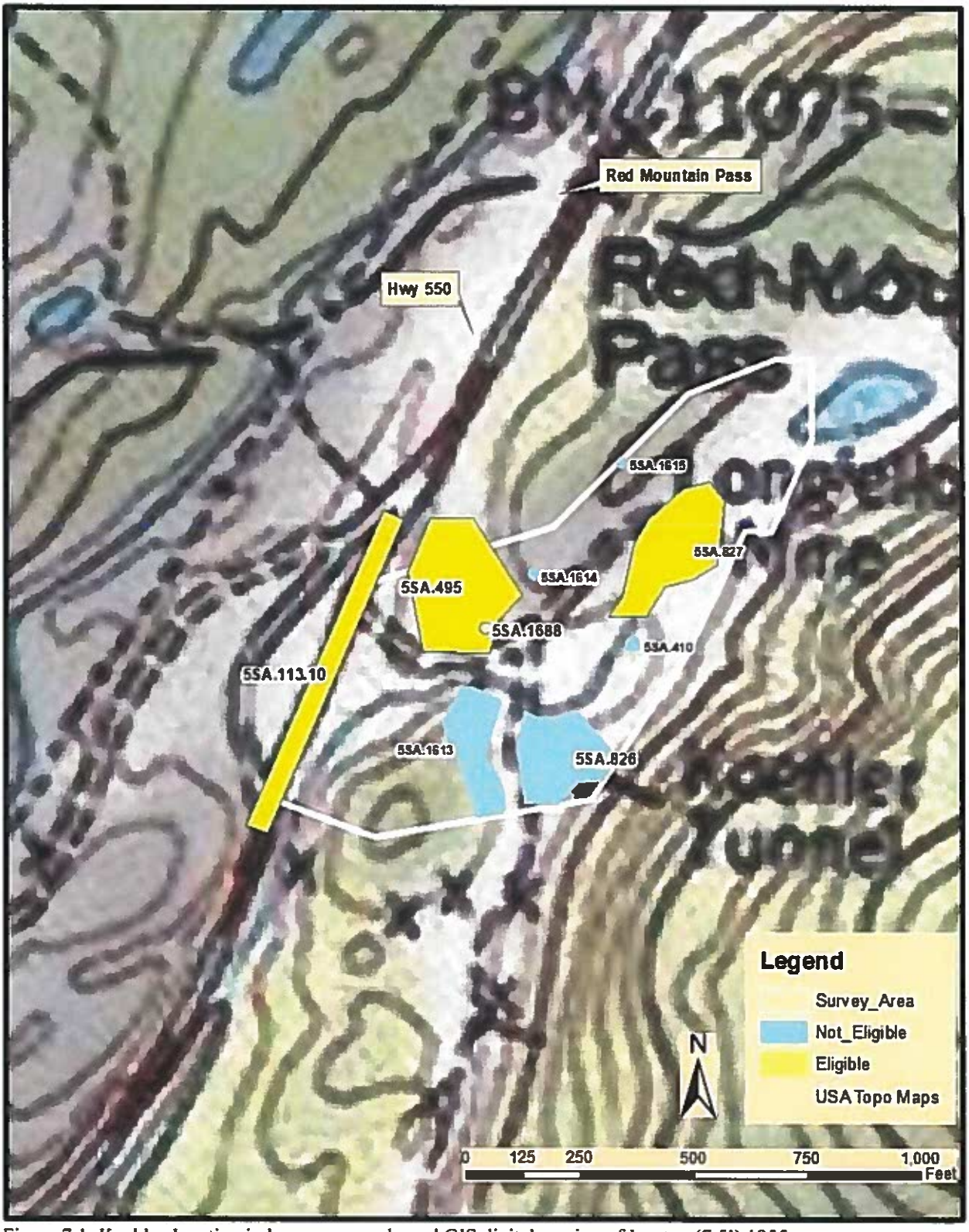

Figure 7.1: Koehler Junction index map, an enlarged GIS digital version of Ironton (7.5') 1955.

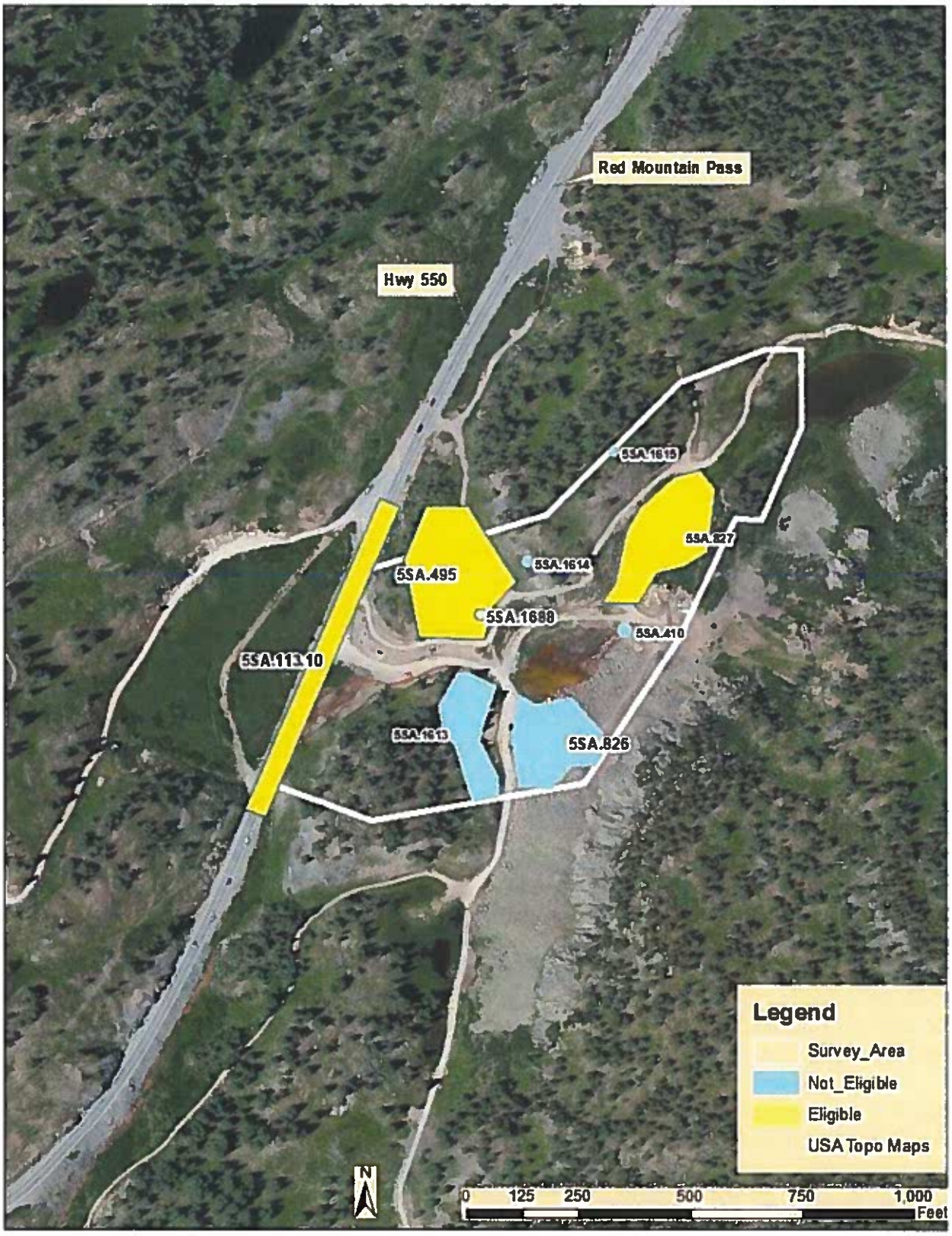

Figure 7.2: Koehler Junction index aerial photo. The aerial is the same scale and location as Figure 7.1 above.

Table 7.1: Koehler Junction Resource Summary

Resource #	Resource Name	Resource Type	Eligibility Status	Ownership	Project Effect
5SA.113.10	Million Dollar Highway	Highway	NRHP A and C	CDOT	No adverse eff
5SA.495	Koehler Boardinghouse	Workers' Housing	NRHP D Need Data	Private	No adverse effect
5SA.826	Koehler Tunnel	Tunnel Mine	No; lack integrity	Private	No effect
5SA.827	Longfellow Mine	Shaft Mine	NRHP A, C, D	Private	No adverse eff
5SA.1613	Workers' Housing Complex	Workers' Housing	No; unimportant	Private	No effect
5SA.410	Junction Mine	Tunnel Mine	No; IF	Private	No effect
5SA.1614	Prospect Cut	Prospect Cut	No; IF	Private	No effect
5SA.1615	Longfellow Mine Utility Pole	Utility Pole	No; IF	Private	No effect
5SA.1688	Prehistoric Tool	Lithic tool	No; IF	Private	No effect
Total: 9			**Total eligible: 2 Need Data: 1**		**No adverse effect**

Linear 5SA.113.10
Million Dollar Highway

Historically, U.S. Highway 550 was known as the Million Dollar Highway, a colorful name derived from its road-base, or from the cost of its construction. When the highway was graded in 1926, crushed waste rock was used, taken from mine dumps in the Red Mountain Mining District, which straddles the pass. Only after the highway's completion did anyone realize that the road-base was actually low-grade silver ore that could have been milled at a profit with then-current technology. Alternately, road construction might have cost $1 million or more.

In any case, the highway crosses northeast-southwest over the pass, connecting Silverton in San Juan County to the south with Ouray in Ouray County to the north. The highway in general, and especially on the pass, is among Colorado's more heavily traveled recreational destinations. Immediately south of the pass, gravel roads extend east and west and provide access to mountains and basins as high as 14,000' elevation. The pass itself is 11,075' elevation, flanked on the west by alpine benches giving way to higher peaks, and on the east by low hills grading into talus slopes of equally high peaks.

The gravel roads on the highway's eastern side, just south of the pass, lead into the Koehler Junction survey area inventoried for this project. Moreover, the highway serves as the survey area's western boundary because a series of soil sample shovel probes is planned for the highway's eastern shoulder. With the probes planned for the shoulder's margin, and the highway being just within the survey area, Kristie Arrington of Two Dog Archaeological Consultants recorded and evaluated a segment for this project (see Figures 7.1 and 7.2).

As reflected in linear resource number 5SA.113.10, the segment is the tenth in the greater highway to be recorded and evaluated. The highway was initially registered with the Office of Archaeology and Historic Preservation (OAHP) in 1974. The term registered is used here because a portion of the highway was given a linear stem number, but associated records are incomplete and missing a location, description, and eligibility recommendation. Perhaps the most important next step in the highway's recognition came in 2002, when Associated Cultural Resource Experts documented the Silverton-Montrose stretch for their Colorado highway context *Highways to the Sky*. The documentation provided a good foundation for stem number 5SA.113, which was officially determined eligible for the NRHP under Criterion A. Since that time, the

Colorado Department of Transportation and Alpine Archaeological Consultants have recorded a number segments, with many being determined eligible/supporting under Criteria A and C. Because the Red Mountain Pass segment is similar in character, integrity, and significance to the earlier ones, it too is logically eligible/supporting under Criteria A and C. Alpine Archaeological's work has been thorough, and the material below is intended to emulate their linear forms for an overall consistent record.

Million Dollar Highway History

The history offered here is a brief thumbnail summary because much has already been written about the Million Dollar Highway. Condensed from Alpine Archaeological's linear form 5SA.113.8, the highway from Silverton, north over Red Mountain Pass, and through the Red Mountain Mining District was adapted from the Silverton Railroad grade. Regional transportation king Otto Mears completed the railroad over the pass and into the district in 1887 with the express interest of reducing operating costs for the mining industry. Reduced costs, he and investors understood, would in turn render lower grades of ore profitable to produce and prolong activity. By no coincidence, many of his fellow railroad investors owned the district's principal mines. The railroad achieved its purpose by cutting otherwise high freight rates for ore sent down to smelters, and fuel coal and supplies hauled up. The industry declined during the 1910s, and Mears suspended traffic in 1921.

Mears turned the railroad grade over to San Juan County and the Colorado Highway Department in 1923. The two organizations then adapted the grade as an automobile road in 1926, initially used for tourism and limited mining. The highway was designated U.S. 550 in later years, and periodically improved for heavier vehicles, faster speeds, and eventually safety. But the highway stayed true to its original route and grades.

Million Dollar Highway Description

The highway segment discussed here is a stretch 755' long passing the Koehler Junction survey area's western edge. In appearance, design, construction, materials, and dimensions, the segment is representative of a greater extent from Red Mountain Pass, through Silverton, and on southwest to Molas Pass.

The segment is straight and 47'-67' wide in total, including two-lane pavement, shoulders, roadbed, cut-banks, and fill areas. The roadbed is 35'-50' wide, 1'-3' thick, and consists of pea gravel over crushed, angular gravel and waste rock. Pavement is a grayish mix of petroleum product, bitumen, and gravel around 6" thick and 28' wide. The surface is crowned to shed water, and divided by epoxy resin paint into north-bound and south-bound lanes, flanked by paved shoulders. The eastern shoulder is 4' wide and the western only 18". The pavement is several decades old at most, and no original road surfaces are visible.

The northern 200' on the highway's eastern side features recessed rock and earthen cut-banks 2'-9' high. A gravel margin 12' wide provides a buffer between the cut-bank and pavement. Around midway on the eastern side, a gravel road extends east from a pullout, and over to Koehler Junction.

Recent signs constitute the only small-scale elements along the segment, and bridges are absent. The western side features Highway 550 marker, 30 mph speed limit, and Adopt-A-Highway program signs, all on individual steel poles. The eastern side features Hwy 550 Mile

Marker 80, pass closure, snow-depth reflector, and Adopt-A-Highway program signs, also on individual steel poles.

Figure 7.3: Highway 550, Segment 5SA.113.10, looking north. The gravel road extending right leads into the Koehler Junction survey area. *7/19/17 K. Arrington*

Figure 7.4: Highway 550, Segment 5SA.113.10, looking south from Red Mountain Pass. The Koehler Junction survey area is at left. *7/19/17 K. Arrington*

Million Dollar Highway Condition and Integrity

The highway is in good condition relative to current standards. Periodic maintenance and improvements have erased surfaces and small-scale elements older than fifty years, but the existing elements are largely the same as when constructed in recent decades.

As a historic resource, the highway embodies a few NRHP aspects of integrity. The highway still reflects overall design of its original route, as adapted from the Silverton Railroad grade in 1926. The highway also has changed little in width and construction of its roadbed. These aspects allow the highway to continue providing a feeling of motorized mountain travel, while the highway's destinations and passage through the Red Mountain Mining District impart historical association. The district also serves as a characteristic setting. But periodic improvements have erased or covered over historic surfaces and small-scale elements. The highway therefore no longer exhibits period materials and workmanship.

Million Dollar Highway Eligibility Recommendation

Segments of Highway 550 previously recorded in San Juan County have been determined eligible/supporting for the NRHP under Criteria A and C. The segment discussed here is similar in character, and has been an integral section of the highway since construction in 1926. The segment is therefore eligible/supporting as well, by example and through direct association.

Million Dollar Highway Management Recommendation

In its environmental study of Koehler Junction, U.S. Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) (collectively the Government) will sample soil in the survey area. As part of this, the Government plans on a series of small, shallow probes along the eastern edge of the highway's roadbed. The pits will be hand-dug, unobtrusive, and restored after sampling. The highway's pavement, main roadbed, and small-scale elements will be avoided, and the pits will impose no detectable or permanent changes. Executed in this manner, the sampling effort will preserve the highway's integrity and its eligibility. Sampling will therefore pose no adverse effect to the highway.

Site 5SA.495
Koehler Longfellow Boardinghouse

Workers employed in the Koehler Tunnel, Junction Mine, and Longfellow Mine lived in a residential complex on two prominent knolls on Red Mountain Pass' eastern side. The complex overlooks Highway 550, and is literally bracketed above and below by heavily used gravel roads. The knolls are 11,160' elevation and form the northwestern edge of a small, natural basin. East is a mountainside of talus and bedrock cliffs, penetrated by the Koehler Tunnel (5SA.826) and the Junction Mine (5SA.410). The Longfellow (5SA.827) is farther northeast. At treeline, the area features a mix of tundra and spruce stands.

Ross Curtiss with Durango Archaeological Consultants initially recorded the residential complex in 1998 as Koehler-Longfellow Boardinghouse (5SA.495) for an extensive study of the

Red Mountain Mining District. At that time, the complex featured a standing boardinghouse, an office with superintendent's quarters, and a transformer house. Additionally, the boardinghouse was almost encircled by a group of privy pits and a diverse artifact assemblage. Curtis recommended the site eligible under NRHP Criteria A, C, and D, and OAHP concurred. His findings can be found on OAHP site forms. The site was then listed on the San Juan County Register of Historic Places, and then stabilized with a State Historical Fund grant.

In 2002, then-owner Frank Baumgardner scraped away the buildings with a bulldozer in preparation for property development and reopening of the Koehler Tunnel. Either he or someone else then hauled the debris away, leaving almost no clear trace of the buildings. The site has since been subject to fifteen years of recreational use, visitors taking most large artifacts. Presently remaining are flat areas where the buildings stood, a severely diminished artifact assemblage, and the privy pits. A few have been probed, but not extensively, and still offer potential to harbor meaningful deposits.

The site has been re-evaluated for the Government's current environmental study of Koehler Junction. Revaluation includes examining the building locations, inventorying the artifact assemblage, inspecting the privy pits, and searching for missed features. Curtis' original 1998 site map was thorough and well-rendered, and is reused for this reevaluation because it provides the best illustration to clearly chronicle the site's changes. The features identified on the map are described in detail below, with the addition of one privy pit that was missed in 1998.

Koehler Longfellow Boardinghouse History

When Ross Curtis recorded the site in 1998, he conducted archival research regarding the Koehler Tunnel and associated mining claims. The following summary is condensed from Curtis' site forms. The tunnel's history begins in 1907, when John Roper staked the Junction claim group over the present-day Koehler Junction area. His interest was probably as a site for a haulage tunnel intended to undercut the Carbon Lake shaft, far east and higher in elevation. Undercutting the shaft would allow miners to work the Carbon Lake vein from the bottom up and haul its industrial-metals ore out the tunnel, thereby greatly reducing operating costs.

Roper commissioned the Koehler Tunnel shortly after staking the claims, and sold the property to the San Antonio Mining Company shortly afterward. San Antonio also owned the Carbon Lake shaft, which had been in production for a few years. By 1908, the company had erected surface facilities at the tunnel including a compressor house, shop, explosives magazine, and the boardinghouse and office discussed here. The tunnel reached the shaft in 1910, but the company went bankrupt a year or two later.

The Summit Copper Mining & Milling Company took over the property in 1915, opened the tunnel in 1916, conducted underground exploration, and produced ore through 1917. The Summit company in turn went bankrupt in 1921, and local miners acquired the tunnel and leased it out for several years. All the while, it can be assumed that anyone working the tunnel stayed in the boardinghouse.

The tunnel went idle until around 1942, when World War II created a demand for industrial metals. The Denver Engineering Company reopened the tunnel under a lease and added facilities to facilitate a high volume of production. Operations continued through the decade and then ceased.

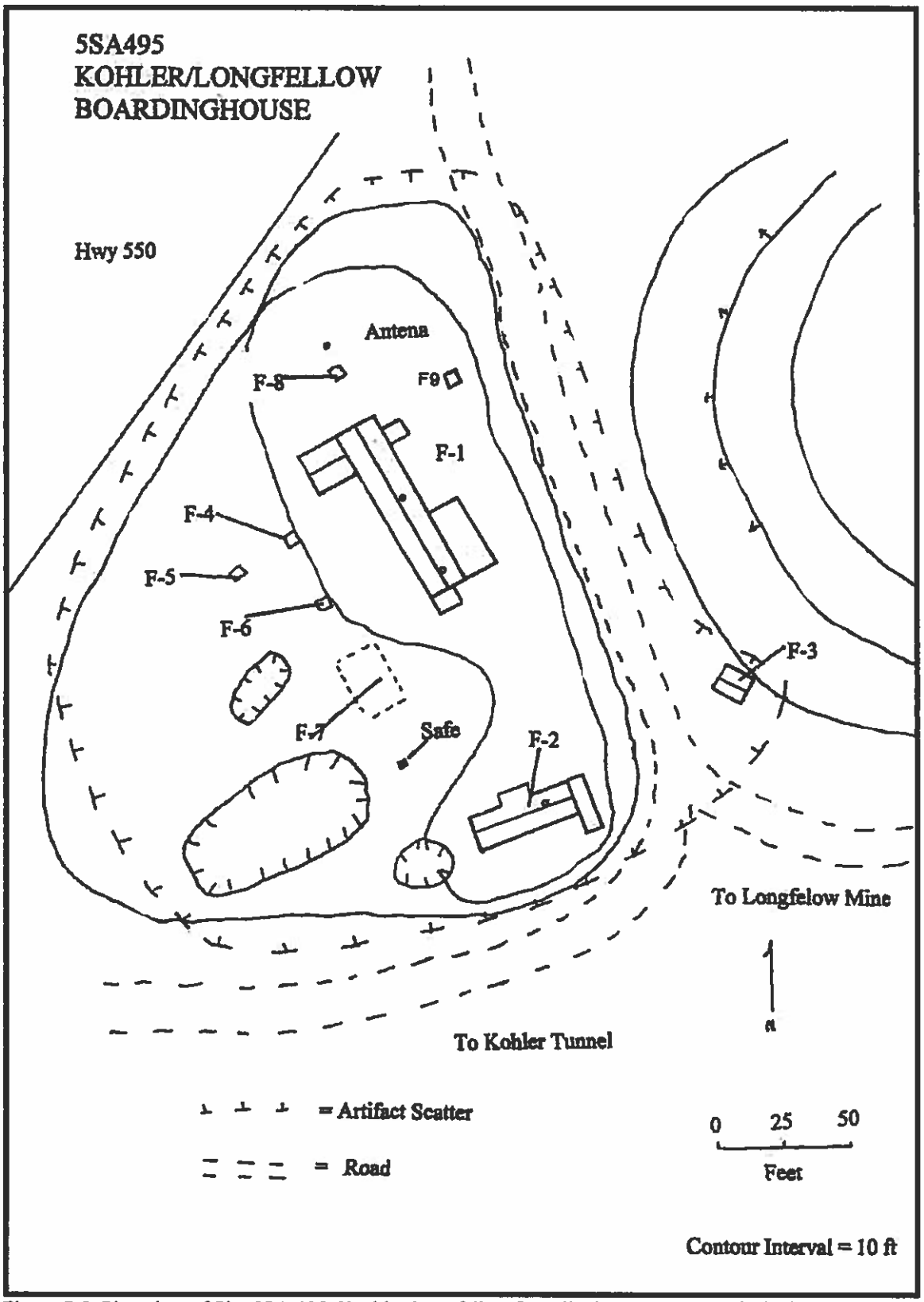

Figure 7.5: Plan view of Site 5SA.495, Koehler Longfellow Boardinghouse. Ross Curtis drafted the map in 1998, when the boardinghouse (F1), office (F2), and transformer house (F3) all stood. The buildings were scraped away with little trace in 2002. The privy pits (F4-F7) are still present. A new privy pit (F9) was discovered in 2017.

Figure 7.6: Northwest view of Site 5SA.495, Koehler Longfellow Boardinghouse. The boardinghouse, office, and transformer house at one time stood on the knolls at center.

Koehler Longfellow Boardinghouse Site Description

As of around the year 1998, the boardinghouse (F1) stood on the flat surface of a glaciated knoll 42' wide and 145' long. In 2002, property owner Frank Baumgardner bulldozed the building and removed nearly all materials. Presently remaining is the knoll and a flat surface 30'x95' in area with a background sprinkling of small, fine domestic refuse. The flat exhibits bulldozing scars such as turned rocks and barren patches. The boardinghouse was totally removed, and even a footprint or foundation are no longer present. Thin, rocky soil precludes buried yard deposits on the knoll, but deposits are likely down the southeastern edge.

The mine's office and superintendent's quarters (F2) stood on the flat surface of a knoll southeast of the boardinghouse. The building was demolished with the boardinghouse, leaving a rock-strewn flat space with no clear footprint. The knoll is rounded and 55'x60' in area, while the barren patch marking the building's location is 22'x40' in area. A deposit of stove clinker lies on the western shoulder, while a bent lightning rod ground extends out of the southern shoulder. Finely fragmented domestic refuse surrounds the knoll crest, while a mix of stove clinker, soil, and cobbles extends down the western flank. The mix appears to be at least 15 cm thick and probably offers meaningful artifacts.

A transformer house (F3) stood on the northern side of the road, opposite the office. The building was demolished with the site's others, leaving little trace. Presently, a faint, sloped platform 12'x18' in area marks the location.

A series of four privy pits extends across the slope immediately below the boardinghouse platform. The western pit (F4) in the series is a faint depression surrounded by currant bushes. The depression is around 3'x3' in area and 6" deep, with a partially buried timber foundation element defining the southeastern edge. Backdirt is a mound approximately 4' in diameter.

The next pit (F5) is a substantial depression surrounded on the western side by thick willows. The depression is 5'x6' in area and 2' deep, filled with slumped earth. A few artifacts are embedded in the northern rim.

The middle pit (F6) is a faint depression 3'x3' in area and 8" deep. The surface is a mix of seemingly native colluvium and grass, with a few artifacts scattered around.

The eastern pits manifest as a platform (F7) on an otherwise south-facing slope. The bench is 8' wide and 24' long with a pronounced fill-bank and only minor cut-bank. The fill-bank appears to be a backdirt mound from several substantial privy pits or a trench. The area is blanketed with stove clinker, indicating that the location was a waste disposal center. Buried deposits are likely.

A faint depression (F8) exists in thin soil at the knoll's northwestern tip, near the boardinghouse location. The depression was recorded as a privy pit in 1998, but in actuality was too shallow given that bedrock is near the surface. The depression's function is unknown.

When the site was reevaluated in 2017, a previously missed privy pit (F9) was discovered over the knoll's shoulder north of the boardinghouse platform. Hidden by brush, the pit is 3'x4' in area and 18" deep, with grass walls, forbes on the floor, and a few artifacts scattered around. Artifact collectors probed the pit in recent months, turning up what appears to be native earth. The material may merely be a cap over a deeper deposit.

The site currently has a fairly impoverished artifact assemblage considering its long history as a residential complex for multiple workers. Within easy reach of a heavily traveled highway, visitors have taken nearly all large artifacts including bottle and tableware fragments. The assemblage around the boardinghouse platform features a background scatter of fine bottle fragments, wire nails, and stove clinker. Density increases over the knoll's southern shoulder, where residents had thrown most of their refuse. The artifact assemblage associated with the office platform is similar, but also features an extensive clinker deposit over the western shoulder. More artifacts might be hidden by willow thickets farther downslope. A few pieces of lumber are scattered around as well, and several sheets of corrugated sheet iron are downslope and west.

The site has potential for two forms of buried archaeological deposits. First are yard deposits. Residents threw solid waste, including much stove clinker, south of the boardinghouse platform, and west of the office platform. Soil creep and some artifact collecting have churned the deposits until they became a mix of clinker, soil, and cobbles. Depth appears to be around 10-25 cm, but could be deeper. Whole bottles are probably gone, but the buried materials that remain are likely to yield information.

Privy pits are the second type of deposit. All pits except for F8 probably feature caps of soil and cobbles intentionally shoveled over waste, for sanitary reasons. Underneath the caps, the pits might include meaningful artifacts. F7 was initially recorded as a platform, but is actually a privy trench or several pits probably offering the richest deposits.

Koehler Longfellow Boardinghouse Condition and Integrity

Surface features clearly defining the site as a workers' housing complex were destroyed in 2002. The buildings were bulldozed and nearly all materials were subsequently removed, leaving very little to mark their locations. Only generic flat areas lacking foundations or footprints now remain. Visitors have also stripped the site of much of its surface artifact assemblage. Ordinarily, workers' housing complexes offer diverse assemblages with numerous broken bottles, food cans, tableware, food waste, and miscellaneous household items. But now, the assemblage has been reduced to small and generic bottle and tableware fragments, a few largely disintegrated can ends, a handful of butchered bones, and several household articles.

In terms of buried deposits, however, the site's five privy pits (F4-F7, and F9) might not have yet been dug by artifact collectors. Several were probed in recent years, but artifact collectors never progressed more than around 12" below the pit floors, leaving potential for intact buried archaeological deposits.

Demolition of the buildings and removal of most materials have compromised the site's integrity. The generic, difficult-to-define platforms are insufficient to convey design or feeling, while nothing remains to embody materials and workmanship. Proximity to the Koehler Tunnel and Junction and Longfellow mines provides some association, while the setting is characteristic of mountain mining.

Koehler Longfellow Boardinghouse Eligibility Recommendations

When Curtis recorded the site in 1998, he recommended it eligible under NRHP Criteria A, C, and D. OAHP concurred. Although supporting arguments are somewhat vague, Curtis implied that the site was significant for its participation in the Red Mountain district's history (Criterion A). He also observed that the buildings are good examples of their types. With the site bulldozed and the buildings completely gone, the site no longer qualifies under Criteria A and C.

In terms of *Criterion D*, Curtis claimed that the site's surface artifacts and buried deposits would yield information important for understanding mining in the Red Mountain district. But with bedrock close to the surface and soil inconsistent in thickness, questions arise as to the pits' depth. If the pits are shallow, which is quite possible, then the pits might not offer buried deposits of substance. If the pits are deep, however, they could yield good information about the workers and their lifestyle. Subsurface testing is the only means for evaluating whether the pits are deep enough. For this reason, the site should be considered Need Data under Criterion D until the pits' content can be verified.

Koehler Longfellow Boardinghouse Management Recommendations

The Koehler Longfellow Boardinghouse site might be involved in water-quality actions at the nearby Koehler Tunnel and Junction Mine. In particular, the site's two flat knolls have been identified as potential repositories for sediment and waste rock moved from the Koehler Tunnel, Junction Mine, and surrounding ground. Earthwork could exhume some of the privy pits (F4-F7, and F9), while others would become buried with relocated material. The pits would either be destroyed or become unavailable for testing and excavation for content.

Recommendations suggest a two-tier approach for satisfying the Need Data determination. The pits can first be tested with shovel-probes or augers to determine if they in

fact possess buried materials of sufficient depth and volume. If the results are negative, then the pits will not yield important information, and earthwork can proceed. If the results are positive, then the pits should be excavated, preferably by deposit strata rather than traditional 10 cm levels. In recovering information according to Criterion D, use of the site for a repository would pose no adverse effect.

It must be emphasized that the site will almost certainly be avoided to preserve the archaeological deposits as they currently are. The Government is considering another repository.

Site 5SA.826
Koehler Tunnel

The Koehler Tunnel was a substantial mine near the southern end of the Red Mountain Mining District. The tunnel is on the eastern side of a small, natural basin around 11,140', immediately east of Red Mountain Pass crest and Highway 550. A steep talus slope rises above and east of the tunnel, while knolls hemming in the basin are southwest and northwest. A pond lies on the basin floor below the tunnel, drained by a small stream trickling westerly between the knolls. A gravel road heavily used by recreationists passes along the mine's western toe. The tunnel is on a patented claim in private hands.

The tunnel was initially driven in 1907, equipped with a mechanized surface plant by 1910, and produced heavily through the 1940s. The mine featured a massive pad of waste rock, as well as a compressor house, shop, ore bins, and snowsheds. After the tunnel closed, at least four episodes of heavy disturbance destroyed all the above elements, totally compromising the tunnel's integrity as a historic resource. First, the surface plant was demolished and its materials hauled away. Second, some of the waste rock dump was hauled off as low-grade ore, probably in 1966 or 1967. Third, the remaining waste rock was removed and consolidated with the neighboring Longfellow Mine's dump in 1996. Last, the tunnel was bulkheaded in 2003, and a steel bonnet installed at the portal in 2010.

In the year 2000, Ross Curtiss with Durango Archaeological Consultants recorded the tunnel as one feature in a larger site. The project was an inventory of the Red Mountain district, with findings produced on site forms and in the 2000 report *A Cultural Resources Survey of the Red Mountain Mining District, Ouray and San Juan Counties, Colorado*. At the time, site 5SA.826 included the Junction Mine as F1, the Koehler Tunnel as F2, a prospect adit to the west as F3, and a cabin ruin as F4. He recommended the site eligible under NRHP Criteria A and D, and OAHP concurred. Under Criterion A, Curtis felt that the Koehler and Junction were important because they participated in the Red Mountain district's industry. Regarding Criterion D, Curtis stated that the cabin ruin had archaeological potential. Curtis also observed that the site was a contributing element in the Red Mountain district's historic landscape.

In actuality, the Junction, Koehler, and cabin ruin qualify as separate, individual resources. The reasons are:

- Historically, the Junction and Koehler were entirely different operations.
- The Junction had been recorded in 1993 as 5SA.410, and already was its own resource. This fact was not noted in the materials for site 5SA.826, possibly because records were unavailable.

- The Koehler and Junction are mine sites, while the cabin ruin belongs to a larger residential complex (5SA.1613). The subthemes of mining and workers' housing are different.
- The Koehler Longfellow Boardinghouse (5SA.495) is associated with the Koehler Tunnel, but was recorded as its own resource. The cabin ruin would logically be an independent site as well.
- The Koehler and Junction sites have been totally destroyed by waste rock removal and reclamation. The cabin ruin, in contrast, still has limited integrity. That said, all are now recommended not eligible.

Therefore, for the 2017 environmental study, the Koehler Tunnel site has been redrawn to exclude the Junction Mine (5SA.410) and the cabin ruin (residential complex 5SA.1613). Site 5SA.826 is now specific to the Koehler Tunnel, with information provided below.

Koehler Tunnel History

When Ross Curtis recorded the Koehler Tunnel in 2000, he conducted fairly exhaustive archival research. The effort was sufficient to determine the tunnel's history, and more research was unnecessary. A brief history can be found with the Koehler Longfellow Boardinghouse (5SA.495) above.

Koehler Tunnel Description

As it existed in 2000, the Koehler Tunnel had severe integrity problems. Salvage efforts, waste rock removal, and reclamation had destroyed all historic features except for the tunnel portal. In 2003, the tunnel portal was dug out with heavy equipment and bulkheaded, and in 2010, an arched steel bonnet installed to fend off talus.

The tunnel (F1) now features the steel bonnet 6'x8' in-the-clear with an arched ceiling supported by steel I-beams. The new portal is recessed in an excavation scar 25'x40' in area with a talus headwall 24' high.

The area where the waste rock dump and surface facilities had been in the past have been completely bulldozed. Today, a scar of reddish talus, boulders, and waste rock marks the dump's (F2) location. The top-surface is 33' wide and 85' long, stained red from mineralized drainage. A mound of bulldozed debris from the tunnel's original timbering rests on the southwestern end.

Some of the tunnel's facilities were clustered on the basin floor where the dump had been in the past. Waste rock removal, water-quality work, and general bulldozing have converted the facility area (F3) into churned, uneven, and boulder-strewn ground. Two parking places for heavy equipment, several small piles of earth, a drainage runnel, and waste rock occupy a 90'x190' area. A few industrial artifacts such as pipes and rails, as well as a dislodged concrete machine foundation, are mixed in.

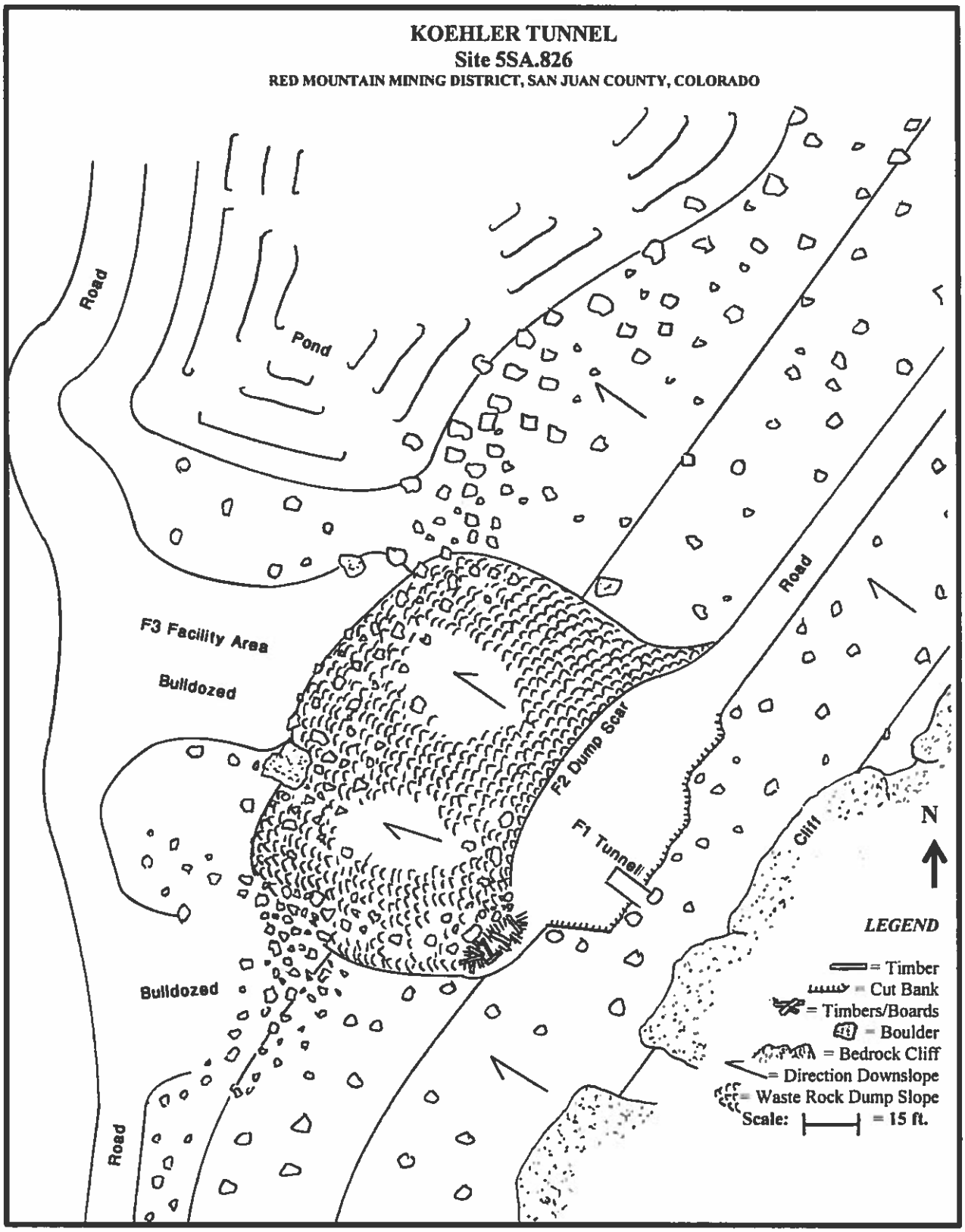

Figure 7.7: Plan view of Site 5SA.826, Koehler Tunnel.

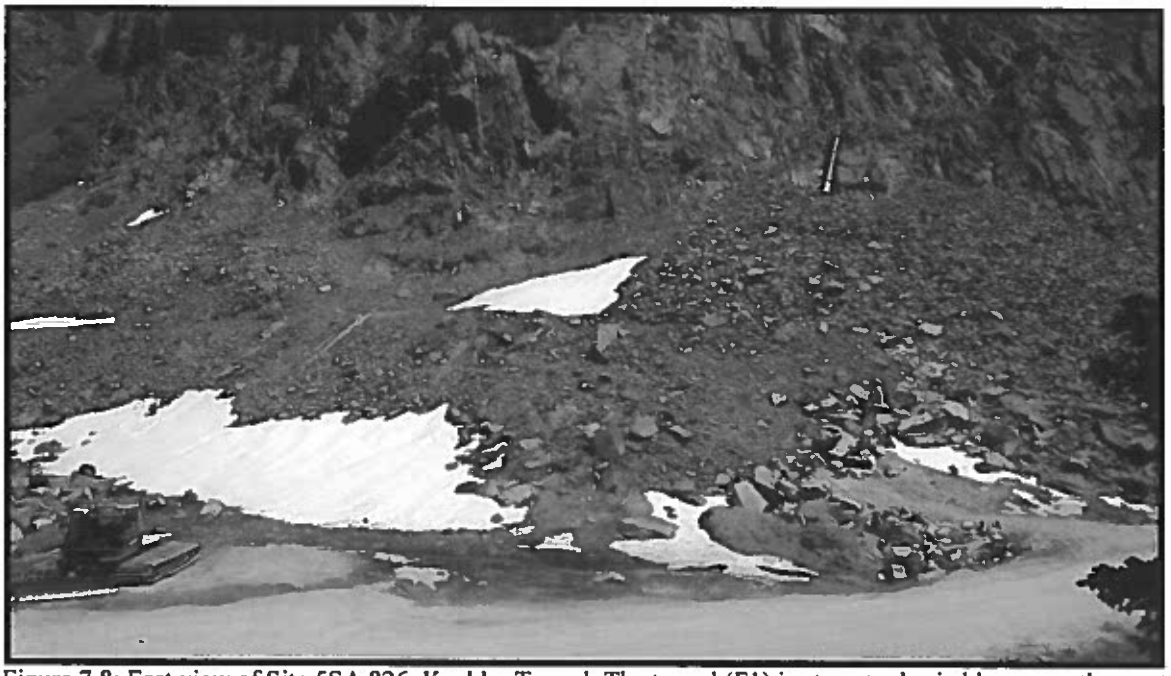

Figure 7.8: East view of Site 5SA.826, Koehler Tunnel. The tunnel (F1) is at center buried by snow, the waste rock dump remnant (F2) is center-left, and the surface facilities (F3) were at bottom. All has been bulldozed multiple times.

The site offers very little in terms of artifacts, and bulldozing has destroyed context for any items that remain. On the waste rock dump's top-surface, near the tunnel, is a push-pile of earth and structural debris from the tunnel's original timbering. The debris includes lumber, timbers, a few logs, wire nails, and severely corroded pipes and mine rails. More of the same is scattered around the rest of the site.

Buried archaeological deposits are absent. The areas where privy pits and refuse dumps might have been located have been bulldozed.

Koehler Tunnel Condition and Integrity

The tunnel complex had already suffered almost total destruction when initially recorded in 2000, and has lost any remaining historical elements since. Some of the waste rock dump was hauled off during the late 1960s, and the remaining portion was removed in 1996. What had been the dump is now a small, scraped pad whose flanks are a mix of pushed boulders, talus, and waste rock. The area where the tunnel is located has been excavated with heavy equipment, and a steel bonnet installed within the portal. The surface plant area was also bulldozed and is unrecognizable as such.

The site has no integrity due to total disturbance. Nothing remains to convey design, materials, workmanship, feeling, or association. The setting, however, is typical of mountain mining.

Koehler Tunnel Eligibility Recommendations

When Ross Curtis recorded the site in 2000, he recommended it eligible under Criteria A and D. The site no longer qualifies for the NRHP because all historic elements have been

destroyed. More specifically, the site is not eligible under *Criterion A* because it has no surviving historical elements, and therefore does not convey its history, content, or associations. The site is also not eligible in terms of *Criterion D* because there is nothing that could contribute meaningful information upon further study.

In 2000, Curtis explained that the Koehler Tunnel is significant as a contributing element in the Red Mountain Mining District's historic landscape. In retrospect, the site's ability to contribute as of 2000 is questionable because it and surrounding area had already been heavily altered by waste rock removal and environmental remediation. That said, even more bulldozing in 2003 destroyed the site's last remaining historical elements, rendering it noncontributing for certain.

Koehler Tunnel Management Recommendations

The Koehler Tunnel will probably be involved in a water-quality action intended to grapple with metals-rich drainage and soil. Any one of the following options might be implemented, with the final choice based on study results. The tunnel's drainage water could be diverted in trenches or pipelines, treated in a small plant, or shunted to settling ponds. More waste rock and surrounding soil could be removed from the site, and run-on runoff control ditches excavated. Regardless of method, any water-quality actions will have no effect because the site is recommended not eligible.

Site 5SA.827
Longfellow Mine

The Longfellow was a productive shaft mine near the southern end of the Red Mountain Mining District. The mine is in a saddle between a mountainside to the east and a low bedrock ridge to the west. Red Mountain Pass and Highway 550 are farther west. The saddle issues a stream descending south past the Longfellow into a small, natural basin surrounded by knolls. In the basin is an intersection of several gravel roads colloquially known as Koehler Junction. Elevation is around 11,160', and the ridge features meadow while the mountainside offers talus and spruce trees. A two-track road heavily used by recreationists passes along the mine's western side.

The Longfellow is a fairly intact site combining engineered structures, buildings, and machinery mostly dating to 1954. Nothing but a single prospect cut remains from earlier activities on the claim. Some of the waste rock dump was taken away as low-grade ore in 1966 or 1967, and the remainder was reclaimed in 1996. In particular, waste rock was moved over from the Koehler Tunnel (5SA.826) to the south, and the consolidated mass at the Longfellow was contoured, capped with ash, and revegetated. The project avoided the surface plant, which Ross Curtiss with Durango Archaeological Consultants initially recorded in 2000. His work was part of a larger study of the Red Mountain district. He recommended the site eligible under Criteria A, C, and D, and OAHP concurred. His findings can be found in the 2000 report *A Cultural Resources Survey of the Red Mountain Mining District, Ouray and San Juan Counties, Colorado*.

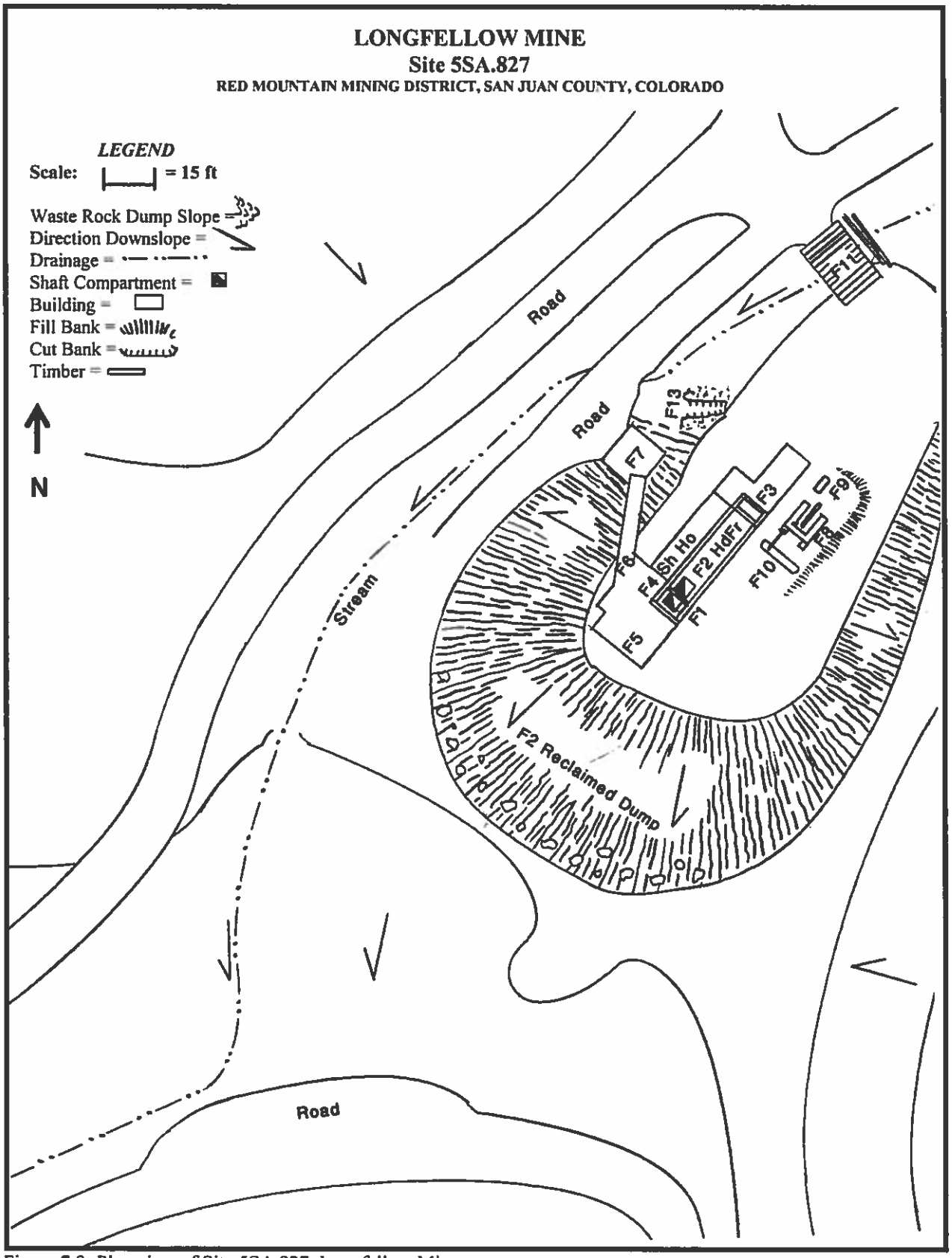

Figure 7.9: Plan view of Site 5SA.827, Longfellow Mine.

Figure 7.10: East overview of Site 5SA.827, Longfellow Mine. The shaft house and headframe stand at center, while the ore bin is in front.

Longfellow Mine History

Prior to recording the site in 2000, Ross Curtis conducted archival research regarding the Longfellow. He detailed the property's early history, but was very general about events resulting in the site as it exists today.

According to Curtis' site forms, D.W. and Mark Ayres, and A.J. and S.L. Moser staked the Longfellow claim in 1881. At that time, the rush to the Red Mountain Mining District was just underway, and prospectors were only beginning to understand local geology. The two Ayres were mining speculators based out of Chicago and focused on the San Juan Mountains. Their Treasure Mountain Mining & Milling Company was one of several ventures, organized mostly to buy promising discoveries, develop the paying ones, and sell the others. Accordingly, the Ayres and Mosers sold the Longfellow to Treasure Mountain, which consolidated the claim with other properties. The price was $750,000, some of which was stock to the Ayres and Mosers. Limited promotion drew in money from investors, but the company did little actual work beyond excavating shallow prospects. With rich ore not forthcoming, the company stopped making scheduled payments in 1886, and the property was put up for auction in Chicago.[12]

Aaron B. Mead bought the claim group in 1887 for a mere $181. He too did little work, and held onto the property until its value increased with renewed activity in the district following passage of the Sherman Silver Purchase Act in 1890. Mead waited too long to start development or find a buyer, because the Silver Crash of 1893 halved silver's value and discouraged interest in Red Mountain district mines. As economic conditions improved by decade's end, however, activity revived in the district. Long-time Red Mountain investor George C. Crawford began a project to develop the district's ore chimneys through a deep haulage tunnel. He bought known silver producers, consolidated them, and commissioned the Joker Tunnel, around one mile to the

[12] Curtis, Ross *Site Form, 5SA.827.*

north. Mead saw that the time was right and sold the Longfellow group to Crawford for $25,000, making a good return on his tiny initial investment. The Joker Tunnel never reached the Longfellow property, but did connect with other well-known mines. Eventually, some of Crawford's holdings went to Sarah Maude Kaemmerling of Philadelphia. The Longfellow, with its prospects, was included.[13]

The Longfellow saw no work until the 1950s, when the claim finally became important, seventy years after the district's initial rush. In 1953, a contractor was widening Highway 550 just south of Red Mountain Pass summit, and unearthed a rich body of silver and gold ore on the Longfellow claim's southwestern end. It was known that a vein within the claim confines did offer such ore, but that the material had been too complex to be profitable with circa 1900 mining and milling technology. The new discovery not only confirmed the vein's existence, but also proved that the ore was of commercial grade. In response, Kaemmerling hired engineer Warren C. Prosser, expert in the region, to conduct a core-drilling exploration program and track the vein's extent. Prosser's findings were favorable, and he recommended sinking a shaft near the claim's center. A small crew began the new shaft as soon as snow melted in 1954, and reached 150' when an unusually heavy monsoon forced miners out.[14]

Down to that point, the vein yielded ore in commercial tonnages, and Prosser thought that the shaft could become a well-paying mine with proper development and facilities. Thus, when the weather prevented work in the shaft, he hired several more miners and had them erect a formally designed surface plant. In following standard practice, the shaft was divided into compartments: one for a hoisting vehicle and other as a manway with ladders. The hoisting system that winched the vehicle up the shaft included a mechanical hoist, and a timber headframe to direct the hoisting cable down the shaft. A shaft house enclosed these facilities, as well as a blacksmith shop, timber dressing station, and bay for parking portable air compressors. A prefabricated Butler building served as a change house. Although records are unclear, Prosser was almost certainly the engineer who designed the surface plant, which he modeled after a general template as old as the Red Mountain District itself.[15]

Under Prosser, a crew of five continued developing the vein through several levels, and generated around ten tons of ore per month as a byproduct. Kaemmerling apparently died in 1957, affecting what happened at the Longfellow. With no family members interested in managing the operation, Kaemmerling's executors leased the new operation out to the Standard Mining Company, which continued where Prosser had left off. Seemingly, Prosser was not impressed enough with the Longfellow to lease it himself, and so turned his attention to his North Star Mine near Silverton.[16]

Standard Mining thought it had a ready-made ore producer and conducted further development, all while enjoying an output of three tons per day. But then, another bulldozer discovery brought a halt to the firm's planning. The bulldozer was scraping the ground south of the shaft and blundered into a chimney of ore around 20' in diameter. The quality was pure, and the press compared the material to the original Guston and Yankee Girl stockworks of the early 1880s. The Kaemmerling estate did not renew Standard Mining's lease when over at year's end, and took another year to consider its options.[17]

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[13] Curtis, Ross *Site Form, 5SA 827*.

[14] "Bulldozer Uncovers Lode of Silver Ore" *Denver Post* 8/27/1957; Mine Inspection Reports: Longfellow.

[15] Mine Inspection Reports: Longfellow.

[16] Mine Inspection Reports: Longfellow.

[17] "Bulldozer Uncovers Lode of Silver Ore" *Denver Post* 8/27/1957; Mine Inspection Reports: Longfellow.

The Kaemmerling estate decided to cash-in and put the property up for sale in 1959. The Haliburton Oil Producing Company was the buyer, and dispatched a crew of four to extract the chimney first, and then consider underground operations later. The chimney was ultimately a surface deposit requiring the entire working season of 1960 to remove.

Meanwhile, the shaft had flooded, and with the chimney now gone, Haliburton evaluated how best to resume underground operations. In 1961 and 1962, several miners unwatered the workings, replaced rotten timbering, and installed new machinery including an Ingersoll-Rand Type 10 belt-driven, two-stage, cross-compound compressor. This machine in turn ran multiple rockdrills underground, and an air-powered hoist that winched an ore bucket to the surface.[18]

For the next three years, a crew of three miners alternated between underground development and extracting small lots of very high-grade ore. The mine was idle long enough at the end of 1965 to allow the shaft to flood again. It was pumped out one last time for a production run in the summer of 1966. The Longfellow's dump was hauled off as low-grade ore at the same time, and then the property saw no further work of substance.

Longfellow Mine Description

Presently, the Longfellow features all structures and buildings erected in 1954, except for the corrugated sheet iron Butler building, which is gone. The 1962 compressed air system, and especially the Ingersoll-Rand Type 10 compressor, also remain mostly intact. Despite the surface plant's relatively recent vintage, it is nearly identical in design, appearance, and components to those of the 1880s and 1890s.

In overview, the Longfellow had a mechanized hoisting system, blacksmith and repair shop, timber dressing station, and room for parking portable compressors all enclosed in a frame shaft house. A snowshed covered a track leading north to an ore bin. The compressor was in a separate room attached to the shaft house's southeastern side.

The hoisting system consisted of a compressed air-powered hoist that winched an ore bucket up into a headframe standing over the shaft. Warren C. Prosser implemented a decades-old design for the system, but substituted modern machinery.

The shaft (F1) itself is fully intact and noteworthy because it was professionally designed and constructed according to a traditional design. The interior has been divided into three compartments. The hoisting compartment is at the southwest end, is 4'x4' in-the-clear, and features hardwood guiderails for an ore bucket hoisting vehicle. A utility compartment is at center, and is 1½'x4' in-the-clear with a 4" compressed air main. The manway is at the northeastern end, and is 2½'x4' in-the-clear with ladders. The entire shaft has been timbered with closed-type plank cribbing, and has been carefully fitted with a steel grate closure.

The headframe (F2) is a well-made two-post gallows type on a timber foundation supported by blocks. The gallows structure is approximately 30' high and 9' wide straddling the shaft, and consists of 10"x12" timbers assembled with notch-joints and steel plates. The foundation is also 30' long, 9' wide, and assembled with 12"x12" timbers with notch-joints for the gallows. Backbraces descend from the crown to the foundation's northeastern end to reinforce the gallows against the hoist's pull. The timbers are in 15' segments assembled to full length with scarf joints. The sheave wheel, now gone, spun in bearings bolted to two 12"x12" timber blocks on the headframe's crown. Above that is a small frame of 2"x10" planks for lifting the sheave during servicing. Overall, the headframe is in good condition.

[18] Mine Inspection Reports: Longfellow.

The mine's hoist was a single-drum compressed-air unit bolted to a timber foundation (F3) incorporated into the headframe's northeastern end. The foundation is 6'x9' in plan and consists of 6"x12" cross-timbers bolted in between the foundation members. Bolts are in the timbers, marking the hoist's footprint.

The shaft house (F4) is 16'x57' in plan with an offset gabled roof, 7' high along the northwestern eaves, 11' high along the southeastern eaves, and 14' high at the peak. The southwest end features a 12' high cupola enclosing the headframe. The building's northeastern 24' have been dismantled, and the remaining section is now 33' long. The walls consist of corrugated sheet iron over lap-edge planks nailed to a 2"x4" post-and-girt frame, while the roof is more corrugated sheet iron on 1"x7" plank cross-members on 2"x8" rafters. Portions of the roof's support have been incorporated into the headframe.

The interior is divided for different functions. The shaft is in the south corner, and workspace is in the western. A storeroom with shelves and parts bins is in the north corner, and a gallery for manipulating large items is in the eastern. The building is in fair condition, but highly mineralized waste rock is oxidizing the bottom 2' of woodwork and sheet iron.

One of the mine's operators built an addition (F5) around the shaft house's southwestern end. The addition, partially collapsed, is 15'x21' in plan with two adjoining sections. The southwestern is 9'x15' in plan with a shed roofline 7' high at the southwestern side and around 10' against the shaft house. The walls are corrugated sheet iron on 1"x8" planks nailed to a 2"x4" post-and-girt frame. The roof is more corrugated sheet iron on 1"x8" boards over 2"x6" rafters. An unattended stove burned the floor, which consists of planks. The western extension is 9'x12' in plan with similar walls and roof. All walls feature 29"x35" windows, while a 36"x84" doorway breaches the northwestern side. The walls have since fallen away, allowing the roof to drop inward.

When miners produced ore underground, they loaded it into an ore bucket winched into the headframe. A steel catch upended the bucket and spilled the contents into an ore car, which one of the miners pushed along a rail line. The track passed out the shaft house, and north through a corrugated sheet iron snowshed to an ore bin. The miner then dumped the contents into the bin for storage between truck shipments.

Today, most of the rail line is gone, but the snowshed (F6) remains in place. The snowshed is 5' wide and 22' long with a shed roofline 6' high on the western side and 8' on the eastern. The walls consist of corrugated sheet iron nailed to a post-and-girt frame based on 4"x4" timber posts. The eastern wall has blown away, and snow-loads have gradually pushed portions of the roof inward.

The ore bin (F7) is a well-built and professionally executed structure designed for truck access. Miners input ore by dumping cars from the snowshed, while trucks took on ore for shipment in two ways. One was through a chute in the northwestern wall, and the other was backing into a bay underneath and receiving ore via sliding hatch. Overall, the bin is 14'x14' in plan and 14' high covered with a superstructure an additional 9' high. The bin itself is a hopper with V floor 5' deep elevated on timber pilings. The floor consists of 2"x12" planks nailed to diagonal 8"x8" timbers and five 8"x8" timber stringers. The assembly spans five posts tied by additional 8"x8" girts, carefully fitted together with notch-joints, bolts, and heavy nails. The superstructure is a basic shed 14'x14' in plan and 9' high at the southwestern side, made of corrugated sheet iron nailed to 2"x4" cross-members and 2"x6" rafters.

The bin is structurally sound and just beginning to deteriorate. Corrugated sheets are blowing off, admitting rain and snow. The sliding hatch is also gone, and the bay underneath is accumulating sediment.

The 1962 compressor (F8) is a mostly intact two-stage, cross-compound Ingersoll-Rand Imperial Type 10 at one time belted to a drive motor. In general, cross-compound compressors featured two cylinders and drive-rods flanking a central flywheel. Air was partially compressed in one cylinder, passed through an intercooler, and was fully compressed in the other cylinder. The flywheel provided momentum and served as a belt pulley harnessed to the motor. The Longfellow's unit is bolted to a characteristic U-shaped concrete foundation 8½'x9' in plan and 4' high. The machine still features its various linkages, bearings, intercooler, and air main.

The motor (F9) that powered the compressor remains partially assembled on its concrete foundation. The motor itself is 1' wide and 4' in diameter on a bedplate 2'x5' in plan. The assembly is in turn bolted to a concrete foundation 3½'x7' in plan and 2' high. The motor's axle was taken out to retrieve the copper windings, and now lies askew.

Like other properly designed compressed air systems, the one at the Longfellow included an air receiving tank. Air pressurized by the compressor was piped into the tank, which moderated pulsations and irregular flow. The tank (F10) currently rests on timber blocks adjacent to the compressor. The tank is an older riveted iron unit 4' in diameter and 12' long, with a clean-out port in one end and fittings for air mains on top. One fitting has been plugged, while the other still features the main and a valve. An additional pipe assembly remains from the pressure valve, which is gone. In general, small fittings are unusual elements because they tend to be removed.

When Prosser prepared the site for the surface plant in 1954, he built a bridge (F11) over the stream so trucks could deliver materials. Still present, the bridge is an assembly of cross-hatched 3"x12" planks over 10"x10" timber stringers. The deck was 15' long and 22' wide, but the northern 8' has rotted and collapsed. The remainder is usable but blocked off by boulders.

As miners developed the underground workings, they used ore cars to dump waste rock south and southwest from the shaft house. Over time, they built up an extensive pad of highly mineralized material that acidified water and leached metals into the stream. Some of the dump was hauled away as low-grade ore in 1966 or 1967, and the remainder improved for water quality in 1996. The existing mound (F12) is 120'x125' in area and 15' thick, and its flanks have been revegetated and paved with alluvial rocks as armor against erosion. The surface immediately around the mine's surface plant is the only original portion.

A prospect cut (F13) west of the shaft house is site's only feature predating 1954. Probably during the early 1880s, prospectors blasted the cut into the stream channel's southeastern side. The cut is now a ragged incision in bedrock 4' wide and 13' long.

Regarding artifacts, the site offers a fairly sparse assemblage for a mechanized mine worked over the course of ten years. As can be expected, most structural materials are incorporated into the buildings and structures. In the case of Longfellow, this includes the headframe, shaft house, ore bin, and snowshed. More structural materials are sprinkled around the site. Normally with such sites, industrial debris such as shop refuse, machine parts, and hardware can be expected around the shaft house and waste rock dump. Little industrial debris remains, however, for three reasons. First, much was lost to waste rock removal. Second, a highly caustic environment disintegrated many more items. Last, recreationists have taken much of what remained.

Buried archaeological deposits are absent. Privy pits could not be identified, and the site lacks concentrated refuse dumps. It may be that the pits and refuse were on the waste rock dump, and destroyed during reclamation.

Longfellow Mine Interpretation

The Longfellow is a good example of how even as late as the 1950s, experienced engineers designed shaft mines according to a template dating back to the 1870s. In the template, a shaft house enclosed all of a mine's critical facilities including the shaft collar, hoisting system, shop, and space for dressing timbers and sorting ore. During the 1880s, most shaft mines in the Red Mountain district followed the template, with the Longfellow continuing the tradition seventy years later.

Given that Warren C. Prosser was the chief engineer developing the Longfellow in 1954, it can be assumed that the surface plant was his creation. Prosser was professionally trained at the Colorado School of Mines in 1907 and gained considerable experience in San Juan County in subsequent decades. During the 1910s, he was manager and engineer at the Intersection Mine, a shaft operation in Maggie Gulch, and afterward ran the North Star Mine on Sultan Mountain near Silverton.

Among an older generation of engineers, Prosser was well acquainted with traditional surface plant design, which he implemented at the Longfellow. As with other mines from Prosser's era, a shaft house enclosed the Longfellow's critical facilities, while an ore bin was separate but connected via a snowshed. Prosser also followed tradition with smaller details such as closed-cribbing shaft timbering, and the shaft's neat division into hoisting, utility, and manway compartments. Further, the headframe was a stout two-post gallows type, while the hoist anchor was incorporated into the foundation timbers. In keeping with proper engineering, Prosser ensured that the headframe, shaft house, and ore bin were professionally assembled with quality, first-generation materials. This stands in contrast to practices common to the 1950s, whereby mining outfits extensively used salvaged materials to save time and costs. Prosser's only obvious then-modern introductions were some construction materials such as steel brackets, and the hoist, which was a compressed air unit.

At the same time, property owner Sarah Maude Kaemmerling fully committed to the Longfellow and invested heavily. She not only hired Prosser, a professional engineer, but gave him latitude to execute a costly surface plant. As designed and built, Prosser's plant was intended to facilitate regular ore production for years, and with minimal improvement or maintenance. Accordingly, the facilities remained in service for more than a decade. The only major change was Haliburton's installation of an expensive Ingersoll-Rand Type 10 compressor in 1962. The machine reflects Haliburton's confidence that the Longfellow would continue producing for years. But the mine went quiet in 1966 for unknown reasons.

Confirming the mine's operation timeframe through material evidence is difficult because dateable artifacts are few. Plastic hose and a 55-gallon drum are general to the 1950s-1970s.

Longfellow Mine Condition and Integrity

The site is in fair condition. All the principal buildings and structures are present. The shaft has been capped with a grate and is well-preserved. The headframe stands complete, and its woodwork appears sound. The shaft house's core stands in good condition, although the

northeastern extension was removed long ago. The timber-dressing room has mostly collapsed, but its wall sections remain partially assembled and interpretable. The snowshed and ore bin are standing but deteriorated. The compressor retains most of its small parts and fittings, but the drive motor was disassembled. The waste rock dump is the only element that experienced major change, having been reclaimed in 1996. The dump was contoured, paved with alluvial rocks, and revegetated with grass. The dump is non-contributing because it no longer retains its original appearance, surfaces, or footprints.

The site retains good integrity. Design of the overall surface plant is readily apparent, and the site strongly conveys feeling and association of mining. Individually, the buildings, structures, and compressor fully embody their designs, materials, and workmanship. The mountain setting is characteristic.

Longfellow Mine Eligibility Recommendations

When Ross Curtis evaluated the site in 2000, he recommended it eligible under Criteria A, C, and D. (Criterion C was not checked on the Management Data Form, but the significance statement notes Criterion C). OAHP concurred, and the determination is official. Regarding Criterion A, Curtis implied that the site was significant for its participation in the Red Mountain district's history. In terms of Criterion C, he also observed that the shaft house and machinery are good examples of their types. For Criterion D, he claimed that the site's residential features will yield meaningful information upon further study.

The 2017 evaluation supports *Criteria A and C*. Regarding Criterion A, the Longfellow was a fairly important ore producer 1954-1966. San Juan County's mining industry had declined sharply in 1954 when the Shenandoah-Dives Mill temporarily closed, and the county's economy suffered deeply. The Longfellow and other mines like it thus assumed importance by providing needed jobs and support for the local economy through ore production.

In terms of Criterion C, the Longfellow is an outstanding example of its resource type, a mechanized shaft mine. The mine's surface plant is mostly intact and offers a well-preserved shaft, headframe, shaft house, ore bin, and two-stage belt-driven duplex compressor. In general, shaft mines with fairly complete surface plants are very rare in Colorado. Altogether, the Longfellow embodies typical surface plants for shafts, and conveys details regarding design, engineering, architecture, materials, workmanship, and operations.

The Longfellow qualifies under *Criterion D* because it will yield important information. Originally, Curtis claimed that the site included residential features with buried archaeological deposits, but neither actually exists. It seems likely that Curtis was really referring to the nearby Koehler Longfellow Boardinghouse (5SA.495), which does in fact feature deposits. At the Longfellow Mine, however, Criterion D still applies, but in a different way. Specifically, intensive study of the standing structures and intact compressor will enhance the current knowledge of how shaft mines were designed, equipped, and engineered.

Longfellow Mine Management Recommendations

The Government is currently studying the best methods for improving water quality in Koehler Junction basin. Streams flowing into the basin might be diverted, while metals-rich waste rock and sediment could be moved to dry repositories. The stream trickling around the

Longfellow Mine's western side may be redirected, and the ground west and south of the surface plant could be used as a repository. Work would be conducted with heavy equipment and trucks.

The ground around all sides of the surface plant, except for the northeastern, is non-contributing. Decades ago, waste rock removal and reclamation changed the areas east and south of the surface plant. Road construction and more reclamation heavily altered the area west of the surface plant. These areas were subjected to major earthmoving at the time and no longer possess their historic appearances or surfaces. Further, mine's waste rock dump was also reclaimed and no longer features its original shape, profile, or surfaces. Therefore, earthmoving and alternative uses of the above areas will have no impact on the site's intact, historic portion.

It is recommended that the mine's surface plant be completely avoided and left as is by all actions. By avoiding the surface plant, and by restricting activity to previously disturbed areas, water-quality work will pose no adverse effect to the site.

Site 5SA.1613
Workers' Housing Complex

The resource is an archaeological site encompassing an explosives magazine, a cabin platform, and a cabin ruin. The Junction Mine (5SA.410), Koehler Tunnel (5SA.826), and Longfellow Mine (5SA.827) are all nearby, and any could have used the magazine and cabins. The features are scattered on flat topographic points extending outward from a low hill around 11,140' elevation. The hill forms the southwestern side of a natural basin immediately east of Red Mountain Pass. Another hill is opposite and northwest, and the flank of a mountain is east. The hills feature thin soil over bedrock, supporting meadow and spruce forest.

The Koehler Tunnel is on the basin's eastern side, the Junction is northwest, and the Longfellow is to the north.

In the year 2000, Ross Curtis with Durango Archaeological Consultants recorded the Koehler Tunnel as 5SA.826 and included a portion of the workers' housing complex discussed here in his original site boundaries. The magazine was documented as F3 in Curtis' site, and the cabin ruin as F4. The cabin platform and a prospect pit were not recognized at the time. The Koehler Tunnel has been re-recorded for this current project, and its boundaries contracted to those features directly attributable to the tunnel alone. The Koehler Tunnel thus becomes its own discrete site. The magazine and cabin ruin, in turn, have been added to the workers' housing complex discussed here because their association with the tunnel is uncertain, and logically form a larger site with the cabin platform and pit. As noted, the cabin ruin, magazine, and cabin platform could have been used by the Junction, Koehler, and Longfellow, and should be recognized as their own entity.

<u>Workers' Housing Complex History</u>

When Curtis recorded the Koehler Tunnel, he conducted fairly extensive research and made no mention of the cabins in his findings. His account of the tunnel did note the general existence of a magazine, but its location was not specified. The magazine could have been near the tunnel and destroyed by property development in 2002. Further research for this project found no information specific to any of the site's elements.

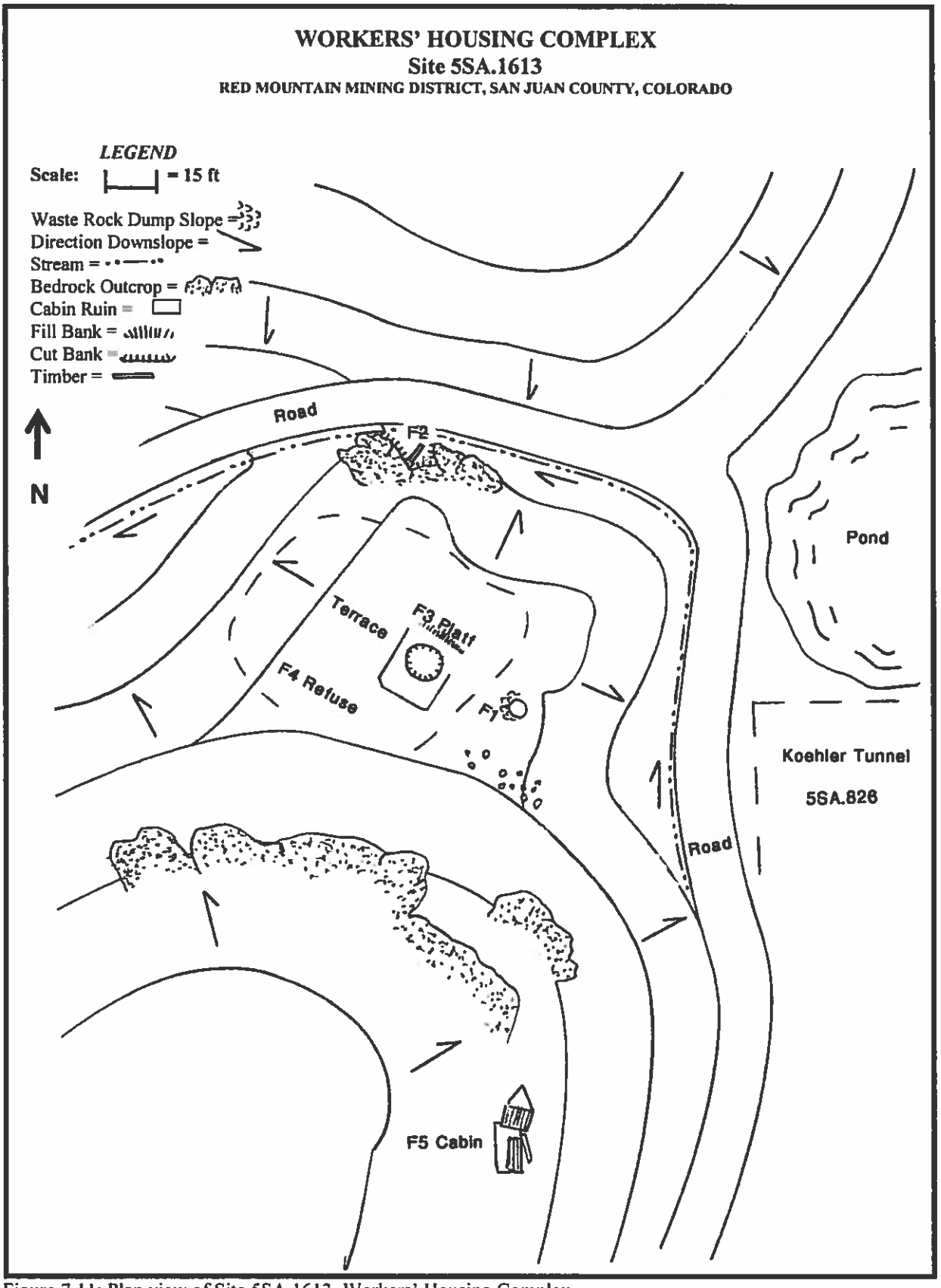

Figure 7.11: Plan view of Site 5SA.1613, Workers' Housing Complex.

Borrowing from Curtis' work, the Koehler Tunnel was initially driven in 1908 and operated intermittently into the mid-1920s. The tunnel was in production again through the 1940s. The Longfellow, in contrast, saw its principal periods of operation during the 1910s, 1930s, and 1950s. Curtis made no mention of the Junction Mine, but it too was probably active between the early 1900s and 1920s. Workers employed at any of these mines could have inhabited the cabins, as mentioned below.

Workers' Housing Complex Description

The site's northern portion features a natural, flat terrace elevated around 30' above the surrounding basin. The terrace is a topographic point extending north from a larger hill, and its top-surface is around 66'x75' in area and unimproved. Probably during the mid-1880s Red Mountain rush, prospectors dug a pit (F1) on the eastern shoulder and bored a short adit (F2) into the northern flank. They may have also erected a cabin (F3) on the surface.

The pit (F1) is a simple sampling excavation 5'x6' in area and 2' deep, with waste rock shoveled west. Its association with the adit and cabin remain unknown.

The adit (F2) was driven southeast underneath the terrace. Prospectors blasted out a niche 6'x9' in area with a headwall 14' high, and then continued underground. The result was a passage 5' wide and 8' long opening into a room 8' in diameter and 7' high. Later, operators of one of the nearby mines adapted the adit as an explosives magazine. Workers installed heavy timbering and two plank doors spaced 6' apart in the niche. The doors were made of 2"x12" planks hinged to 12"x12" timbers, and the outer one featured a forged lock-hasp to prevent theft. The timbering has partially collapsed and wrecked the outer door, while burying the inner with rubble and debris. Inside the adit, the ceiling has fallen in.

At one time, a cabin stood near the terrace's middle. Residents chose the location for its well-drained surface, and excavated a shallow pit as a storage cellar. Presently remaining is flattened ground (F3) 20'x20' in area with the cellar at center. The cellar is 5'x6' in area and 18" deep, and completely slumped in. The surface is mostly blanketed with ground-cover, although bare soil reveals no artifacts except for stove coal and clinker. A sparse scatter (F4) of finely fragmented bottle and tableware fragments, coal, and stove clinker surrounds the cabin platform. The scatter is widely disbursed and offers no large or conclusive items. Thin soil over shallow bedrock precludes buried deposits on the platform, in the cellar pit, or amid the refuse scatter. Cut nails date to the 1880s, while wire nails are later.

The cabin ruin (F5) lies on a prominent topographic point, on the eastern side of the area's hill. The point, with its broad, flat surface, is around 40' higher than the other cabin platform, and around 70' higher than the surrounding terrain. When standing, the cabin was a front-gabled frame building 10'x12' in plan, 7' high at the eaves, and 14' thigh at the gable peak. The walls consisted of corrugated sheet iron over 2"x12" plank sheathing, on a 2"x6" post-and-girt frame. The foundation was no more than boards and floor joists on roughly leveled earth. The roof had the same basic materials as the walls, on 2'x6" common rafters with collar-ties. The roof also featured a 34"x34" inch entry port. The cabin has slumped south, the walls and roof remaining mostly intact but fallen over. Thick willows and tundra surround the ruin, concealing small artifacts. But soil is too thin to harbor meaningful buried deposits.

The site offers a very impoverished artifact assemblage. In general, Red Mountain Pass is a poor preservation environment for iron and perishable items because natural conditions are acidic. Whatever resilient artifacts such as glass and ceramics that might have survived have

been taken by recreationists. The cabin ruin has almost no domestic refuse, while the other cabin platform offers stove clinker, a few small, generic bottle and tableware fragments, and several butchered bones. The explosives magazine and cabin ruin are the only features with structural materials.

Buried archaeological deposits are absent for several reasons. First, the environment is not conducive because soil is too thin on the flat benches, while the surrounding slopes are too steep. Second, privy pits could not be identified and may not have existed in the past, again because soil is too thin. Last, the site has no refuse dumps or major artifact concentrations.

Workers' Housing Complex Interpretation

All the site's features are difficult to date with certainty because archival information and clearly dateable artifacts are absent. The prospect pit and adit were probably created during the mid-1880s, when the Red Mountain district saw its principal period of surface prospecting. The cabin platform features cut nails, placing it during the 1880s, probably the mid-1880s prospecting period. Wire nails, however, indicate that the cabin was repaired during the 1890s or afterward. Materials, workmanship, and amethyst bottle glass suggest that the nearby cabin ruin was built during the 1900s or 1910s.

Miners in any of the nearby operations could have inhabited the two cabins. In any case, their occupation was very brief, reflected by remarkably sparse artifact assemblages. Although artifact collectors have removed large items, sustained residence would have generated measurable volumes of finely fragmented domestic refuse.

The explosives magazine might have been used by the Koehler, Junction, or Longfellow operations, and possibly all three. The magazine began as a prospect adit, and was adapted for safe explosives storage with stout inner and outer doors. Wire nails date the magazine sometime after circa 1890.

Workers' Housing Complex Condition and Integrity

The site is in mixed condition on an archaeological level. The magazine is identifiable, but its portal collapsed and partially buried the support timbering and plank doors, which are falling apart. At one time, a cabin stood on the natural bench above, but it was removed and left almost no trace. A depression and faint footprint mark the location. Recreationists cleaned the associated refuse scatter of everything except for stove clinker and a few small bottle and tableware fragments. The cabin ruin southwest and high on another bench is readily interpretable, with intact wall sections and gable roof. Artifacts representing historic use are gone.

The site has limited integrity. The site does not convey an overall design because the features are haphazardly located and apparently placed as needed. The site also has little feeling, but its location near the Longfellow Mine and Koehler Tunnel provide association with mining. Only the cabin ruin offers enough substance to convey its materials and workmanship. Bulldozing, reclamation decades ago, and road grading have compromised the setting.

Workers' Housing Complex Eligibility Recommendations

The worker's housing complex is recommended not eligible for several reasons. Regarding *Criterion A*, the site is difficult to date, and its historical associations remain uncertain. Archival information and material evidence are inconclusive for any of the site's features. The prospect pit and adit were probably created during the Red Mountain district's mid-1880s rush, but the cabin platform may have been a little later. Further, the cabin ruin could have been erected anytime 1900s-1910s. The buildings were certainly residences, but it remains unknown which mine they are associated with. Further, the cabins saw very little use, and were therefore probably unimportant.

In terms of *Criterion B*, research was unable to establish the presence of significant people.

Under *Criterion C*, the site is not a good example of its resource type, a workers' housing complex. Integrity is insufficient. The existing cabin ruin is the only clearly identifiable housing feature. The other cabin is represented by an almost undetectable platform, while other character-defining elements expected at workers' housing complexes, such as privy pits, foundations, footpaths, and refuse dumps, are absent. Better examples exist elsewhere.

For *Criterion D*, the site is highly unlikely to yield meaningful information upon further study. Buried deposits such as privy pits and refuse dumps are absent, while almost no surface artifacts remain.

Workers' Housing Complex Management Recommendations

The site might be involved in water-quality actions involving the nearby Koehler Tunnel and Junction Mine. In particular, the northern flat terrace could be used as a potential repository for sediment and waste rock moved from the Koehler, Junction, and surrounding ground. Preparatory earthwork would likely scrape away the faint cabin platform and adjacent prospect pit, while the explosives magazine may be impacted by improvements to the stream trickling past. Any remaining elements would then be buried by relocated material. The cabin ruin, however, will be avoided. With the site recommended not eligible, any water-quality actions would have no effect.

IF 5SA.410
Junction Mine

As a resource, the Junction Mine is little more than a tunnel draining mineralized water. The tunnel featured a waste rock dump and surface facilities in the past, but these were erased by bulldozing, waste rock removal, and reclamation in 1996 and 1997. The tunnel is on the northeastern edge of a natural basin hemmed in by low bedrock knolls, elevation 11,150'. Behind and east is an extremely steep west-facing slope featuring a mix of talus, bedrock cornices, tundra, and spruce trees. A bulldozed road wraps around the tunnel's northern and eastern sides on its way to the heavily scraped Koehler Tunnel (5SA.826). The Longfellow Mine (5SA.827) is farther north, a pond is west, and talus south.

The Junction Mine has been previously recorded twice. The first was by DRMS for a mine closure project in 1993. DRMS provided only a few notes on an MDF form and its in-house worksheet, while documenting no substantive information about the resource. DRMS then recommended the tunnel not eligible, and OAHP concurred. A photo reveals that the tunnel has changed little since 1993. The second documentation was in 2000, when Ross Curtis included the Junction in his larger Koehler Tunnel site (5SA.826). Curtis designated the Junction as F1 but provided no information or history. Curtis then recommended the entire site eligible under Criteria A, C, and D.

For the 2017 environmental study of the Koehler Junction area, the Koehler Tunnel site has been reduced to those features directly attributed to that specific resource. The Junction has been separated out to distinguish it as an independent mine, and in recognition of its original 5SA.410 number. With the Junction being merely a tunnel with no other features, it is reevaluated here as an IF.

Junction Mine History

Archival research found no information specific to the Junction Mine. It could have been initially developed any time during the 1880s or 1890s, and may have been worked with the Koehler Tunnel 1907-1921.

Figure 7.12: North view of IF 5SA.410, Junction Mine. The tunnel is at center. Note the bulldozed ground and lack of features including waste rock.

Junction Mine Description

Historically, the Junction Mine had surface facilities, but road grading, waste rock removal, extremely caustic environmental conditions, and heavy sediment deposition have erased whatever was left. Currently remaining is a tunnel portal with deteriorated timbering, and trickling highly acidic water. To the immediate west, the ground is a mire of mineral deposits, mud, moss, and grass. The tunnel extended east, and the portal was reinforced by cap-and-post

timbering lagged with 3"x12" planks. The timbering is 6½' wide, 6' high, and at least 30' long, but most has been buried with bulldozed waste rock. The outer timber set has partially collapsed, and the interior is filled with muck to a depth of 4½'.

Junction Mine Eligibility and Management Recommendations

The Junction Mine is recommended not eligible. The tunnel's history is unknown, and so its significance under *Criterion A* is uncertain. Even if a history had been determined, the tunnel lacks sufficient integrity to embody its past. Similarly, the tunnel lacks sufficient integrity to qualify for *Criterion C*. Bulldozing, reclamation, sediment deposition, and caustic conditions have reduced the resource to a tunnel portal alone. Associated features necessary for eligibility are gone. In terms of *Criterion D*, the IF will also not yield important information upon further study.

The Junction Mine will likely be the subject of water-quality work. The tunnel is the source of mineralized drainage, and surrounded by metals-rich sediment and rock. Water-quality actions may divert, capture, or treat the drainage, while surrounding ground could be removed with heavy equipment. The tunnel portal will likely be destroyed. With the resource recommended not eligible, any proposed actions will have no effect.

Figure 7.13: Northeast view of IF 5SA.1614, Prospect Cut.

IF 5SA.1614
Prospect Cut

Prospectors probed the southern-most bedrock outcrop on the shoulder of a prominent topographic point. Extending south into Koehler Junction basin, the point features a flat surface 11,140' elevation, and extremely steep skirts. The point is also northeast of Red Mountain Pass's crest, in an area prospected elsewhere. Tundra and spruce trees are on the point above, while grass and talus are below.

Prospect Cut History

The cut probably dates to the mid-1880s, when the Red Mountain district saw its principal period of prospecting.

Prospect Cut Description

Prospectors blasted the cut to investigate a mineralized joint and band extending northeast through the outcrop. In solid rock, the cut became 3' wide and 10' long with a headwall 9' high. The floor is flat and largely rubble-free.

Prospect Cut Eligibility and Management Recommendations

The cut is recommended not eligible for several reasons. Under *Criteria A and B*, the cut was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect cut with no other features or artifacts. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The cut is incidental to water-quality studies of the surrounding area, but is within a survey area proposed for work. On the outside chance that the cut is impacted by environmental actions, disturbance will have no effect because the cut is recommended not eligible.

IF 5SA.1615
Longfellow Mine Utility Pole

During the 1950s or 1960s, an electrical line carried power from a main system on Red Mountain Pass, east to the Longfellow Mine (5SA.827). The main system crossed the pass roughly northeast-southwest. The Longfellow line ascended east 550' up and over a narrow but high ridge to the mine. A single pole standing on the ridge carried the wires. The ridgetop is around 30' wide, 11,220' elevation, and hummocky with bedrock outcrops. Spruce forest descends the western side to Red Mountain Pass and Highway 550. Meadow descends the eastern side to the mine.

Longfellow Utility Pole History

The electrical line's exact date of construction remains unknown. The Longfellow Mine's surface plant was assembled in 1954, and electrical service probably began at this time. But an electrical compressor was installed in 1962, and the line could have been strung up to provide power. In any case, the line was in use until the mine closed in 1966.

Figure 7.14: View west of IF 5SA.1615, Longfellow Mine Utility Pole.

Longfellow Utility Pole Description

When in service, the pole stood 32' high near the ridge's center. The pole broke around 3' above its base and toppled west. The fractured stump remains in place, while the rest of the pole now lies downslope. The pole is a log 1' diameter and 28' long with a cross-member bolted to the top. At one time, the cross-member had pegs for two brown porcelain pony insulators, one of which is fragmented and scattered around. Several iron straps braced the cross-member. The woodwork is heavily rotten and melting into the ground.

Longfellow Utility Pole Eligibility and Management Recommendations

The pole is recommended not eligible because it lacks integrity. The pole is arguably important under *Criterion A* because it carried electricity to the Longfellow Mine, which depended on the power for operations. But the pole has fallen, is mostly rotted away, and is difficult to discern. In this condition, the pole no longer conveys its historical role and is not a good example of its resource type (*Criterion C*). In terms of *Criterion D*, the pole will not yield meaningful information upon further study because of its simplicity.

The pole is incidental to water-quality studies of the surrounding area, but is within a survey area proposed for work. On the outside chance that the pole is impacted by environmental actions, disturbance will have no effect because the pole is recommended not eligible.

IF 5SA.1688
Prehistoric Tool

The IF is a single, isolated, scraping and cutting tool, spokeshave/knife. The tool lies at the eastern base of a flat topographic point on which the Koehler Longfellow Boardinghouse (5SA.495) once stood. The boardinghouse was a large building in a greater site that included an office, transformer house, and privy pits. The site was a heavily used workers' housing complex for miners employed at the Koehler Tunnel and Longfellow Mine. Building construction circa 1900, site use afterward, and general traffic have caused considerable surface disturbance. The tool is isolated, and intensive survey found no other prehistoric materials.

Figure 7.15: Detail of IF 5SA.1615, Prehistoric Tool, at upper left.

Prehistoric IF Description

In terms of material, the tool is red mottled quartzite, and exhibits reasonable evidence of being a reworked early Archaic projectile point. Modifications converted the point into a scraping and cutting tool, spokeshave/knife. The affiliation of later modification and use is unknown. The IF is currently located in-situ under a 7" rectangular piece of tabular limestone just southeast of the topographic point. It was placed under the stone to protect it from collection, given that this area is heavily visited by recreationalists.

Prehistoric IF Eligibility and Management Recommendations

In itself, the multi-use flaked stone tool is recommended not eligible. In terms of *Criteria A and C*, the tool has no cultural context. The tool is isolated, not associated with other prehistoric materials, and difficult to date. Timeframe, cultural affiliation, and exact use remain speculative. Regarding *Criterion D*, the IF will not yield meaningful information upon further study. The tool is isolated and not an artifact in a larger site. The immediate environment also has no potential for buried deposits given steep slopes, thin soil, and an absence of cultural materials in exposed cut-banks. Extensive property use 1890s-present has caused extensive disturbance.

The tool lies at the base of a flat landform that might be used as a repository for waste rock moved from nearby mines. Activity would be restricted to the landform top, and the tool avoided. Regardless, if the tool is lost to earthwork, then the loss would be no effect because the tool is recommended not eligible.

Freda Mine and Mill Survey Area

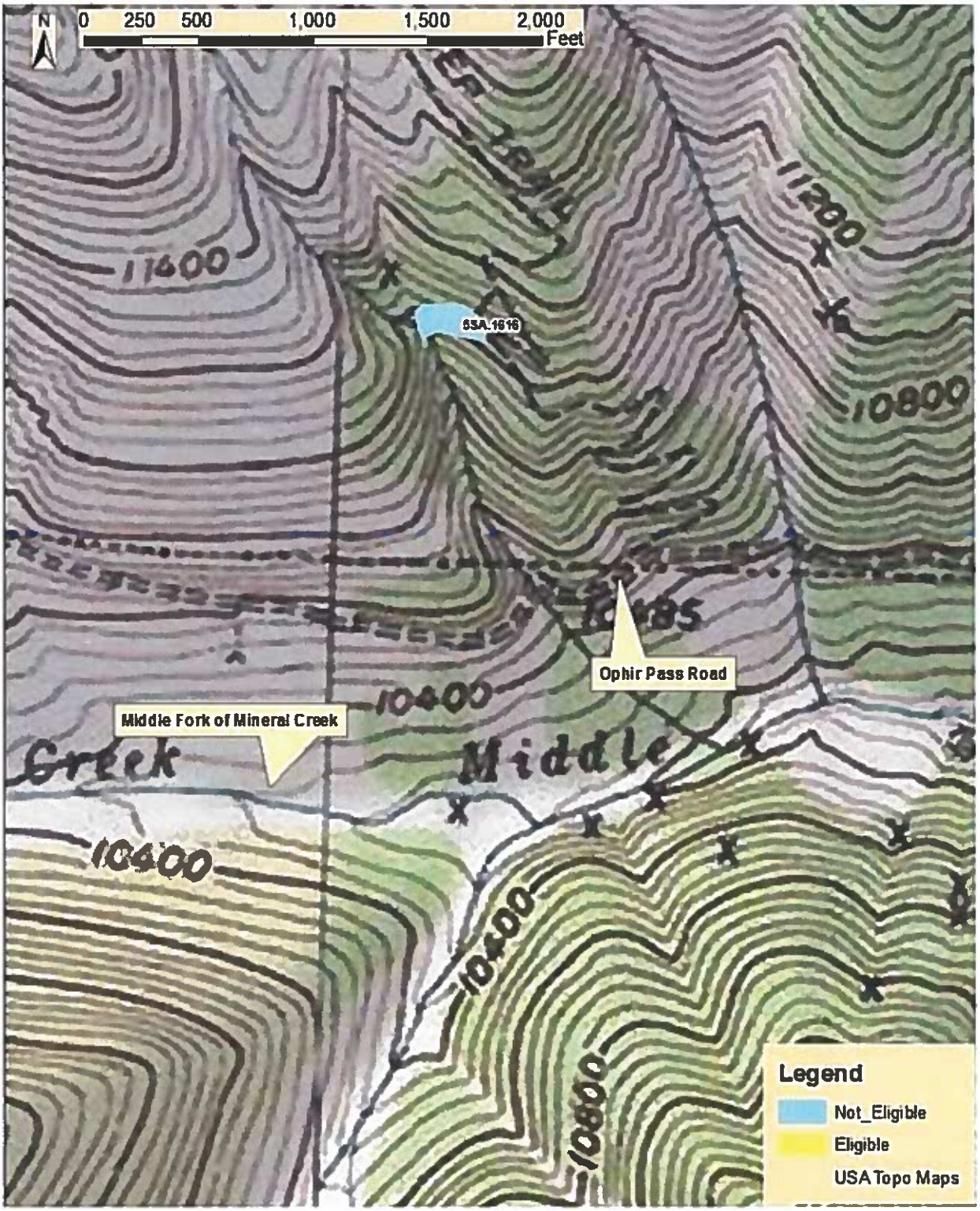

Figure 7.16: Index map of Freda Mine and Mill. The map is an enlarged, digital GIS version of Silverton (7.5') 1955.

Table 7.2: Freda Resource Summary

Resource #	Resource Name	Resource Type	Eligibility Status	Ownership	Project Effect
5SA.1616	Freda Mine and Mill	Tunnel Mine and Mill	No; less than 50 years	Private	No effect
Total: 1			**None**	**None**	**No effect**

Site 5SA.1616
Freda Mine and Mill

The Freda Mine's existing elements date to the 1980s. Miners were interested in a gold-bearing vein trending northeast up the extremely steep northern wall of the Middle Fork of Mineral Creek valley. As a significant drainage, the valley descends east for approximately one mile and joins the main fork of Mineral Creek. The vein was high up the wall, 11,030' elevation, on the eastern side of a deep, craggy chasm historically known as Ruby Creek. The chasm plummets straight down and is flanked by mature spruce and fir forest.

The Freda lies on the Tornado No.1 claim, which is patented. The Triple L Mining Incorporated improved the claim for mineral exploration during the 1980s. The firm bulldozed a switchback road up to the Freda, gouged out drill-roads, cut a flat bench to provide workspace, and reopened the tunnel portal. The outfit then built a tiny mill and processed a small amount of ore before going bankrupt and removing all equipment. The Red Arrow Gold Corporation then operated the mine probably through a lease during the 1990s. Today, the Freda features the tunnel, a mill building, privy, and bulldozed terraces, all dating to the 1980s. The earthmoving and improvements have erased all historic elements.

The Freda is involved in the project discussed here for the following reasons. First, the buildings, structures, and associated junk will be hauled away. Second, the operator illegally dumped low-grade ore on USFS land, northeast of the site. The ore pile will be removed. Third, the tunnel might also be closed for safety reasons, and its metals-rich drainage diverted or treated. Last, the 1980s road will be cleared of deadfall and improved slightly for vehicle access.

Freda Mine and Mill History

The Freda lies on the Tornado No.1 claim's eastern end. The claim was apparently staked circa 1880 east-west across Ruby Gulch. Prospectors drove a tunnel into the gulch's western bank and sank a shaft farther west, but failed to find much ore. Abbie A. Bock owned the claim by 1882 and had it surveyed for patent, but did little more than further exploratory work.

It remains unknown when the Freda was actually developed on the claim's eastern end. A 1984 operator's permit application stated that a road had been graded to the site during the 1950s or before. But archival research found no information about such an operation.

Triple L Mining Incorporated completed the first major improvements during the early or mid-1980s. The outfit bulldozed a road up to the site, graded additional drill-roads, and conducted underground exploration. The firm then developed the vein for light production by retimbering the adit portal, installing a track for an ore car, and constructing log cribbing to retain waste rock. Assuming that the vein would yield well, Triple L then erected a small test mill, cabin, storage shed, and privy, and processed a little ore.

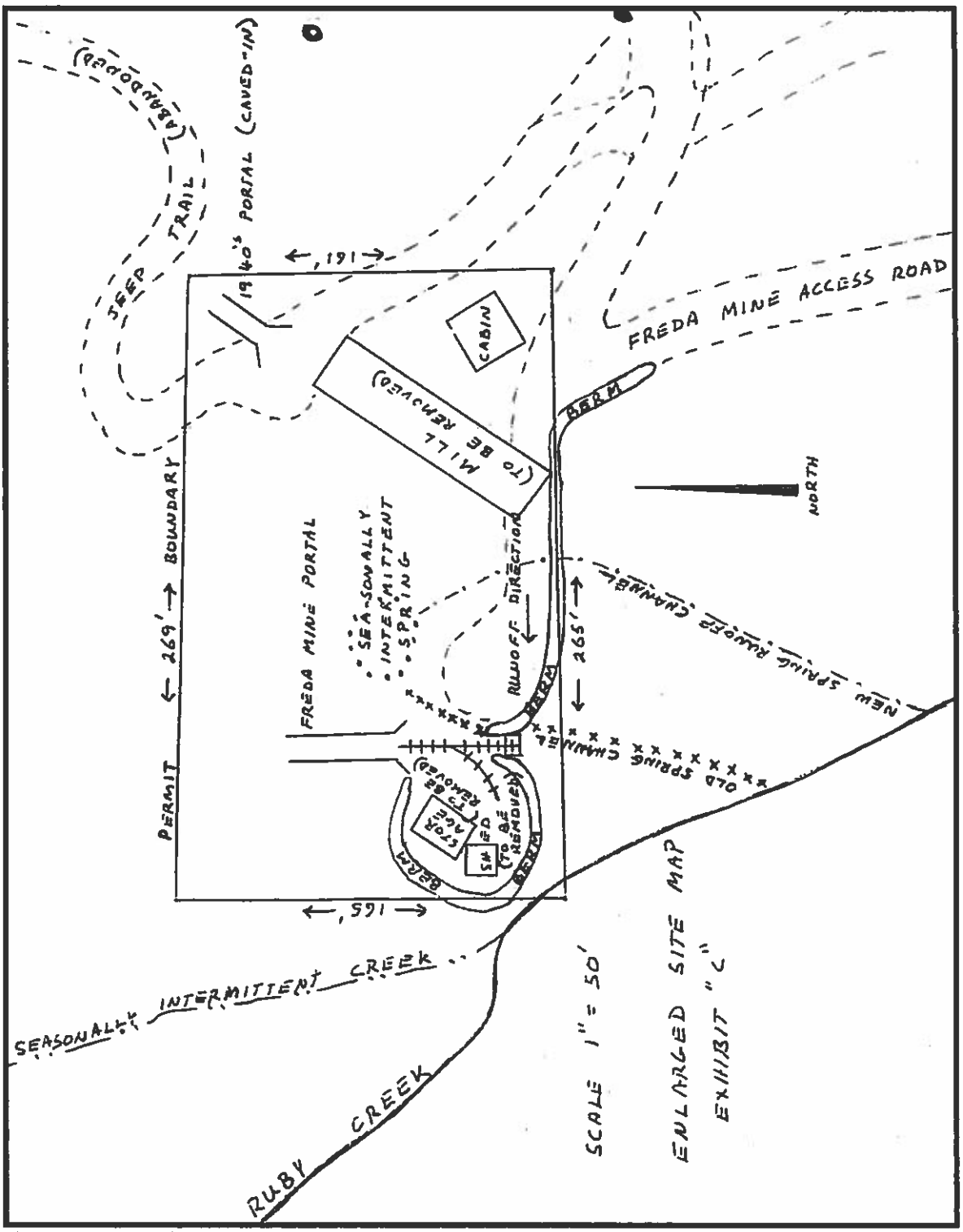

Figure 7.17: Plan view of Freda Mine as of 1988, from Red Arrow Gold Corporation operator's permit application. All elements date to the 1980s.

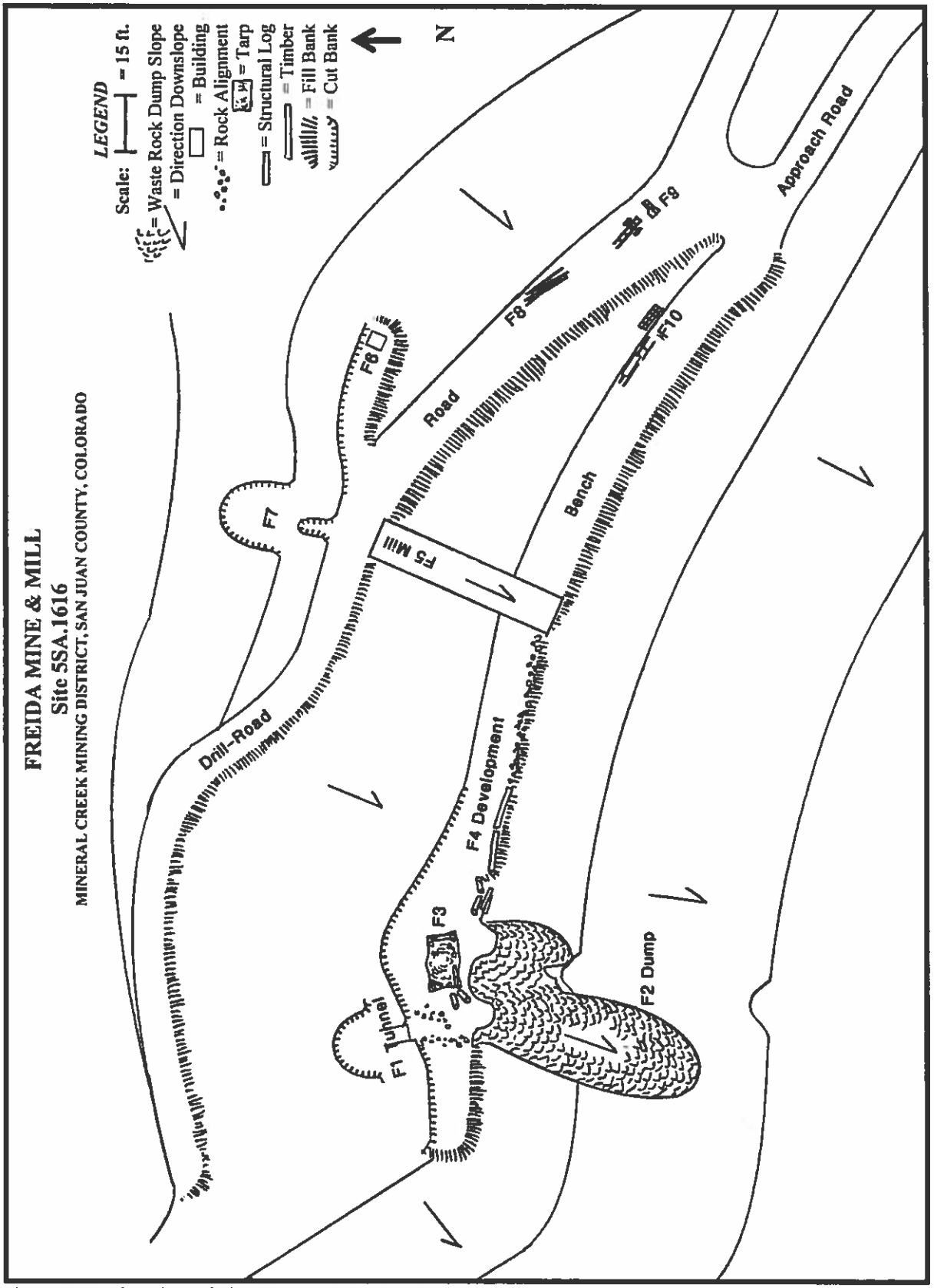

Figure 7.18: Plan view of Site 5SA.1616, Freda Mine and Mill in 2017.

In 1988, the Red Arrow Gold Corporation took over the property apparently through a lease and conducted additional mineral exploration. Red Arrow also made a few changes including dismantling the cabin and storage shed, but made little further progress. The company then went bankrupt in 2014 and forfeited its cleanup bond for the property.

Freda Mine and Mill Description

When Triple L prepared the Freda for production, they used a bulldozer to cut a development bench (F4) from east to west, toward the tunnel. The bench became 12' wide and 85' long, and provided flat space for moving ore, caching materials, and parking a portable compressor. The shoulder has slumped in places, while rocks and logs retain other sections. Workers used fine waste rock as pavement on the top-surface because the material provides good drainage. The bench is well preserved.

The tunnel (F1) was originally driven northwest into an extremely steep slope prone to slumping. The Red Arrow Gold Corporation reopened the portal and timbered it for stability, workers cleaning out the entry and installing cap-and-post timbering lagged with plywood. The timbering is 5' wide, 28' long, and 6½' high, assembled with doubled 4"x6" timbers. Some are pressure-treated stock. The tunnel has collapsed around 20' in, creating a debris plug and subsidence scar above. Mineralized water drains from the portal, recently shunted southwest around the waste rock dump by a rock alignment.

When developing the underground workings, Triple L dumped waste rock out the tunnel and down an extremely steep slope. In so doing, workers deposited a formation (F2) with one small and one large fan totaling 36' wide, 70' long, and 6' thick. The main fan is 26' wide and 70' long. A deep erosional gully cuts through the fan's eastern flank.

Figure 7.19: Northwest profile of the 1980s Freda Mill (F5), in Site 5SA.1616.

At the end of the last operating period, miners stockpiled low-grade ore east of the tunnel. They heaped the ore into a mound (F3) 10'x15' in area and 3' high, covering it with synthetic tarps to keep the fine material in place. The tarps are now tattered, and boards and rail ties still hold down the remaining edges.

Triple L built a small test mill (F5) east of the tunnel to concentrate the ore's gold content and separate out waste. All machinery is gone, but the building itself still stands intact and preserved, except for a small wall section that has separated. Overall, the building is 12' wide and 55' long descending a stairstep series of five concrete terraces. The building is typical of mills in that it is linear with a steep roof descending in a single pitch. Average height is 12'.

The support system consists of a series of 8"x8" timber posts and girts crossing the building's width. Around the outside, irregularly spaced, finished and planed 2"x4" studs and cross-members link the posts and provide backing for still-shiny corrugated sheet iron cladding. The roof is similarly assembled, with corrugated sheet iron nailed to 1"x4" boards over 2"x4" rafters extending lengthwise. The mill's concrete terraces serve as the support system's foundation.

The terraces are described from top to bottom, following the ore-treatment flow-path. In the upper terrace, a front-end loader or haul vehicle input crude ore into a jaw crusher in the mill's open head, shielded with a tarp. The crusher reduced the ore to gravel, which slid down a slanted corrugated sheet iron skirt. The terrace is 12' wide and 12' long, and features a welded steel frame as an anchor for the crusher.

The gravel slid down the sheet iron into a prefabricated steel hopper on the second terrace, which is 12' wide and 8' long. The hopper is 6'x10' in plan and 6' high.

The hopper meted out the gravel for processing in an unknown appliance on the third terrace below. The terrace is 12' wide and 8' long with a concrete floor and headwall. No mounts or bolts hint at what the appliance might have been.

Processed ore dropped into another appliance on the fourth terrace, which is 12' wide and 12' long. The appliance and its function are unknown, but a foundation of four pre-cast concrete blocks 5'x11' in plan lies on the floor.

The last terrace in the mill is a pull-through so trucks could load finished concentrates. The floor is 12' wide and 15' long, while the walls are wide open to permit passage of trucks. The interior and ground to the east are blanketed with crushed rock and a thin veneer of mill tailings.

The mining outfit erected a plywood privy (F6) on a bulldozed terrace east of the mill for workers. The building is little more than a plywood booth 4'x4' in plan with a shed roofline 6' high at the rear and 8' high at the front. Plywood sheets have been nailed to 2"x4" corner posts and rafters. The toilet seat is plastic, and the pit underneath is only 3'x3' in area and 2' deep. Buried deposits are absent.

A subsidence scar remains from a short prospect adit (F7) adjacent to the mill. The adit, possibly the vein's discovery point, extended north into the mountainside. The portal completely collapsed and became a depression of earth and rubble 8' wide and 34' long. Remnants of a log post extend out of the lower portion. Waste rock was bulldozed away during mill construction.

Red Arrow cached rails, machine parts, and hardware in three concentrations (F8-F10) east of the mill. A sample includes compressor and mill appliance parts, welded steel frames, pipes, and a trailer made from a truck chassis. Nothing is historic, and the items lie on bulldozed roads.

The site offers a fairly simple and sparse artifact assemblage. As can be expected, most structural materials are incorporated into the tunnel portal, mill, and privy. Industrial refuse is

light for a recent, mechanized operation. Track hardware and general hardware are scattered around the tunnel, while large industrial pieces are in three groups east of the mill. A little ash, nails, burned aluminum cans, and small pieces of hardware are on the bench's eastern portion. Food and beverage containers are few, and buried archaeological deposits are absent.

Freda Mine and Mill Interpretation

The Freda was a fairly typical small, late twentieth century mine. The Freda was typical in that the outfit adapted then-modern technology to traditional underground mining methods. Miners drilled, blasted, and hauled out ore and waste rock largely by hand. But the operation was dependent on heavy equipment for initial preparation, trucks for transportation, a portable compressor to run rockdrills, and gasoline engines to power the mill. The operation also used modern construction materials such as plywood and welded steel.

The operation was short-lived and marginally productive at best. The small waste rock dump indicates that the underground workings were shallow. The lack of a bin or storage structure reflects little production, and minimal tailings confirm that the mill processed only a small volume of ore. Activity was brief overall, otherwise the site would offer more artifacts than it does.

Archival records indicate that most activity occurred during the 1980s, while dateable items are a little broader in timeframe. In general, plastic items, synthetic tarps and a toilet seat, an aluminum ladder and fire extinguisher bracket, and one-piece aluminum sardine and beverage cans are generally 1980s-2000s.

Freda Mine and Mill Condition and Integrity

Condition can be summarized in two ways. Nothing attributable to early activity remains today, the 1980s improvements having erased all previous features. But the 1980s elements are in fairly good condition. The tunnel portal is intact but collapsed farther underground. The development bench is still flat and suffers minimal sediment deposition and rockfall. The mill is still sound, except for partial detachment of a minor section of the western wall. The privy also stands, and the industrial debris remains in place. Vegetation is minimal.

The site retains no integrity relative to early occupation because the 1980s operation destroyed all previous features. The 1980s operation, however, exhibits a general design of property development. Individually, the tunnel portal, mill, and privy embody their designs, materials, and workmanship. The site has feeling and association of late twentieth century mining, and is in a characteristic setting.

Freda Mine and Mill Eligibility Recommendations

The site is recommended not eligible. All features older than fifty years have been destroyed by recent activity, and the site has no integrity regarding historic occupation. The existing features are less than fifty years old, but the site is not important enough to qualify under Criterion Consideration G.

Freda Mine and Mill Management Recommendations

The site faces four actions. First, is general removal of its structures, buildings, and debris. The tunnel portal, mill, and privy will be dismantled, and the materials and refuse hauled away by truck. Second, a pile of low-grade ore left on USFS land northeast of the site, during the 1990s, will be removed. Third, the tunnel might be closed for safety, and its mineralized drainage water could also be diverted for treatment. Last, the 1980s road will be cleared of deadfall and improved slightly for vehicle access. In general, the above actions will pose no effect because the site is recommended not eligible.

Brooklyn Mine Survey Area Sites

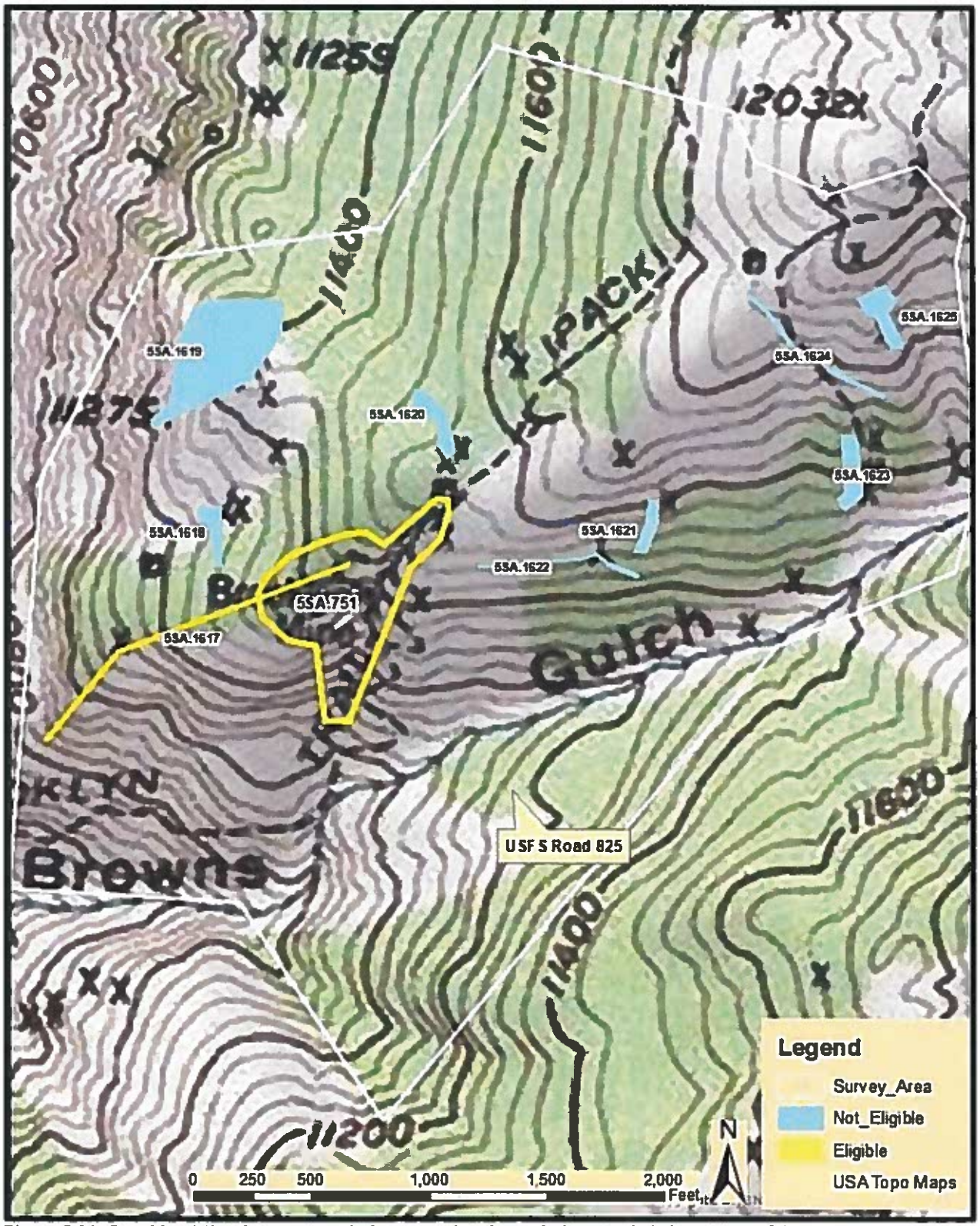

Figure 7.20: Brooklyn Mine Survey Area index map, showing only inventoried sites. Most of the prospects on the map were recorded as IFs, on a separate map below. The map is an enlarged GIS version of Silverton (7.5') 1955.

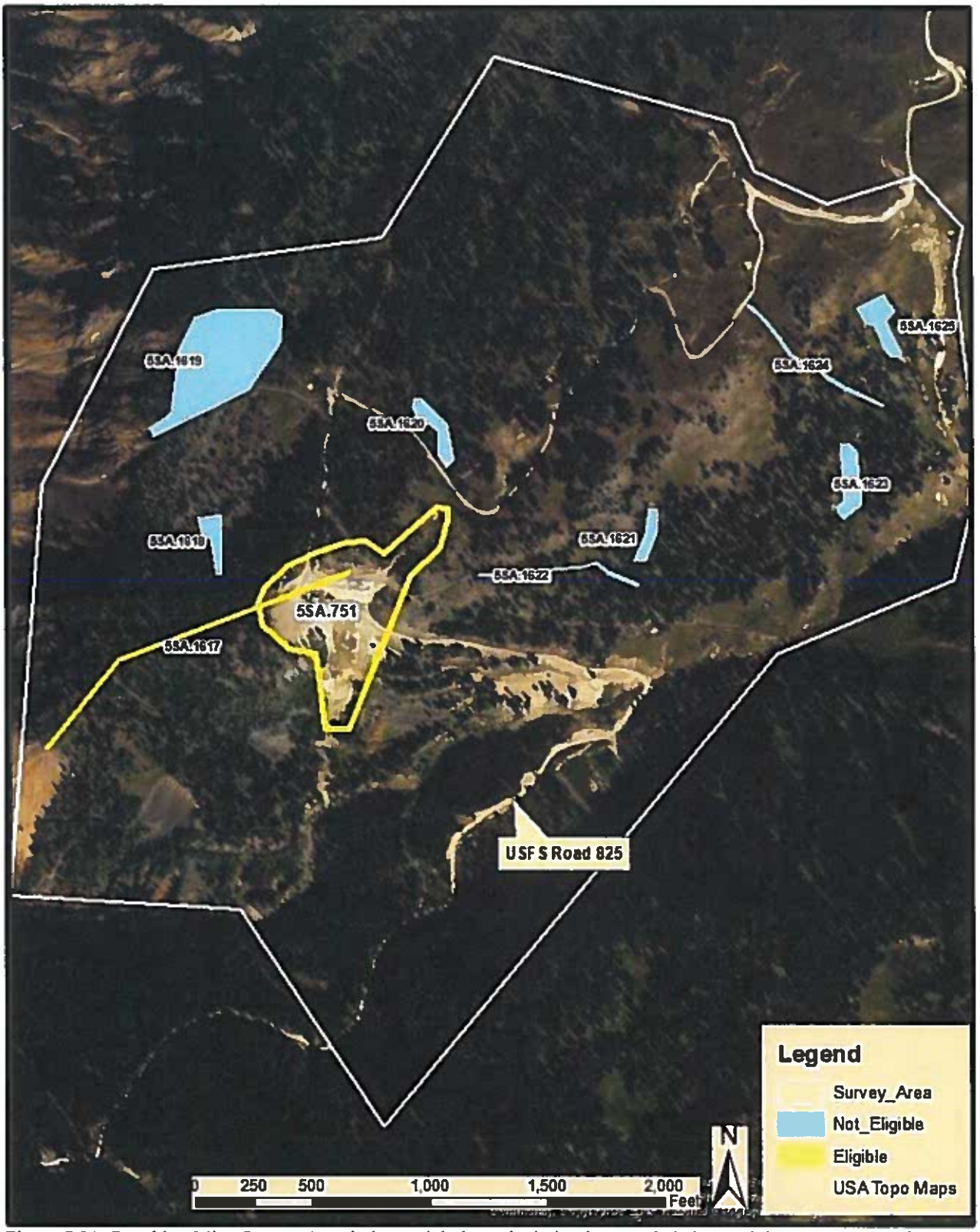

Figure 7.21: Brooklyn Mine Survey Area index aerial photo depicting inventoried sites and the survey area. The aerial is the same scale and location as the map above.

Table 7.3: Brooklyn Resource Summary

Resource #	Resource Name	Resource Type	Eligibility Status	Ownership	Project Effect
5SA.751	Brooklyn Mine	Tunnel Mine	NRHP A, B, C	USFS	No adverse eff
5SA.1617	Brooklyn Mine Telephone Line	Telephone Line	NRHP C	USFS	No adverse effect
5SA.1618	Prospect Adit	Prospect Adit	No; unimportant	USFS	No effect
5SA.1619	Gloucester Mine: West Workings	Tunnel Mine	No; lack integrity	Private	No effect
5SA.1620	Gloucester Mine: East Workings	Tunnel Mine	No; lack integrity	Private	No effect
5SA.1621	Prospect Complex	Prospect Complex	No; unimportant	USFS	No effect
5SA.1622	Pack Trail	Pack Trail	No; unimportant	USFS	No effect
5SA.1623	Jessica Prospect Complex	Prospect Complex	No; unimportant	Private	No effect
5SA.1624	Pack Trail	Pack Trail	No; unimportant	Private	No effect
5SA.1625	Winning Prospect Adit	Prospect Adit	No; unimportant	Private	No effect
5SA.470	Venetian Prospect Adit	Prospect Adit	No; IF	Private	No effect
5SA.471	Prospect Shaft	Prospect Shaft	No; IF	USFS	No effect
5SA.1626	Prospect Trench	Prospect Trench	No; IF	USFS	No effect
5SA.1627	Prospect Trench	Prospect Trench	No; IF	USFS	No effect
5SA.1628	Prospect Pit	Prospect Pit	No; IF	USFS	No effect
5SA.1629	Prospect Pit	Prospect Pit	No; IF	USFS	No effect
5SA.1630	Claim Post	Claim Post	No; IF	USFS	No effect
5SA.1631	Prospect Complex	Prospect Complex	No; IF	USFS	No effect
5SA.1632	Prospect Adit	Prospect Adit	No; IF	USFS	No effect
5SA.1633	Prospect Trench	Prospect Trench	No; IF	USFS	No effect
5SA.1634	Jessica Prospect Trench	Prospect Trench	No; IF	Private	No effect
5SA.1635	Winning Prospect Pit	Prospect Pit	No; IF	Private	No effect
5SA.1636	Eleventh Hour Prospect Trench	Prospect Trench	No; IF	Private	No effect
5SA.1637	Prospect Complex	Prospect Complex	No; IF	USFS	No effect
5SA.1638	Prospect Adit	Prospect Adit	No; IF	USFS	No effect
5SA.1639	Venetian Prospect Pit	Prospect Pit	No; IF	Private	No effect
5SA.1640	Prospect Adit	Prospect Adit	No; IF	USFS	No effect
5SA.1641	Venetian Prospect Shaft	Prospect Shaft	No; IF	Private	No effect
5SA.1642	Venetian Prosp. Cut	Prospect Cut	No; IF	Private	No effect
5SA.1643	Survey Monument	Survey Monument	No; IF	Private	No effect
5SA.1644	Eleventh Hour Prospect Complex	Prospect Complex	No; IF	Private	No effect
Total: 31			**Total eligible: 2**		**No adverse effect**

Site 5SA.751 ***USFS # 21308931***
Brooklyn Mine

The Brooklyn was among San Juan County's long-term gold and industrial metals producers, becoming increasingly active in four basic periods. The mine began as a small prospect during the late 1880s and was developed on a pay-as-you-go basis during the 1890s. The Brooklyn then generated ore regularly in 1902, and declined slightly through the 1910s. The Brooklyn's most important period may have been 1934-1941, when the mine ranked among the county's principal producers. Operators installed new surface facilities at each of the mine's three tunnels, supplementing what had been only a few small buildings up to that time. But the last period, 1959-1982, had the greatest impact on the property as it exists today. The operator reshaped most of the mine's surface expression with a bulldozer, scraping away surface facilities, spreading out the two voluminous waste rock dumps, and cutting several roads.

Today, the Brooklyn appears similar to a historic mine, but much of the site actually is a result of earthmoving 1968-1972. A boardinghouse, several ancillary buildings, and utility poles are the principal historic elements that remain. Ownership is USFS.

Now an archaeological site, the Brooklyn is on the northern shoulder of Browns Gulch, overlooking the main fork of Mineral Creek, which is west. The site is 11,400' elevation amid spruce and fir forest broken by patches of meadow. Slopes are extremely steep and south-facing, but moderate above and north of the site. Historically, a packtrail through Browns Gulch provided access, and became the route for a road bulldozed during the 1960s. During the 1970s, another road was bulldozed up the gulch's southern side, curved around to the mine, and continued northeast along the general strike of the Brooklyn Vein. The route is still in use as County Road 14, also termed USFS Road 825.

As early as 2002, USFS began studying the mine as a source of metals contamination and acidic drainage. The main tunnel drains water, the recently bulldozed dumps generate sediment, and what may be a natural seep below the mine releases iron-rich material. In preparation for greater effort, in 2016, USFS designated the mine as the center of a larger study area.

Several years before commissioning the study, USFS recorded and evaluated the site for a county-wide mine inventory driven by BLM. The inventory was intended to recognize the county's principal mines as historic sites, regardless of ownership. In 1999, USFS documented the site, conducted a little archival research, and determined the site not eligible. USFS published their findings in the report: *An Archaeological Assessment of the Proposed Brooklyn Mine Reclamation Project, San Juan National Forest, Columbine Ranger District, San Juan County, Colorado (SJNF 03-80).*

Afterward, the site was subject to a partial remediation project. In 2004, waste rock was removed from the main pad and used as fill for a cavernous subsidence crater above and north of the site. At the same, time, a middle tunnel was grated closed, and a small facility to clean talc and other mineralization off ore was removed. The facility, built in 1981, included several mill appliances and a rotary tumbler identified in 1999 as an amalgamator. The reclamation was restricted to portions of the site that had been bulldozed 1968-1972.

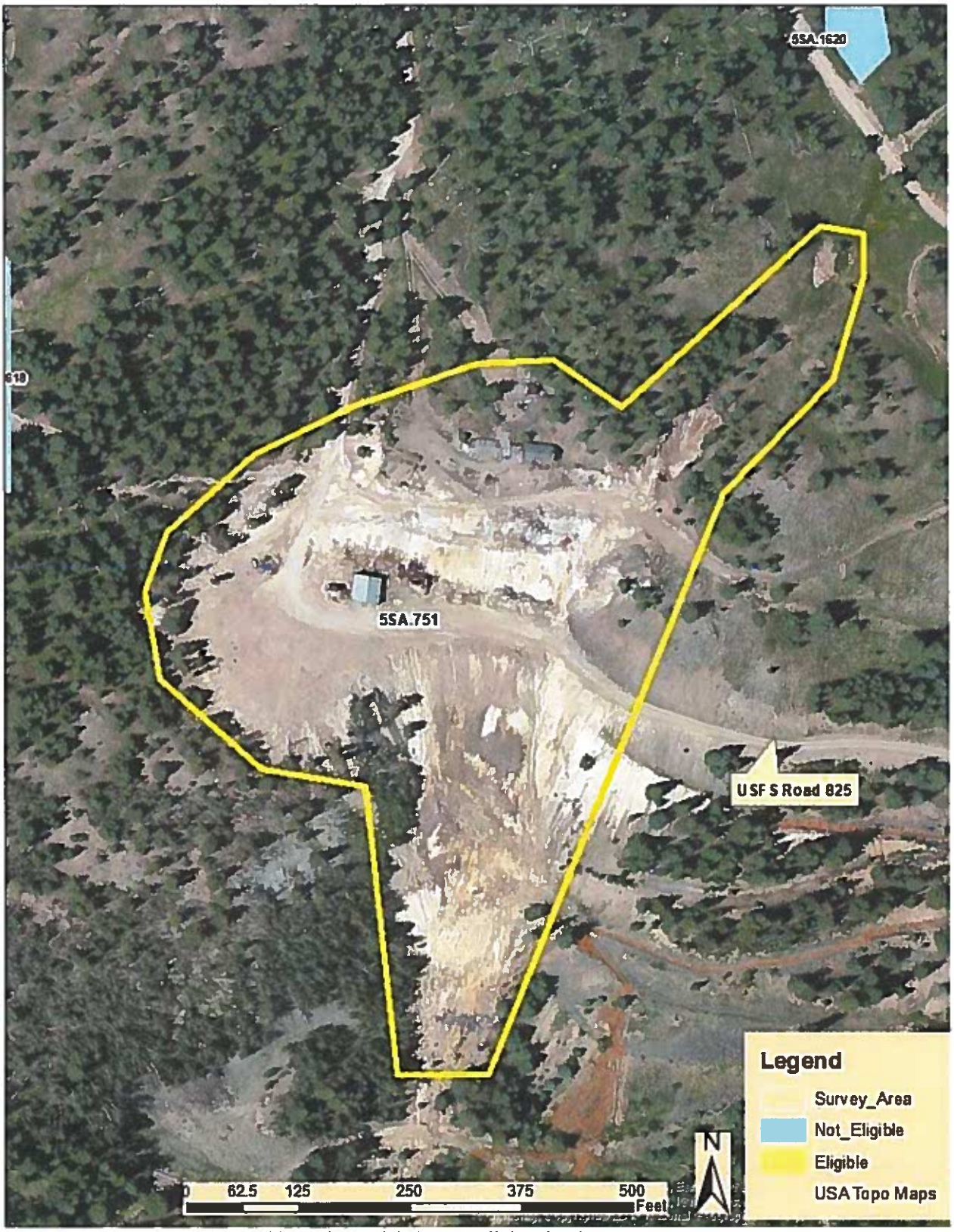

Figure 7.22: Site 5SA.751, Brooklyn Mine aerial photo, outlining the site.

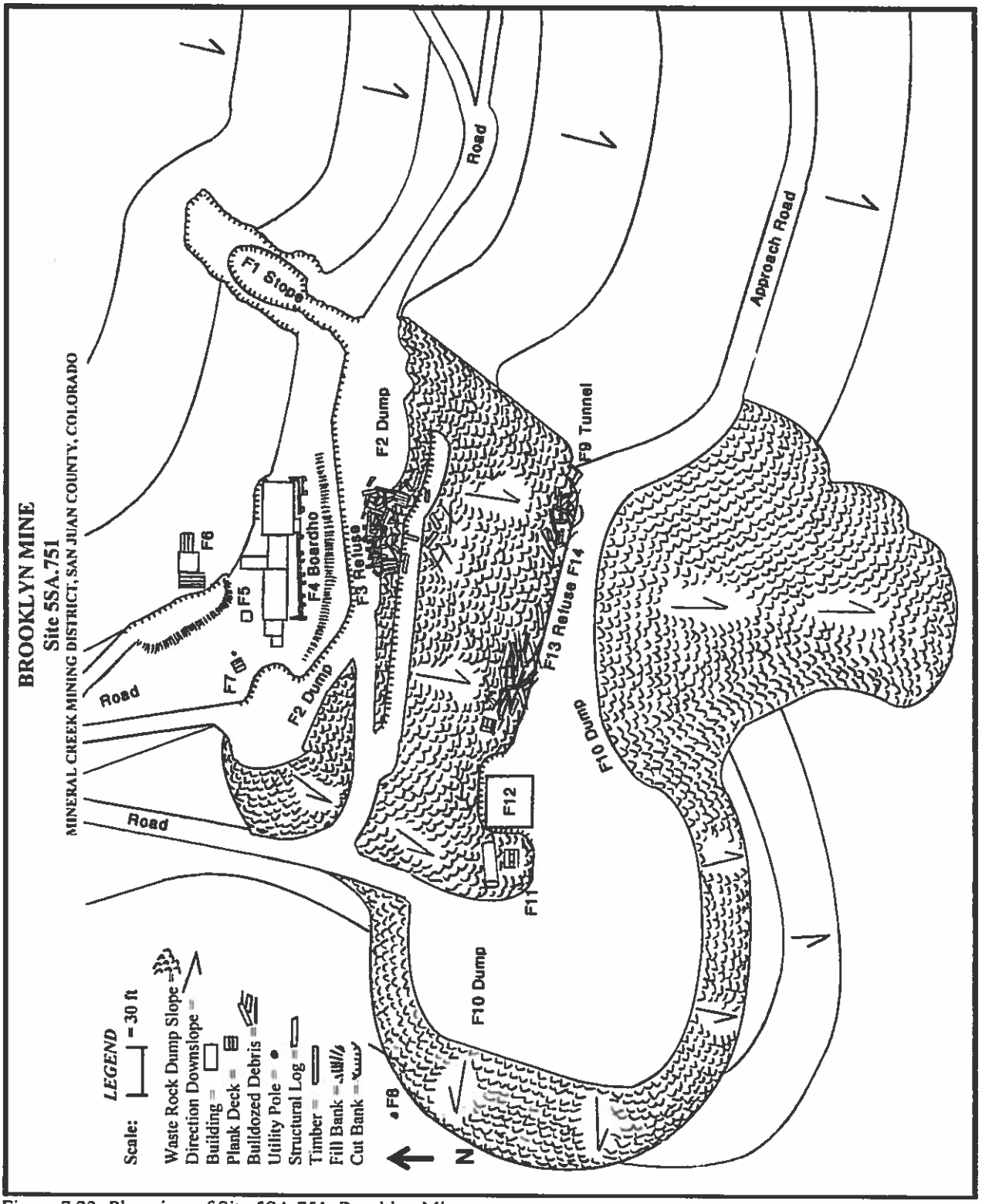

Figure 7.23: Plan view of Site 5SA.751, Brooklyn Mine.

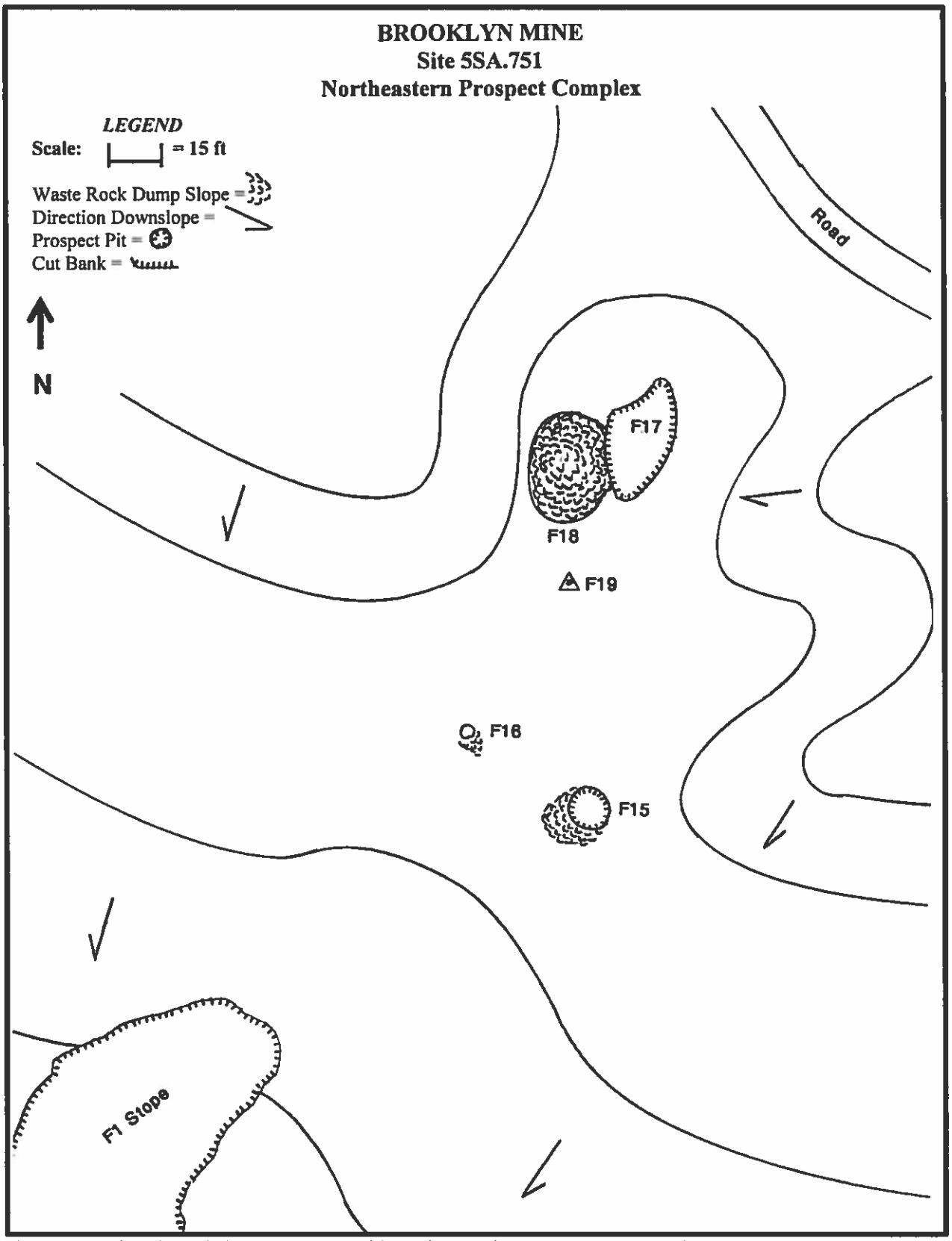

Figure 7.24: Plan view of Site 5SA.751, Brooklyn Mine, northeastern prospect complex.

The northeastern portion of the overall Brooklyn Mine site includes a prospect shaft that was previously recorded. In 1988, DRMS registered the shaft as 5SA.241 under the name Glouchester Mine, and then backfilled it with its waste rock dump. The shaft was registered in that it was given a site number but not actually recorded. A few general facts, location map, and a photograph were submitted on an MDF form and an in-house field sheet. DRMS recommended the shaft not eligible, and OAHP concurred. Correcting the record, the shaft was actually a prospect directly associated with the greater Brooklyn Mine, and not the Glouchester. For this reason, the shaft has been recorded as a feature (F18) in the Brooklyn Mine. The shaft is discussed at the end of the site description below, and also depicted on the site map above. The original number 5SA.241 should be retired.

Brooklyn Mine History

In 1882, the Denver & Rio Grande Extension Railroad arrived in San Juan County and stimulated a wave of prospecting. Few areas in the county escaped exploration during the next several years, and this held true for the northern side of Browns Gulch. Prospectors examined the gulch's northern wall and identified several mineralized veins trending north-south, but failed to find much ore. And yet, a few dedicated individuals suspected that at least several had something to offer, and returned periodically. During the late 1880s, one party in particular finally unearthed what all the others had sought, a vein offering gold mixed with industrial metals. The party, which may have included A.L. Harris, claimed the vein as the Brooklyn and probed it with shallow prospect workings. The vein trended northeast, and the Brooklyn Extension claim took in the northeastern continuation.

Assays revealed that the vein had a fairly high gold content, but the mineral matrix and portfolio of metals made the ore very complex. As a result, the ore was troublesome to mill and provided meager returns. A.L. Harris was the principal owner by 1890 and funded development in search of richer material during the next several years. He drove one or two tunnels into the gulch's upper wall on a fitful, seasonal basis and stalled when the Silver Crash of 1893 wrecked the economy.[19]

Around 1895, Harris resumed work and hired relative John A. Harris for help. The two continued pecking away through the decade and may have produced a little ore, but output was minimal. A.L. Harris died in 1900, and his heirs locked up the property in family squabbles. But John asserted that A.L. Harris had owed him for his work, and that the heirs were now responsible for the unpaid debt. They neglected to pay, so John seized the property and at last broke through into a better portion of the vein during 1901.[20]

Unequipped to systematically develop the vein, John sold the Brooklyn to several experienced miners who were more capable. The miners were Tom Manion and Jim Murphy of Ouray, buying a majority interest in the property for $11,000. It remains unknown how much development work went with the deal, but Manion and Murphy hired a crew of six and began an improvement campaign next year. By 1902, the Brooklyn featured three tunnels stacked vertically on the vein, while surface facilities were limited to a blacksmith shop and a 15'x30'

[19] *Silverton Standard* 6/27/1914.

[20] *Denver Times* 4/30/1901 p11 c4; *Silverton Standard* 4/14/1900.

log boardinghouse. Manion and Murphy also talked of building a small mill to concentrate the ore and render it less expensive to ship and smelt, but lacked the capital to do so.[21]

For the rest of the year, the crew split time between more underground development and ore production. The ore was better than the low-grade material initially revealed by Harris, but was still complex and costly to treat. Regardless, the sampling plants at Silverton provided the only market, at least for a brief time. Over on the Middle Fork of Mineral Creek, C.L. Abbott and Augustus Stoiber had been operating the Robert Bonner Mine under similar conditions. They recognized that the Bonner needed a concentration mill to render its low-grade ore profitable to ship, but also lacked enough money.

Meanwhile, Louis Johnson and Benjamin Lonne knew something of mills and proposed building a small plant mostly for the Bonner. Stoiber put up some of the money in 1902, and Johnson and Lonne reduced expenses by securing used appliances from the Silver Ledge and Silver Wing mines. Johnson and Lonne maximized the project's viability by siting their small mill at Burro Bridge rather than at the Bonner. Burro Bridge was central to local mines, which could provide additional ore for custom treatment, in addition to the Bonner's output. The Brooklyn would be one of those additional sources. When finished, Johnson and Lonne's mill had a ten-ton per-day capacity, with stamp battery for secondary crushing, and vanners and vibrating tables for concentration. With its small size, simplicity, and use of second-hand equipment, the mill functioned as expected. While the mill prioritized the Bonner's output, it also came to rely on the Brooklyn beginning in 1903.[22]

With the Brooklyn in good condition, Manion and Murphy leased the mine out for royalties. Lessees then produced regularly for three years while Manion conducted yet more development work. Murphy lost his interest in the operation in 1906 for unpaid taxes, and was promptly replaced by James H. Cosgrove. The Brooklyn maintained output until 1908, when a national recession tightened metals markets. From this point until the county's industry collapsed in 1921, Manion and small leasing partnerships produced on a fitful basis. Although the mine featured three tunnels, its surface plant remained simple and consisted of a log blacksmith shop, frame fan house, and gasoline ventilation fan at the main entry, and a shed and possibly another shop at the upper tunnel. Workers lived in the same old log boardinghouse as before.

The Brooklyn still offered ore, but Manion's death during the 1920s raised ownership issues that prevented further activity. Meanwhile, Thomas Woods, who bought a share of the mine in 1908, was trying to untangle legal problems so he could invest in better facilities and yet deeper development. Woods finally succeeded in 1927, formed a partnership with J.E. Carney, and hired two miners to put the property back into shipping condition. The rapid succession of lessees during the 1910s had left the property in severe disorder and unsafe timbering underground. The seasonal effort took several years, and just as Woods and Carney were ready to begin production, the Great Depression struck in 1929. Woods and Carney understandably hesitated on further expenditures, but knew the ore would remain valuable because of its gold content. In general, mining investors tended to turn away from silver and industrial metals, and toward gold in time of economic instability. Still waiting for the situation to improve, the partners sent one or two men back to the mine in 1931 to finish preparing it.[23]

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[21] *Denver Times* 5/11/1901 p9 c3; *Denver Times* 10/24/1902 p14 c7; *Ouray Herald* 8/15/1902; *Silverton Standard* 8/10/1901; *Silverton Standard* 8/30/1902.

[22] "Mining News" *EMJ* 8/23/02 p257; "Mining News" *EMJ* 7/4/03 p28; *Silverton Standard* 7/19/02 p3; *Silverton Standard* 9/27/02 p1; *Silverton Standard* 6/4/1904; *Silverton Standard* 6/25/1904.

[23] Colorado Mine Inspectors' Reports, Brooklyn.

The situation did improve, and immensely, in 1934, when President Franklin Delano Roosevelt signed into law the Gold Reserve and Silver Purchase acts. The legislation increased the values of gold and silver in hopes of reviving mining, and successfully stimulated a wave of activity, including in San Juan County. Woods and Carney hired several miners in 1934 to finish rehabilitating critical workings and to begin small shipments, which paid for the most aggressive improvement campaign since 1902.[24]

During 1935, a crew of five drove the main and midlevel tunnels deeper underground and assembled new facilities in preparation for a full years' stay. The crew erected an ore sorting house, timber-dressing shop, and snowshed connecting these facilities with one of the tunnels. They also built a 12'x12' coal and wood shed against the old boardinghouse, and what the local mine inspector referred to as an 8'x8' vegetable house for storing fresh food. Two more miners joined the crew in 1936 and constructed a two-story 18'x36' log bunkhouse adjoining the boardinghouse, plumbed for fresh water from a small tank house at the Gloucester Mine. In 1938, workers added yet more surface facilities including an ore bin and timber-dressing shed at one of the tunnels, and a 15'x15' cold-storage cellar attached to the boardinghouse.[25]

The facilities allowed the crew to extract ore simultaneously from both the upper and midlevel tunnels. The Brooklyn then produced heavily into 1940 when Thomas Woods either retired or died. His partners reorganized as Brooklyn Claims, Incorporated and installed the last critical surface plant component needed. Until that time, miners had been drilling blast-holes by hand using traditional methods dating back into the mid-1800s. The process was slow, laborious, and required expertise, but little capital. By the 1930s, rockdrills had become commonplace among most other mines because they were far more efficient, leaving the Brooklyn as one of the last holdouts to adopt the technology. In 1941, Brooklyn Claims paid for an electric compressor and an electrical line to carry power up from the main system on Mineral Creek. Unfortunately for Brooklyn Claims, the new compressor came too late and saw little use. World War II and its labor and materials shortages forced the company to suspend in 1942.[26]

The Brooklyn remained quiet through the 1940s and 1950s even though the heavily developed vein still had ore at depth. During this time, Frank Richardson, a principal with the local Osceola Mining Company, bought the mine and found the capital necessary to bring it back into production. In 1958, he and several workers cleaned out the upper and midlevel tunnels, brought in a portable compressor, and began an exploration campaign to better define where the ore was. This done, he bulldozed a road up to the mine and delivered a diesel locomotive to shuttle trains to surface, where dump trucks hauled ore to distant smelters. He began production but was restricted to only small batches of high-grade ore because trucking costs made anything less unprofitable. As a remedy, he organized Richardson Mines, Incorporated in 1962 with investors, who fronted capital for a small test mill built at the lower tunnel. The mill was only partially effective concentrating the remaining deeper, low-grade ore, and was idled in 1964. Production then tapered off during the next several years as the vein showed signs of exhaustion.[27]

In 1967, Richardson initiated a major effort to find more ore through both underground and surface exploration, emphasizing then-current technology. Underground, several miners used a core-drill to probe sections of the vein, while on the surface, workers began what became a

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[24] *Minerals Yearbook*, 1935:229.

[25] Colorado Mine Inspectors' Reports: Brooklyn; *Minerals Yearbook*, 1939:303; *Minerals Yearbook*, 1940:278.

[26] Colorado Mine Inspection Reports: Brooklyn; *Minerals Yearbook*, 1941:306, 312.

[27] Colorado Mine Inspectors' Reports: Brooklyn.

regular practice of bulldozing. They first scraped portions of the mine in 1967, and then gouged out a long cut directly on the vein next year. In 1973, workers drove the machine northeast along the vein's strike, above the mine, and incised a number of cuts in an attempt to expose the vein for sampling. North of the mine, workers also spent some of the summer logging the forest and hauling the timber out on bulldozed roads.[28]

Richardson conceded defeat in finding rich ore in 1976 and turned the property over to Alpha Energy & Gold, managed by Thomas Baumgardner. Alpha picked up underground exploration where Richardson had left off, and erected a new sheet iron compressor house to enclose equipment. Given this, it seems likely that the mine's original buildings were either unserviceable or had been demolished by the earlier bulldozing. In any case, Alpha conducted seasonal work underground and apparently encountered a new stringer of good ore in 1979. But the ore was contaminated with talc and other mineralization that interfered with cost-effective processing. As an ingenious experiment, the company drove in a cement truck and used its revolving drum as a means of tumbling the ore and cleaning off the contaminants. The trial in fact rendered the ore into a viable product, and led to a permanent if small ore-washing plant.[29]

Now with proven ore reserves and a means for preparing the ore for shipment, Alpha hired a crew of twenty-one in 1981 and began heavy output. The last major modification was replacement of the locomotive and ore cars with trackless, self-propelled haul vehicles. Miners enlarged both tunnels for the vehicles, and used them to shuttle ore to the surface for cleaning and shipment by truck. The operation lasted for several years, followed by more exploration, and finally abandonment of the Brooklyn.[30]

Figure 7.25: Northeast view of Site 5SA.751, Brooklyn Mine. Most of the site was bulldozed 1968-1972, and 1980.

[28] Colorado Mine Inspectors' Reports: Brooklyn.
[29] Colorado Mine Inspectors' Reports: Brooklyn.
[30] Colorado Mine Inspectors' Reports: Brooklyn.

Brooklyn Mine Site Description

As an archaeological site, the Brooklyn appears to be older than fifty years on first impression, but most of the site actually dates 1968-1982. The site features two stairstep benches of waste rock. The highest came from the mine's upper tunnel, now a ragged cut. The lower dump is a broad pad derived from the mine's midlevel tunnel. The cut and the dumps were bulldozed 1968-1972, while the midlevel tunnel was enlarged for self-propelled haul vehicles in 1980. All features on the dumps, including debris piles and a standing corrugated sheet iron compressor house, are less than fifty years old. At one time, the mine also had a lower tunnel, but the portal is unidentifiable, probably having been completely buried by waste rock. The site's only area older than fifty years is ground surrounding a standing boardinghouse, several associated outbuildings, and utility poles. And even then, roads were bulldozed among these elements in the recent past. In the following, the site is described according to the upper workings, workers' housing complex, and midlevel workings.

Brooklyn Mine Upper Workings

The upper workings are fairly simple regarding their elements, being limited to a stope and its extensive dump. The stope (F1) began around 1902 as the upper-most of three tunnels driven into the Brooklyn Vein. The vein was fairly wide and deep, and encased in crumbly, friable, hydrothermally altered rock. Sometime between 1902 and 1910, miners hollowed out a substantial stope where the vein had been, and probably timbered the walls for support. In 1968, Richardson Mines completely gouged out the stope with a bulldozer, leaving a ragged incision 30'-40' wide, 120' long, and 24' deep with vertical walls. The gateway is around 15' wide.

As miners developed the upper tunnel, they used ore cars on a track to dump waste rock to the west. Over time, they built up a large bench (F2) of highly mineralized material 320' wide and 145' long, and graded the top-surface flat. Some of the mine's historic facilities stood on the dump, including a blacksmith shop, timber-dressing shed, and ore bin. Between 1968-1972, Richardson Mines conducted annual bulldozing and destroyed the dump's original footprint, profile, and surfaces. The outfit cut a terrace across the dump's southern flank and a road down the western shoulder, and spread the dump's surface outward and west. The outfit also scraped off the historic facilities and pushed the debris (F3) down the dump's flank, where it scattered over a 60'x70' area. The dump now has little integrity as a historic feature.

Brooklyn Mine Workers' Housing

During the Brooklyn's eighty years of production, successive crews of workers lived in a housing complex on a steep mountainside west of the upper stope. The complex began around 1902 as a single log boardinghouse, expanded with a larger workforce 1935-1937, and saw yet more additions during the 1960s or 1970s. Rather than erect a cluster of free-standing buildings, various operators kept adding on to the original 1902 core. The result became a rambling series of additions with radically different footprints, construction methods, and materials. Several outbuildings were constructed in the 1930s as well, and a transformer station was installed in 1941. Although the complex certainly had privies, pits could not be confirmed, nor could a refuse dump. It seems likely that these were destroyed by the 1968-1972 bulldozing. And yet, the

complex has seen the least amount of earthmoving in the site, and therefore offers the greatest number of elements older than fifty years.

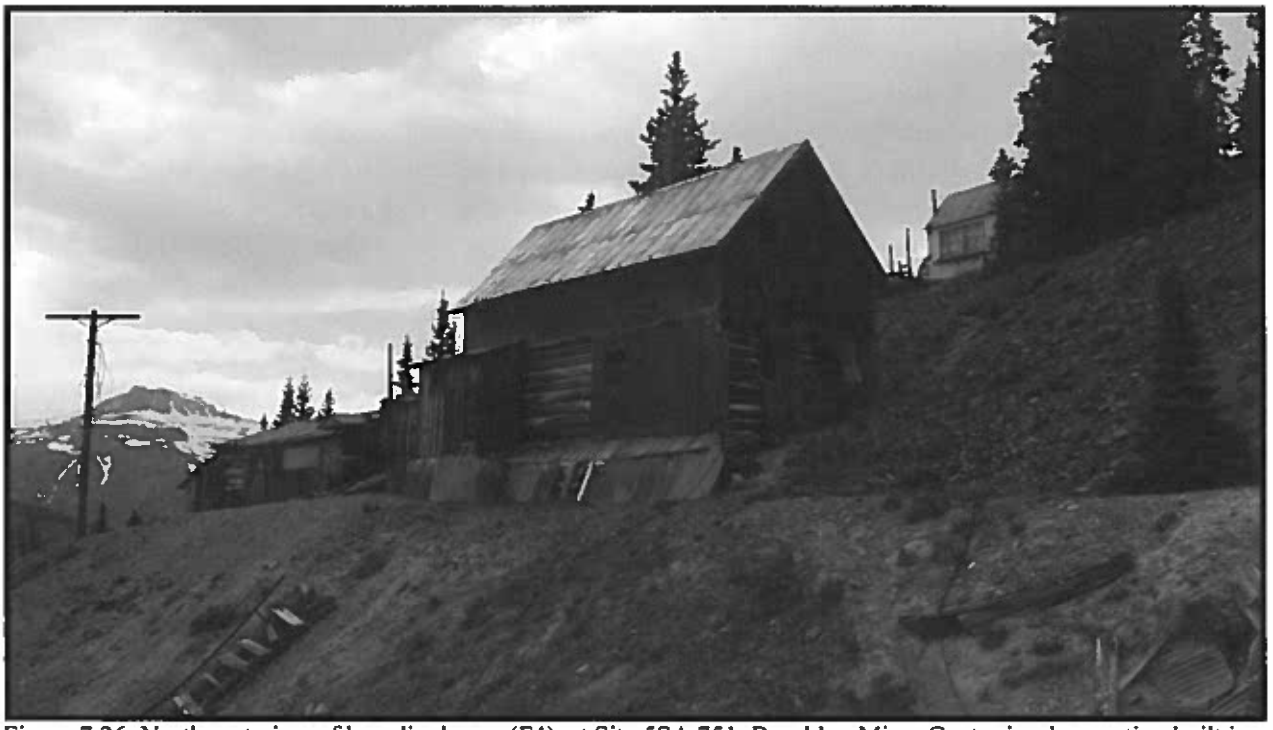

Figure 7.26: Northwest view of boardinghouse (F4), at Site 5SA.751, Brooklyn Mine. Center is a log portion built in 1936. Extending left are a 1902 portion and a number of later additions.

As hinted at above, the boardinghouse (F4) is a complex, rambling building consisting of six components merged together over time. The entire building is 18' wide and 85' long, and severely dilapidated. The building is best described according to the chronology of its individual components.

The first component was a log cabin built around 1902 when the mine was initially developed for production by Tim Manion and Jim Murphy. The cabin later became the overall boardinghouse's main western block. The cabin is front-gabled, 16'x30' in plan, 7' high at the roof eaves, and 10' high at the gable peak. The cabin's walls were assembled with saddle-notch joints chinked with lime-based grout, all on a foundation of logs laid on a cut-and-fill platform. The roof consists of plank decking over 2"x4" rafters. The eastern end features a mudroom 7' wide, assembled with plank sheathing on a 2"x6" post-and-girt frame. The entry is a 30"x72" panel door in the mudroom's south wall, underneath its own gable roof. The cabin's north and south walls each feature two windows.

In 1935, Thomas Woods and J.E. Carney added a shed for cordwood and heating coal on the eastern end. The shed became the overall boardinghouse's second component. The addition is 12'x14' in plan with a shed roofline 7' high at the south (front) and 10' at the north. The walls consist of board-and-batten siding over a 2"x6" post-and-girt frame, and the roof is assembled with corrugated sheet iron cladding and plank decking over 2"x6" rafters. The south wall (front) featured a door and window, both of which are gone. The interior was divided into three stalls

for wood, coal, and other materials. Currently, an unused water-heater made from a 55-gallon drum remains in the eastern stall.

In 1936, Woods and Carney erected a second and larger log cabin east of the woodshed to house a growing workforce. The cabin is the overall boardinghouse's third addition. The cabin is front-gabled, one story-and-a-half, 17½'x31½' in plan, 12' high at the roof eaves, and 19' high at the gable peak. Each story is 8' high. The cabin's lower half is a log box assembled with hog-trough methods, in that the logs were sawn flat and nailed to 2"x8" end-plates. The corners of the walls were finished with more 2"x8" planks to seal gaps. The upper story consists of tarpaper cladding over plank sheathing, nailed to a 2"x4" post-and-girt frame. The roof is corrugated sheet iron on plank decking nailed to 2"x4" rafters, and the foundation consists of logs and floor joists on a cut-and-fill platform retained by log cribbing. The occupants also anchored the northern wall with iron tie rods. The cabin features numerous doors and windows.

In 1938, Woods and Carney built a storeroom, the fourth component, on the shed's northern side. Workers countersunk a 12'x15' plank box with a shed roofline in an excavation cut from the mountainside. The walls are tarpaper over planks on a 2"x6" post-and-girt frame, and the roof is corrugated sheet iron nailed to plank decking on 2"x6" rafters. The interior is lined with shelves, and earth currently presses against the walls.

During the early 1940s or late 1950s, the mine's operator built an addition on the boardinghouse's western end, which became the fifth component. The addition was a kitchen 8'x12' in plan with a shed roofline 6' high at the west end and 8' at the eastern. The walls consist of planks over a 2"x4" post-and-girt frame, and the roof corrugated sheet iron on plank decking nailed to 2"x4" rafters. The south (front) features a doorway, while the west and north walls have windows. The floor is layered particleboard and planks. Inside are two partially disassembled stoves. One is coal-fired, while the other has settings for coal heat or electric elements.

The boardinghouse's last component was a privy added on to the western end during the 1970s. The privy is 7'x8' in plan with a shed roofline 6' high at the west and 8' high at the east. The walls and roof are like the adjacent kitchen, but with recent materials including plywood. The entries are 24"x78" plank doors in the north and south walls. Inside, two seats in a bench are in a small privacy room whose walls shield users from outside view. Workers custom-made wooden toilet paper holders and a bin for lime used to suppress foul odors. The privy stands over a still-empty pit around 8' deep retained by log cribbing.

The boardinghouse was modified several times in its eighty-year lifespan, and the most impactful changes date to the 1960s or 1970s. To fend off chronic fierce winds, the occupants tightly wrapped the original two cabins, kitchen, and the roofs of the other additions in corrugated sheet iron. Workers custom-cut sheets around boards and joints, and simply warped and bent other sheets over corners, angles, and edges. More sheet iron was nailed over the cribbing retaining the boardinghouse's earthen platform. The boardinghouse took on a ragged, battered appearance with few original wall or roof surfaces exposed to view. The other major change was inside. Workers lined the two cabins and kitchen with combinations of fiberboard, sheetrock, and plywood, all painted white. A sink and counter were installed in the 1902 cabin, and many original doors were also replaced with circa 1950s panel units. Minor changes include running water in 1936, electric lighting in 1941, and a patchwork replacement electrical system during the 1970s.

The boardinghouse is in very dilapidated condition. The foundations for the two cabins have rotted and promoted settling, while some sheet iron has blown away. Most of windows are gone, as well. The coal shed siding is falling apart, the roof leaks, the foundation is

disintegrating, and the interior is damp. The recessed storeroom is in a similar state, while the kitchen and privy are in better condition because of their recent age.

In 1935, Woods and Carney constructed two food storage buildings behind the boardinghouse. One (F5) stands against a dead spruce tree, and appears similar to a privy with a gabled roof. The building is 2½'x2½' in plan and 6½' high, and the walls feature slats with alternating gaps covered by window screens for ventilation. The support system is based on four 2"x4" corner posts, girts, and rafters, on a foundation of several logs. The floor is plank, and the roof features more planks clad by several pieces of sheet iron bent over the gable peak. The structure leans but is in good condition.

The local mine inspector referred to the second storage building (F6) as a vegetable house. Still standing, the building is front-gabled, 10'x10' in plan, 7' high at the roof eaves, and 12' high at the gable peak. The walls were assembled with corrugated sheet iron cladding over tarpaper, on plank sheathing, nailed to a 2"x4" post-and-girt frame. The roof is of similar materials. The western wall (front) has a 24"x24" four-light window under the roof gable, and a 30"x72" plank door, now covered in particle-board and locked. The floor is plank and the foundation consists of timbers laid on a cut-and-fill platform. Recreationists made a number of substantial modifications in recent decades, changing the building's appearance. They installed a large picture window in the southern wall and nailed particleboard over the door. The recreationists also repaired a rotting foundation, and built broad decks in front and back. A table, chairs, garbage can, and building materials were then brought in.

When the mine was electrified in 1941, a line was extended from the regional transmission system down on the main fork of Mineral Creek. The Brooklyn line ended at a transformer station northwest of the boardinghouse. An open-air facility, the station (F7) consisted of a utility pole and several transformers on a plank deck. All equipment and most hardware is now gone. The pole carried the mine's incoming lines, lashed to insulators on a cross-member at top, as well as distribution lines extending from insulators on a bracket below. The pole is a fir log 1' in diameter and 24' high treated with creosote. The cross-member has fallen, but the distribution bracket remains in place with tangled wires. The deck is 7' west, and is 6'x7' in plan on a cut-and-fill platform. A surface of 2"x12" planks are nailed to three log joists. Half the planks are gone.

The electrical line's second-to-last pole (F8) stands at the toe of the western waste rock dump. The pole is a dead tree adapted for the purpose, with a cross-member for insulators bolted to the crown. The tree is around 32' high and was never trimmed of its branches.

The residential complex lacks privy pits and refuse dumps, as noted above. Moreover, the complex also has a surprisingly light artifact assemblage, especially considering eighty years of intermittent occupation. Residents probably threw most of their refuse down the nearby waste rock dump, where iron items disintegrated and what remained was bulldozed. However, a sparse scatter of generalized and finely fragmented domestic artifacts does surround the boardinghouse, with most materials concentrated along the narrow undisturbed strip of ground downslope and south.

Brooklyn Mine Midlevel Workings

The midlevel workings include a tunnel, its extensive waste rock dump, a corrugated sheet iron compressor house, an adjacent water tank, and several debris scatters. The workings were the focus of Richardson Mines' exploration and bulldozing activities 1968-1972, and Alpha

Energy & Gold's ore production 1980-1983. During these periods and probably in between, the midlevel area was repeatedly bulldozed and all historical elements scraped away. In addition, the midlevel tunnel was enlarged for self-propelled haul vehicles, and several new facilities built.

During the 1890s, the original mining outfit bored the midlevel tunnel (F9) northeast along the vein for deeper development. The portal was recessed in a trench incised into the mountainside and timbered for support. During the 1960s or 1970s, the portal was cleaned out with heavy equipment and retimbered, only to be enlarged in 1980 for the haul vehicles. Around 2004, DRMS barred the entry with a steel grate. Offering no original characteristics, the tunnel presently drains mineralized water.

During the midlevel tunnel's lifetime, miners used ore cars to dump waste rock at the portal and west across the mountainside. In so doing, they built up a massive bench (F10) of material that was bulldozed between 1968 and 1972. The material was spread out and pushed farther west, creating an irregular deposit. When the tunnel was worked during the early 1980s, haul vehicles added more waste rock, which was also spread out with a bulldozer. The dump now takes form as a fan 220'x240' at the eastern end, and a pad 230'x260' at the western end. Lumber, logs, and hardware are scattered down the southern flank, which was terraced by a bulldozer. A tank, 55-gallon drums, and truck tires lie below the toe. The mine's access road crosses the dump and sees heavy recreational traffic. The dump has no historic character.

A fuel tank (F11) stood on the western portion of the midlevel tunnel's dump. Installed during the 1970s, the tank was a welded steel vessel on a timber cribbing base, resting on a raised waste rock pad. The assembly was intact as of 2000, but someone has since rolled the tank to the north. The tank is 6' in diameter and 10' long, while the base is 5½'x9' in plan and 3' high. Wrecked mill appliance parts and other bulldozed junk are scattered around.

During the 1970s, a compressor house (F12) was erected on a bulldozed platform east of the midlevel tunnel. Currently intact, the building is front-gabled, 30'x30' in plan, 10' high at the roof eaves, and 16' at the gable peak. Generic and utilitarian, the building consists of corrugated sheet iron over a steel frame bolted and welded together. The frame features four steel corner-posts, mid-posts, and cross-members, all supported by cylindrical pre-cast concrete pilings. The southern wall (front) has a 16'x12' sliding corrugated sheet iron door, and a 36"x84" steel entry. The inside is a jumble of recent materials not inventoried here. A sample includes clothing, shelves, plastic items, cardboard, metal baskets, engine and machine parts, and a wood stove made from a transformer case. The building is in good condition except for a tear in the sliding door.

Between 1968 and 1972, the mine's operator bulldozed structures and materials located west of the midlevel tunnel. The debris was pushed into two concentrations. The western pile (F13) became clustered over a 20'x50' area, and the eastern pile (F14) is 20'x75' area, all on bulldozed ground. A sample of artifacts includes pipes, steel beams, hardware, PVC tubes, plastic hose, and machine and mill appliance parts.

Northeastern Prospect Complex

During the mid or late 1880s, prospectors searched for the Brooklyn Vein by employing then-standard methods of digging pits in an attempt to unearth the mineralized formation. Once the prospectors confirmed the vein, they next sank a shallow shaft to evaluate its richness at depth. The vein in fact offered gold ore, and was developed shortly afterward as the Brooklyn Mine.

Today, the pits and shaft are a cluster of archaeological features immediately above and northeast of the main stope (F1). The small cluster of excavations lies in a shallow basin between minor knolls. Overall, the cluster has marginal integrity because of poor preservation, in part because the shaft was backfilled with its small dump.

It remains unknown which pits came first, although the lower, southern one (F15) was dug during the initial search. The pit is circular, 9' in diameter and 5' deep, and has a waste rock fan downslope. A short distance northwest is another, smaller pit (F16) 5'x6' in area and 2' deep, mostly filled with slumped earth. The largest pit (F17) is upslope in the nadir of a minor swale. The pit is a depression 15' wide, 33' long, and 3' deep with an earthen floor and thin veneer of backdirt downslope.

It seems likely that the pit revealed the vein, and that the prospectors shifted a short distance west and sank their shaft (F18). When intact, the shaft was 4'x6' in-the-clear, around 30' deep, and lined with log cribbing. DRMS backfilled the shaft in 1988, leaving an irregular mound of rock 15'x30' in area with a closure pipe marker. South of the shaft is a monument (F19) for the Gloucester claim. A 3' diameter collection of cobbles surrounds a brass cap stamped with Cor. 1 15975.

The Brooklyn Mine has a moderate assemblage of artifacts mostly dating to the 1960s-1980s. The only artifacts retaining integrity of location are those around the boardinghouse and 1970s compressor house. Most of the remainder has been pushed around by bulldozing. In general, structural materials are incorporated into the boardinghouse, food storage buildings, and compressor house. More lies in the site's refuse scatters and across the waste rock dumps. Industrial refuse is distributed across the dumps, concentrated in the bulldozed piles, and around the compressor house. Large items such as 55-gallon drums and truck tires lie around the toe of the lower dump. Domestic refuse is surprisingly light, even though miners intermittently lived in the boardinghouse for eighty years. Domestic refuse is limited to disbursed bottle fragments, a few food and beverage cans, several general household items, and stove clinker. Some items are sprinkled around the boardinghouse, while small bottle fragments and clinker is downslope from the southern side. Concentrated refuse dumps are conspicuously absent. It seems likely that most rubbish was thrown onto the waste rock dump, where caustic conditions disintegrated iron and other materials, only to be buried or destroyed by bulldozing.

The site has little potential for buried archaeological deposits. Historic privy pits could not be located, and refuse dumps are absent as noted above. Also, thin, dense soil provides a poor deposition environment around the boardinghouse.

Brooklyn Mine Interpretation

Only a few broad conclusions can be drawn about the Brooklyn because the feature and artifact assemblages are poorly preserved and incomplete. Regarding timeframe, archival information is the only sure source providing definitive dates of operation. Dateable features and artifacts are few. At the boardinghouse, a hand-finished bottle base is the only temporal item reflecting activity prior to circa 1910, while several amethyst, machine-made bases reflect occupation 1910-1921. A few colorless, machine-made bottles and jars probably date to the 1930s. Otherwise, most other bottle fragments and nearly all industrial artifacts are 1960s and later, with plastic, aluminum, and PVC being late 1970s and 1980s.

Overall, the mine was like many moderate-scaled operations in the San Juan Mountains. The property was prospected on a marginal basis during the 1890s and did not yield much at first

because the ore was complex and costly to treat. Experienced, local miners knew what was required to make the Brooklyn pay, and carefully invested just enough money to develop the vein. Completion of a nearby concentration mill in 1903 lowered treatment expenses and rendered the complex ore worth extracting. The Brooklyn then became a regular if limited producer, never generating enough money at any one time to justify expansion or mechanization. Operations suspended in 1921 along with the rest of the county's industry, and revived in 1934 with increases in the values of gold and silver. With the ore now worth more than ever before, the Brooklyn entered one of its most important periods. The operators funded deeper underground development and new surface facilities as income allowed, and the Brooklyn joined the ranks of the county's principal producers. During the 1930s, the Brooklyn was apparently among the county's last holdouts regarding mechanization, miners having to drill and blast largely by hand. At the late date of 1941, the operators finally installed a compressor so miners could use rockdrills. World War II forced the operators to suspend, and like many of the county's mines, the Brooklyn reopened again during the late 1950s. The mine shipped ore to the Shenandoah-Dives Mill for around ten years, and the vein finally began pinching out. A surface and underground exploration campaign found yet another stringer of ore capable of supporting one last period of output in the early 1980s. Making way for modern machinery and methods, the operators bulldozed the site and erased nearly all traces of previous facilities.

In general, the two tunnels and their voluminous dumps reflect extensive underground workings on two levels. Archival sources allude to lower third and fourth levels, which would be below and southwest of the midlevel tunnel. Bulldozed waste rock, however, has obscured the portals. Lack of telltale dumps indicate that the lower levels were minor, shallow, and not a focus of production.

Brooklyn Mine Condition and Integrity

The Brooklyn Mine is in poor condition as a historic site, and none of its operating periods are well represented by existing features. At one time, the mine had bold, large waste rock dumps and surface facilities at the upper and midlevel tunnels. A sample of what had been includes shop buildings, timber sheds, rail lines, snowsheds, and ore bins. Evidence of everything was erased when nearly the entire mine was bulldozed 1968-1972, and circa 1980. The only facilities that survive in any form are a fuel tank (F11) and adjacent compressor house (F12) dating to the 1970s. Otherwise, only bulldozed piles of debris remain. The waste rock dumps themselves no longer retain their original footprints, profiles, or surfaces. The upper stope collapsed and is now a subsidence pit, while the midlevel tunnel was enlarged and then plugged with a grate. Overall, the mine workings, including waste rock dumps and debris piles, are non-contributing.

The residential complex is the site's only area with features older than fifty years, and is contributing. And even then, the complex saw some bulldozing in the form of roads cut past the boardinghouse and up to the food storehouse. The boardinghouse is in dilapidated condition, and gaps in the roof and walls admit rain and snow. The foundation has rotted and the building's components have settled, and most doors and windows are gone. The building was wrapped in corrugated sheet iron during the 1970s, concealing original elements.

The storehouse is weather-tight, but only because recreationists adapted it for their use and repaired gaps. The storehouse no longer appears original due to the addition of a large

picture window and several plywood decks, which belie the building's original function. The adjacent food storage structure is as-built.

The site suffers an incomplete artifact assemblage. Most of the existing artifacts date to the 1960s-1980s, with little remaining from the mine's previous sixty years of production. Bulldozing destroyed many items and buried more in pushed waste rock, while caustic waste rock dissolved other materials. Additionally, recreationists have taken artifacts, as well.

Integrity is mixed. Bulldozing severely disrupted the mine workings. With few identifiable surface facilities, the overall design, materials, and workmanship of the mine's surface plant is no longer apparent. Association with mining prior to the 1960s is also weak. Although the site was bulldozed, the large waste rock dumps, compressor house, and industrial refuse support some feeling, reinforced by a setting evocative of mountain mining.

Individually, the boardinghouse has good integrity. Design of the 1890s core is readily apparent, and the additions reflect planned periodic expansion to house larger workforces and their spatial needs. The boardinghouse also embodies its materials and workmanship, which changed over time. The building has feeling of high altitude mining, while the mine workings provide association and an appropriate setting. The two nearby food storage buildings embody their designs, materials, and workmanship.

Brooklyn Mine Eligibility Recommendations

When USFS recorded the Brooklyn in 1999, staff recommended the site not eligible because then-recent disturbance had caused too much disruption. The finding is reversed here, with the site recommended eligible under Criteria A, B, and C. The mine workings are non-contributing because of poor integrity, while the residential complex is contributing because of good integrity.

Regarding *Criterion A*, the Brooklyn was among San Juan County's longer-lived mines, yielding ore intermittently from 1902 into 1966. The mine was important for several reasons during the period, which is a considerable timespan despite being idle during the 1920s and 1940s. The mine was a regular employer, contributed to the local economy, and was a source of ore for the Shenandoah-Dives Mill near Silverton. The Shenandoah-Dives depended on mines like the Brooklyn for viability, and in turn directly encouraged mining in San Juan County by offering local ore processing. As important, the Brooklyn was also a substantial producer during the Great Depression, when employment and economic contributions were all the more needed in San Juan County.

In general, Criterion A requires that a site be intact enough to clearly convey its history and areas of importance, even if only on an archaeological level. The Brooklyn's residential complex (F4-F8) retains integrity from the entire period of production, and played a fundamental role in the mine's success. Integrity is in the form of the standing food storage buildings and especially the boardinghouse, which consists of additions dating to each of the mine's principal periods. The complex's role was in housing the workforce who made the Brooklyn possible.

The site's mine workings (F1-F3, F9-F19) lack sufficient integrity to qualify under Criterion A. Extensive bulldozing 1968-1972, 1980, and probably at times in between, have erased too many historic elements.

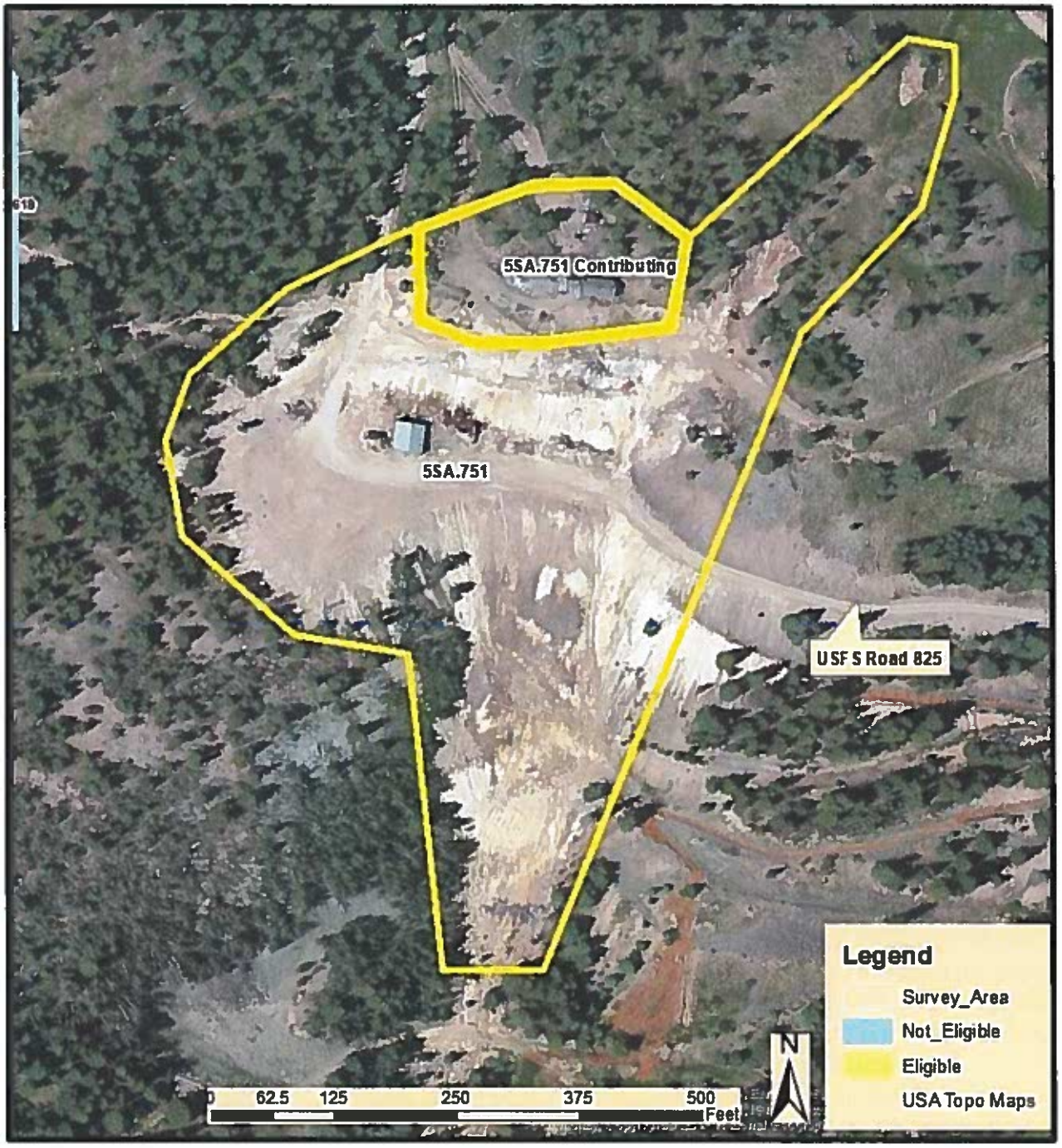

Figure 7.27: Overview aerial of Site 5SA.751, Brooklyn Mine, contributing portion. The outline at top surrounds the residential complex, which is contributing and should be avoided. The rest of the site is non-contributing.

For *Criterion B*, Thomas H. Woods was directly involved with the Brooklyn Mine, and certainly spent time in the residential complex. Woods was a locally significant mine manager also attending to other, larger operations including the famed Camp Bird and Revenue mines near Ouray. Woods personally reshaped the Brooklyn for production in 1927-1928, and oversaw operations into 1940, when he moved on. During his thirteen year affair with the mine, Woods stayed in the boardinghouse for prolonged periods. The residential complex currently retains good integrity relative to Woods' association.

In terms of *Criterion C*, the residential complex is a good example of its resource type, workers' housing associated with a substantial, long-lived high altitude mine. In keeping with the type, the complex includes a boardinghouse and food storage structures for caching supplies in volume. The boardinghouse in particular consists of an original 1890s core and five additions, each built by one of the mine's successive operators for greater numbers of workers and more living space. Boardinghouses with multiple additions were common at fairly remote mines active for prolonged time periods. The one at the Brooklyn reflects changes and evolution of materials, workmanship, and spatial needs (design), 1890s-1970s.

The Brooklyn's mine workings do not qualify for *Criterion C* because, again, integrity is insufficient. The workings are no longer a good example of their resource type because character-defining features and artifacts are missing. Better examples exist elsewhere in the county.

Under *Criterion D*, the Brooklyn will not yield important information upon further study. Definitive privy pits, refuse dumps, and other archaeological deposits are absent. The site also offers no complex artifact assemblages or features worth further investigation.

Brooklyn Mine Management Recommendations

The Brooklyn has been included in this project because its waste rock dumps and midlevel tunnel drainage are probably sources of acid and metals. USFS is currently studying the site and may employ one or several actions to resolve problems. Depending on study results, actions could include run-on runoff control ditches for the dumps, capture-and-treat for tunnel drainage, and/or limestone settling ponds. The dumps might alternatively be contoured, vegetated, or removed wholesale to a repository. USFS might also conduct a general cleanup of the site, removing all debris, refuse, the compressor house, and water tank. In general, the actions are planned only for the mine workings (F1-F3, and F9-F19), which are non-contributing. The actions will avoid the residential complex (F4-F8), which is the site's only contributing portion.

As long as the residential complex is totally avoided by all actions, the project will pose no adverse effect. But, determination of effect will be based on the intermediate and final remediation project design.

Linear 5SA.1617 ***USFS # 2130802132***
Brooklyn Mine Telephone Line

In 1934, Thomas H. Woods and J.E. Carney reopened the Brooklyn Mine (5SA.751) for production. From that time until 1941, Woods and Carney sporadically reinvested in improvements as funds came available. Direct telephone service was among the improvements and could have been completed anywhere in the period. A line connected the mine with the regional system down on the main fork of Mineral Creek. The Brooklyn line ascended northeasterly from the valley floor up an extremely steep mountainside, beginning at 10,150' elevation and ending at the mine, 11,400'. The lower portion of the mountainside is a heavily eroded talus and gravel slide, and the line has been lost. But above, the line is traceable for much of its length, featuring intact poles standing amid spruce and aspen forest. The line qualifies as a linear resource, and is an engineered construct crossing USFS land.

Brooklyn Mine Telephone Line History

The Brooklyn Mine was developed for production in 1902 and received a log boardinghouse at this time. During the next ten years, the operators added various surface facilities to accommodate increased production. Unlike many mines elsewhere in the San Juan Mountains, a telephone was not among the new facilities. An economic depression in 1921 forced the mine to close.

Thomas H. Woods and J.E. Carney purchased the property and reopened it for production in 1934. As with their predecessors, Woods and Carney erected new facilities as money allowed. Some of the facilities involved making the workers' housing complex more comfortable and capable of accommodating a larger crew. In particular, the old boardinghouse received several additions in 1935 and 1936, and the entire mine was electrified for lighting and power in 1941. New electrical wires were strung from the main transmission line down in the main fork of Mineral Creek valley up to the mine on a combination of utility poles and dead trees adapted for the purpose. Somewhere among the improvements also came telephone service, with its own dedicated wire and series of utility poles. Woods and Carney could have instituted the service with the main boardinghouse improvements in 1935 or 1936, or at the time the electrical wires were routed in 1941. Archival sources make no mention of the exact date, but material evidence places it during the 1930s.[31]

Brooklyn Mine Telephone Line Description

The telephone line began with some sort of connection to the regional system near the mouth of Browns Gulch, on the main fork of Mineral Creek, and ascended northeasterly 3,600' to the Brooklyn Mine. The line's southwestern end is difficult to locate and probably missing, but the main extent is traceable for much of its length. The existing line is 1,570' long and features two sections strung at slightly different angles. The southwestern section is 500' long and angles at an azimuth of 40 degrees northeast. The northeastern continuation is 1,070' long and angles 65 degrees to a terminus at the boardinghouse.

In general, the line featured two iron wires without sheaths, lashed to Hemingray glass pony insulators. In turn, the insulators were screwed to angled pegs nailed to the crowns of poles. Each pole is a trimmed Douglas fir log around 20' high set firmly in the ground, with the pegs on the northern side. The poles are 100' to 200' apart, depending on topography, but most are 150' apart. Markings, date nails, and hardware are absent, except for the pegs.

One pole in particular joins the line's two sections. The only difference between the union pole and all the others is that a guy cable lashes the northern side to counter a southward pull exerted by the telephone wires. The cable is fastened to an eye bolt through the crown, anchored to a standard utility rod in the ground, and features a sheet metal safety guard on the northern side. The hardware is galvanized, a zinc coating method post-dating circa 1910.

The artifact assemblage includes items typical of remote, rural telephone lines. The assemblage is mostly lodgepole pine logs, insulator pegs, colorless Hemingray glass pony insulators, wire nails, and wires with no sheaths.

The line is in fairly good condition overall. In the lower, southwestern section, the wires are still fastened to insulators, although some have broken. In the upper, northeastern section, the

[31] Colorado Mine Inspectors' Reports; Brooklyn.

insulators are gone and the wires are down, but most poles stand intact, including the one joining the two sections.

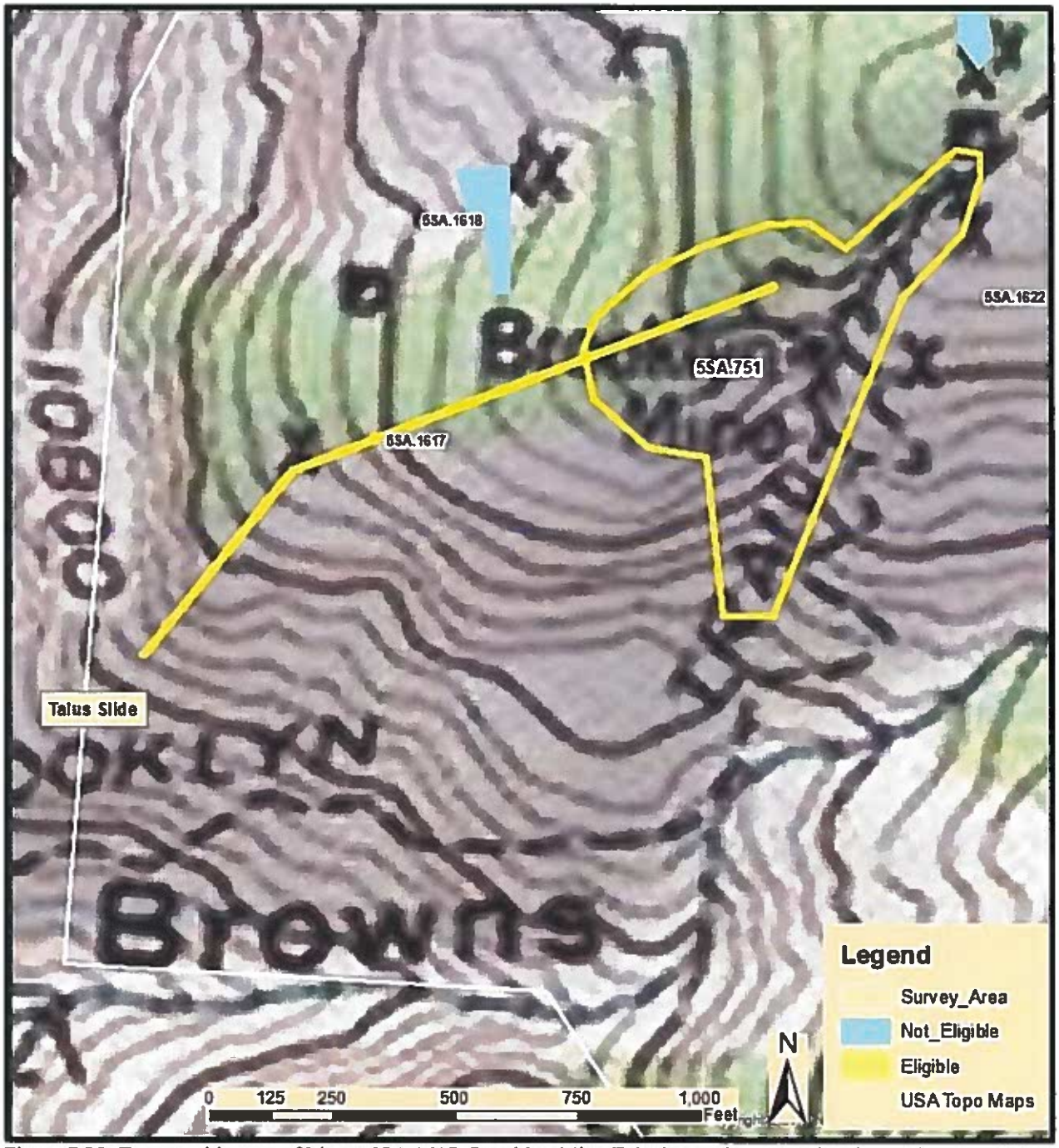

Figure 7.28: Topographic map of Linear 5SA.1617, Brooklyn Mine Telephone Line. Note that the northeastern 400' pass into the associated Brooklyn Mine site (5SA.751).

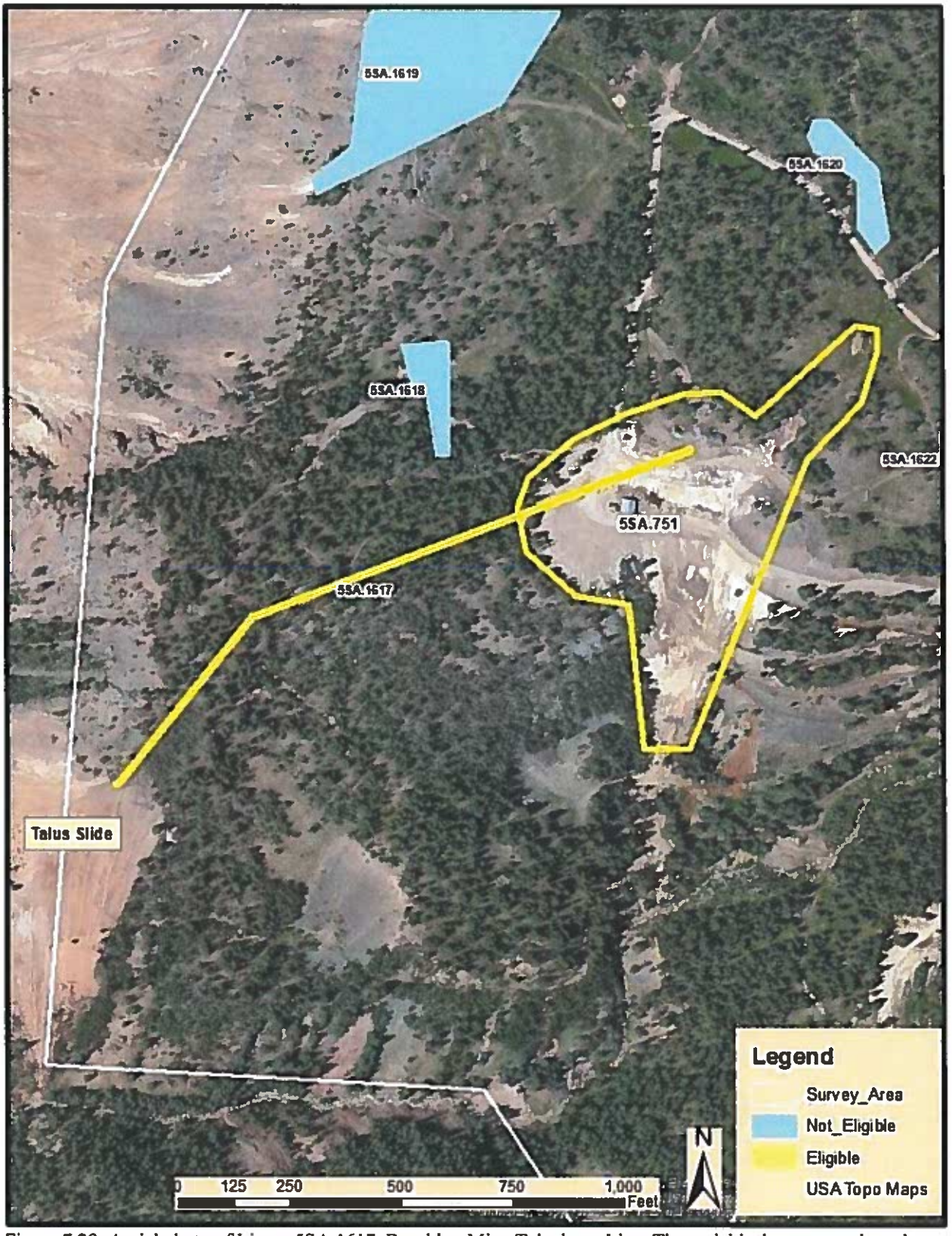

Figure 7.29: Aerial photo of Linear 5SA.1617, Brooklyn Mine Telephone Line. The aerial is the same scale and location as the topographic map above.

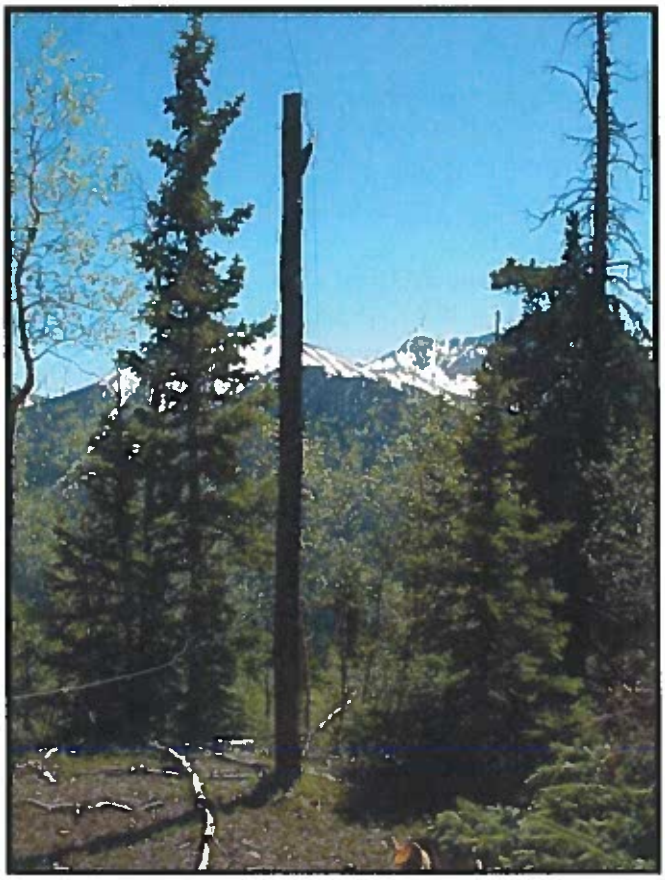

Figure 7.30: View southwest at a representative pole, Brooklyn Mine Telephone Line, 5SA.1617.

Brooklyn Mine Telephone Line Interpretation

The telephone line is standard for rural systems dating to the 1910s-1950s. The line features fairly short Douglas fir poles spaced as regularly as localized topography allowed, and was assembled with factory-made hardware for dual wires. Single in-coming and out-going wires reflect one or two telephone receivers at the mine. The poles were set in small-diameter holes excavated with picks and shovels where soil was thick, but augmented by blasting along most of the route. Most poles still stand because of quality construction and materials, which came from somewhere off-site.

The builders chose a route that was as direct as possible to minimize cost, but took a general northeasterly course because topography was simply too steep. A roughly east-west route would have been around 3,000' long, instead of the current 3,600', but the line would have had to ascend an extremely steep and unstable talus slope prone to slide, creep, and avalanches. Rather than save the additional 600' of distance, the builder chose a route that followed the northern shoulder of Browns Gulch, which ensured that the line would not be damaged. The use of standardized hardware and uniform Douglas fir poles, and closely spaced in particular, reflects professional design and execution, and investment of enough capital for a lasting and reliable communication system.

Brooklyn Mine Telephone Line Condition and Integrity

The telephone line is in good condition as an engineered resource. The principal deficiency is that the lower 2,030' of the southwestern section is missing poles and is difficult to trace because of extreme topography and an unstable mountainside. Otherwise, the line's northeastern 1,570' are traceable and most poles are standing. Further, the poles feature their twin insulator pegs, some with insulators still screwed on.

The telephone line retains good integrity on an engineered level. The line's design is readily apparent, both in route and in construction. The route is a line through forest, generally southwesterly down to the main system in the valley below. Regarding design, the poles, insulator pegs, in-place insulators, and wires reflect a system of two wires fastened to insulators on angled pegs nailed to the northern side. The line also embodies materials and workmanship, while a destination at the Brooklyn Mine provides association. The main fork of Mineral Creek valley, and its extremely steep walls, provides a setting characteristic of mine telephone lines. Feeling is negligible.

Brooklyn Mine Telephone Line Eligibility Recommendations

The telephone line is recommended eligible under *Criterion C* because it is an outstanding example of its resource type, a circa 1930s rural telephone line. Well-preserved, the resource has defining characteristics including a fairly straight route, standing poles, insulator pegs, and even intact insulators. The twin wires are lashed to some pegs, and carried incoming and outgoing telephone calls. In general, as-built telephone lines are rare.

Based on current information, the line does not qualify under *Criterion A*. Exact timeframe is uncertain, and so historical associations are somewhat speculative. The line's general importance is also questionable. Rather than connecting communities, major institutions, or multiple parties together, the line provided service for a single customer, the Brooklyn Mine. As such, the line was not an important communication system in a broad sense.

In terms of *Criterion B*, the line is almost certainly not associated with important people. In general, the line transmitted messages electronically, and was not a place where significant individuals spent appreciable amounts of time.

Regarding *Criterion D*, the Brooklyn line will not yield important information upon further study. The line is simple in materials and workmanship, and lacks complex elements capable of justifying more investigation and documentation.

Brooklyn Mine Telephone Line Management Recommendations

The line could be inadvertently involved in potential water-quality actions at its end-point, the Brooklyn Mine. USFS is currently studying the mine's two large waste rock dumps and tunnel drainage for environmental remediation. Actions to treat tunnel drainage, or divert runoff water around the dumps, will not involve the telephone line at all. But if the two dumps are heavily altered by contouring, revegetation, or removal altogether, then the line could lose its three eastern-most poles. As noted in the site description, the line ends at the mine's boardinghouse, while the preceding 400' cross through the greater site. Waste rock removal at the Brooklyn would pose no adverse effect if the three poles on-site are left standing.

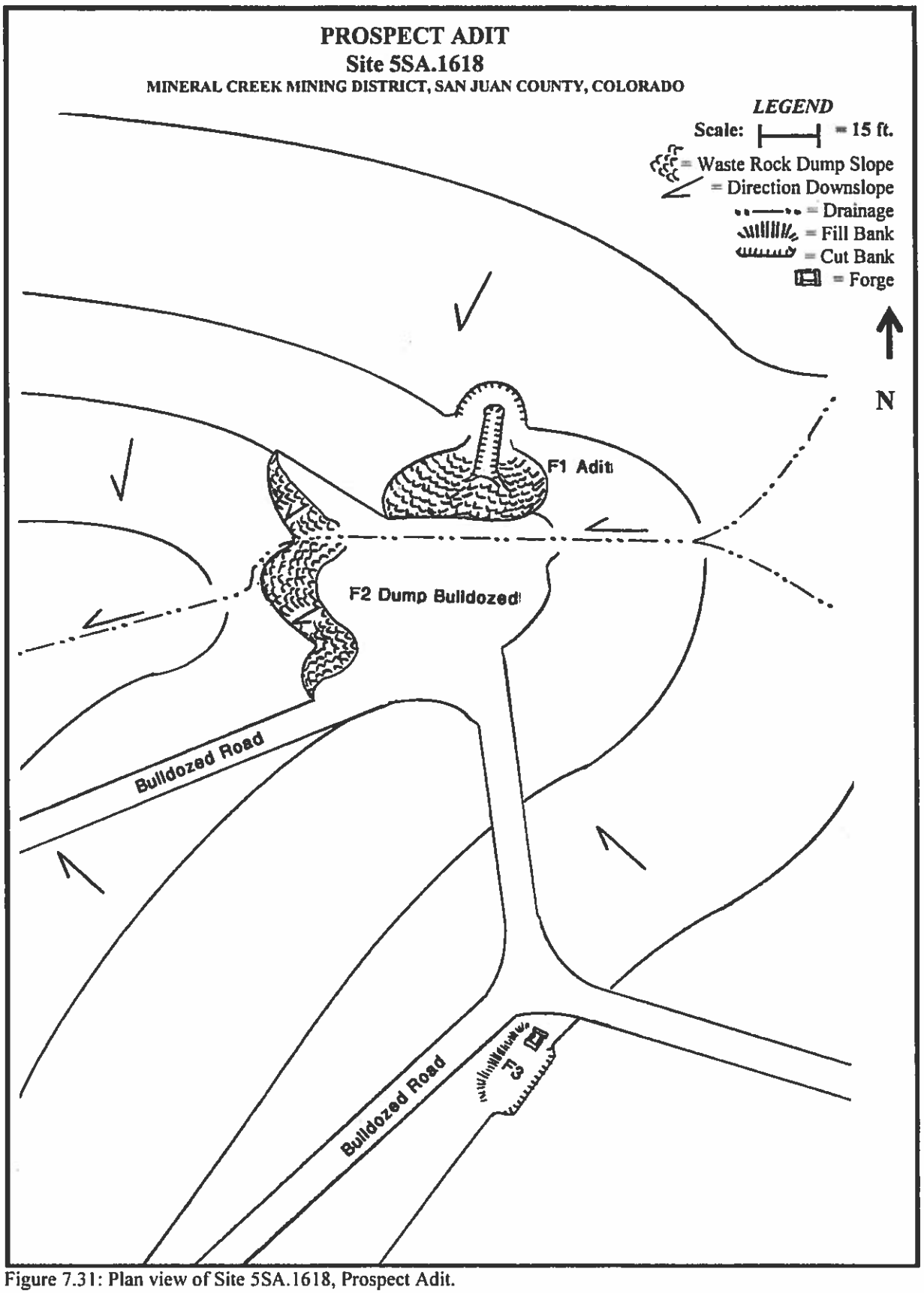

Figure 7.31: Plan view of Site 5SA.1618, Prospect Adit.

Site 5SA.1618 ***USFS# 2130802133***
Prospect Adit

Sometime around 1900, a prospecting party discovered traces of a mineralized vein crossing northeasterly through a minor drainage a short distance northwest of the Brooklyn Mine (5SA.751). The drainage descends steeply to the west through spruce and aspen forest, and patchy meadow, all on USFS land. Prospectors bored an adit northerly into the drainage's north side to evaluate the vein, and constructed a blacksmith shop on the drainage's southern side, elevation 11,250'. Between 1968-1978, Richardson Mines operated the Brooklyn and conducted extensive bulldozing around the mine. During this period, Richardson bulldozed a road down from the mine to the adit's shop, turned north to the adit, and scraped the waste rock dump. The bulldozer continued southwest out of the drainage on its way to other prospects. With the adit collapsed and the shop building gone, the resource manifests as an archaeological site. Integrity is poor.

Prospect Adit History

No archival information specific to the site could be found. The property was never patented, historic maps do not depict the operation, and the Bureau of Land Management General Land Office possesses no records. Names are necessary for research. It can be observed, however, that discovery of the Brooklyn Vein stimulated a wave of prospecting during the late 1880s and early 1890s. Development of the Brooklyn and reports of rich ore shortly after 1900 also drew prospectors to the general area.

Prospect Adit Site Description

The site presently features the adit and its bulldozed dump on the drainage's northern side, and shop platform around 150' away on the southern side. Prospectors drove the adit (F1) northerly into unstable, friable volcanic tuff, and timbered the portal for support. The timbering later rotted and completely collapsed, the portal becoming a subsidence area 11' wide and 22' long with a ragged and crumbling headwall 6' high. The adit is barely recognizable for what it is, and features a log spanning the headwall.

When prospectors worked the adit, they dumped waste rock (F2) into the drainage, filling the floor. The deposit took form as an irregular pad with a flattened top-surface. Between 1968-1978, Richardson Mines bulldozed the pad, scraping the surface and pushing material a little farther down the drainage. The pad is now a hummocky and heavily eroded mass with no original form, overgrown with spruce saplings. The western end is 68' wide, and the main portion is 60' long and 5' thick.

The prospect outfit erected a blacksmith shop on a moderate slope around 150' south of the adit. The building stood on a cut-and-fill platform (F3) 12' wide and 20' long oriented northeast-southwest. The forge, a gravel-filled wood box type, was nestled against the northeastern wall, and the anvil block rested nearby. The shop building consisted of frame walls on a foundation of logs, all of which burned decades ago, leaving several elements. One is the stub of the southeastern corner, with rotten wall planks around 2' high. The other is impressions of log footers against the platform's well-defined northeastern and southeastern cut-banks. The forge is still evident, and is a square earthen pad 3'x3' in plan and 2' high surrounded by remnants

of its walls. The anvil block lies adjacent, split in two. The rest of the platform is a faint flat area blanketed with duff and erosional deposits. Buried materials are absent, and a few artifacts are scattered downslope, including a dismembered cook-stove.

The site offers a severely impoverished artifact assemblage, some of which was destroyed by bulldozing. A few logs lie on the waste rock dump, while most other materials are scattered around the shop platform. The materials include decayed lumber, a few wire nails, blacksmithing refuse, parts for a coal-fired cook-stove, and sheet iron made from key-wind side-strip coffee cans. Bulldozing past the platform's western edge has erased additional items.

Buried archaeological deposits are absent because activity was too brief to generate materials in volume. In addition, steep slopes provide a poor deposition environment.

Prospect Adit Interpretation

The site's history can only be derived from material evidence because archival research found no information. It must be noted, however, that material evidence is somewhat incomplete. Regarding timeframe, dateable artifacts strongly suggest that the adit was driven between 1900 and 1910. Wire nails post-date 1890, while key-wind coffee cans are a little later than 1900. In contrast, hole-in-cap food cans predate circa 1910.

In general, the adit is the product of a short-lived attempt to evaluate and sample a mineralized vein at depth. The vein trended northeast-southwest across the area's drainage, and prospectors drove the adit into the drainage's northern side. The drainage provided a low topographical point for deeper intersection of the vein, but was vulnerable to flashflooding. The prospectors dumped waste rock into the drainage anyway, but more thoughtfully sited their blacksmith shop on high ground to the south. The shop was a simple frame building housing very basic blacksmithing facilities, including a forge assembled with local materials.

The volume of waste rock indicates that the adit may have had as much as around 200' of workings, but never encountered ore in profitable tonnages. If the adit had produced, then the site would feature evidence of an ore storage or sorting facility, even if limited to bulldozed structural debris. The short adit, lack of production, simple shop, and use of local materials for the forge indicate that the operation had very little capital, and was abandoned after little work.

Prospect Adit Condition and Integrity

The site is in poor condition due to natural deterioration and bulldozing. Regarding deterioration, the adit collapsed and became a ragged subsidence area with no original form. The shop building burned, and the platform gradually eroded and became blanketed by sheetwash sediment and duff. The platform is now difficult to discern, even though the forge is identifiable. Regarding bulldozing, the waste rock dump was scraped and spread downslope, destroying the original footprint and surfaces. The dump is now only vaguely identifiable. Also, a road was bulldozed below the shop platform, scraping away artifacts.

The site's integrity is compromised due to deterioration and bulldozing. Design, association, and feeling are no longer apparent. Also, there is nothing to convey materials and workmanship. The setting, however, is characteristic of mountain mining.

Prospect Adit Eligibility Recommendations

The site is recommended not eligible for several reasons. In terms of *Criterion A*, the site was a relatively unimportant prospect operation with a brief life. Under *Criterion B*, archival research was unable to connect the site with important individuals. In terms of *Criterion C*, the site is not a good example of its resource type, a prospect adit. The site appears as little more than an eroded subsidence zone, a bulldozed waste rock pad, and a platform that is difficult to identify and perceive. Better examples of prospect adits exist elsewhere in San Juan County. Regarding *Criterion D*, the site will not yield important information upon further study because surface features and artifacts were thoroughly documented, buried archaeological deposits are absent, and the underground workings inaccessible.

Prospect Adit Management Recommendations

The prospect adit is included in this project because it lies within a survey area defined for water-quality actions at the Brooklyn Mine. Given the mountainside's extremely steep nature and the site's isolation in the area's western margin, the site will almost certainly be avoided by cleanup activity. That said, the site could be damaged by logging and earthmoving. If so, the action would have no effect because the site is recommended not eligible. Further consideration is not warranted.

Site 5SA.1619 ***USFS# 2130802134***
Gloucester Mine: West Workings

Probably during the 1890s, two prospecting parties found different mineralized veins traversing a nearly flat topographic point on the eastern wall of the main fork of Mineral Creek. The point is approximately 400'x500' in area and 11,400' elevation with an undulating surface. Soil is thin and bedrock is close to the surface. The point's western side abruptly drops away over cliffs and extremely steep talus-fields, while the north and south sides are more moderate slopes featuring fir and spruce forest. Terrain rises more gradually to the east. USFS Road 825 extends 750' south to the Brooklyn Mine (5SA.751).

The two prospect parties staked claims over their respective veins, which cross and form an X near the point's center. The Rainbow claim is oriented northeast-southwest, while the Gloucester claim is northwest-southeast. Each features a prospect adit, while a cabin ruin stands on overlapping ground. The adits, cabin ruin, and extensive prospect cuts that were bulldozed 1968-1978 have been recorded as an archaeological site. The site has little integrity. Ownership is mixed. Most of the site lies on the claims, which are patented, while some ground extends onto USFS land.

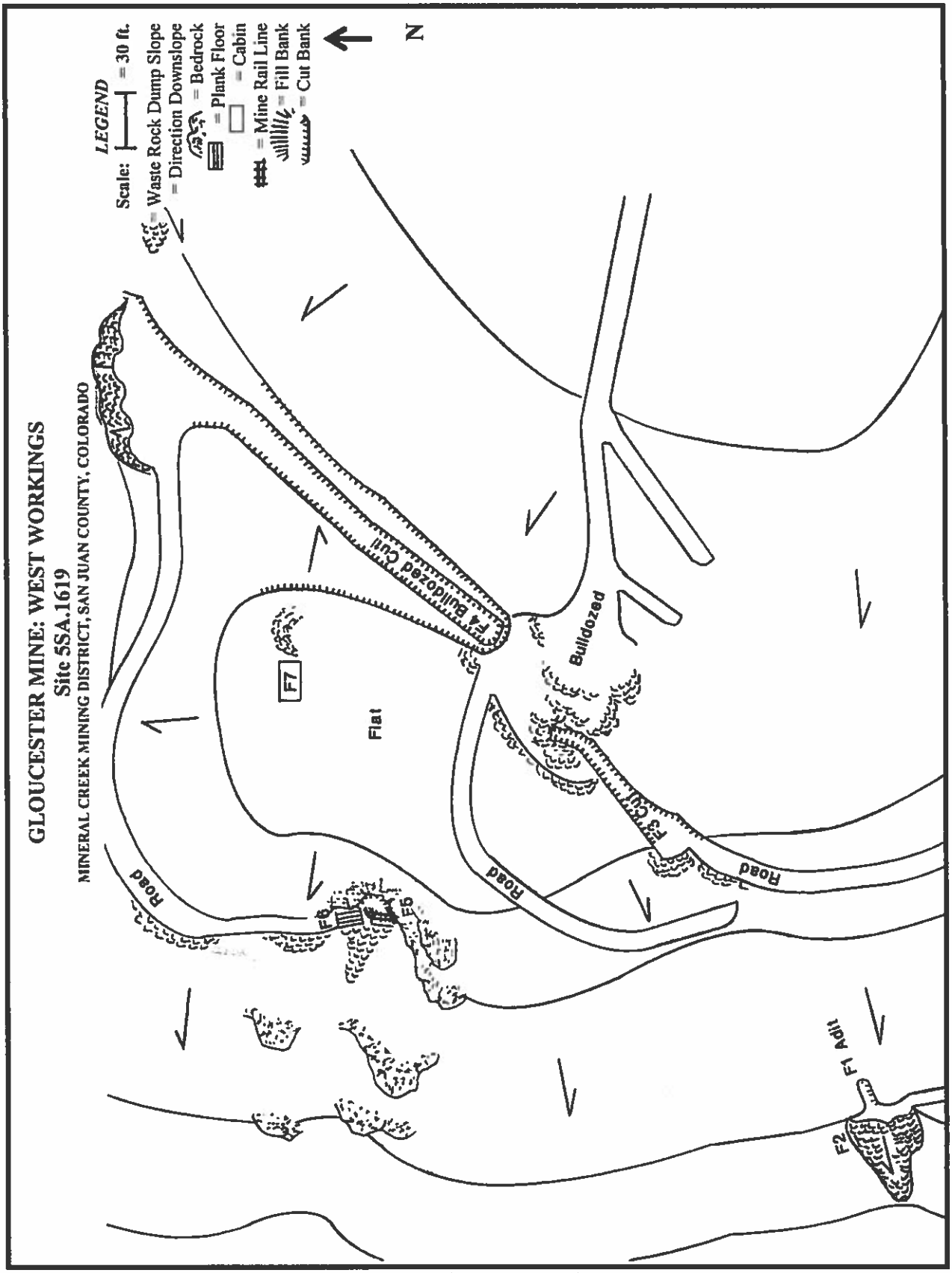

Figure 7.32: Plan view of Site 5SA.1619, Gloucester Mine: West Workings.

Gloucester Mine History

Archival research found no information other than information offered by mineral survey claim plats. Prospectors found the site's two veins during the 1890s, and were probably drawn to the area by reports of rich ore in the nearby Brooklyn Mine. The earliest party on the scene staked their vein, trending northeast, as the Rainbow and bored a prospect adit into the southwestern end. By 1901, the owners were C.W. Roe and W.W. Winchell, who were probably the original locators. They had the claim surveyed for patent, but never developed the vein.

The second party included Daniel Sheridan, and he staked the Gloucester claim over the vein trending southeast. He too drove an adit from over the point's rim, and angled it to reach the apex where the two veins met. Sheridan had his claim surveyed for patent in 1902 and made little further progress.

The Gloucester, however, was eventually brought into minor production, but research found no information about exactly when. Material evidence suggests that the operation yielded briefly sometime during the 1940s or 1950s. As an ore producer, however minor, the operation is known here as the Gloucester Mine: West Workings for its location at the claim's western end.

Richardson Mines operated the nearby Brooklyn Mine during the 1960s and 1970s. Between 1968-1978, the firm prospected ground around the mine with a bulldozer, and cut trenches, cuts, and roads through the site in this period.

Gloucester West Description

The Rainbow adit is in the site's southwestern corner, amid bedrock cliffs below the topographic point's shoulder. The adit (F1) was simple and short and penetrated blocky, friable rock that completely collapsed. The portal became a ragged subsidence trench 6' wide and 20' long with a headwall 10' high. Erosion and rockfall around the trench created a larger scar 14' across, 35' long, and 20' deep, with no original form.

When prospectors drove the adit, they dumped waste rock at the portal. Over time, they deposited a fan (F2) of pale, mineralized gravel 33' across, 55' long, and 4' thick. Most material slid downslope, preventing the build-up of a flattened top-surface.

The Gloucester adit (F5) is in the site's northwestern corner, amid northwest-facing cliffs that afforded little flat space. Miners found a vein extending southeast into the cliff, and blasted out a niche for the adit portal. The niche became 3' wide and 10' across. Miners then bored the adit along the vein, creating a passage around 3½'x6' in-the-clear in solid rock. Later, the cornice above dumped rubble in front of the adit, partially burying the portal and niche. The portal is now a partially open crown-hole approximately 4' wide and 3' high.

Probably during the 1940s or 1950s, miners brought the adit into production. They assembled a tunnel house (F6) against the cornice's northwest face to shelter the adit portal and an ore sorting station. Little remains of the building except for a partial plank floor, a mine rail line, and rubble-blanketed flat area totaling 12' wide and 30' long. The floor outlines the building's footprint, which was 10'x20' in plan. The floor consists of 2"x12" planks nailed to various log and timber joists spanning a gap between bedrock outcrops. The track is 18" gauge, and allowed miners to dump ore onto a 10'x10' floor at the northern end for sorting. Between 1968-1978, a road was bulldozed from the north to the tunnel house, destroying the northern end and disrupting the artifact assemblage. The ruin is very difficult to interpret.

The ruins of a cabin (F7) stand on the northern shoulder of the area's topographic point. The location provided protection from wind, remained snow-free longer than in forest, and was well-drained. The location was also on ground where the two claims overlapped, and so it remains unknown whether it was built by the Rainbow or Gloucester parties. When intact, the cabin was a side-gabled log building 12'x20' in plan, 6' high at the roof eaves, and 10' high at the gable peak. Miners assembled the walls with saw-cut V-notch joints, and chinked gaps with lime mortar retained by log strips. Three log beams held up the roof, and the floor consisted of planks. A 30"x60" doorway breached the southern wall, and a 30"x30" window the northern. Inside are remnants of a cook-stove and a counter along the southern wall. The cabin has fallen into ruin. The western end settled downward and the roof fell in, allowing snow to accumulate in the interior. The door and window are also gone.

Either the Rainbow or Gloucester parties sank a small shaft where the two veins crossed on the topographic point. In general, prospectors understood that intersections of geological formations served as zones of weakness favorable to ore deposition. But the shaft failed to encounter ore and was abandoned. During 1968-1978, Richardson Mines used a bulldozer to gouge out the vein and incise large cuts extending west and east. The shaft was destroyed in the process. The western cut (F3) is 20' wide at its mouth, 90' long, and constricts to 9' wide at the eastern headwall, which is 20' high. A ragged portion of the original shaft remains in the headwall. The eastern cut (F4) is around 30' wide at the rim, 18' wide at the floor, and 230' long with a sloped headwall 20' high. The bulldozer pushed waste rock northeast out the cut mouth.

The site offers a fairly sparse artifact assemblage, mostly associated with the Gloucester adit and the cabin ruin. As can be expected, most structural materials are incorporated into the cabin and the tunnel house ruin. At the Gloucester adit are general industrial artifacts including cable segments, track hardware, pipes from a compressed air line, and a truck chassis. At the cabin, industrial refuse is a mix of historic items and junk left from the recent bulldozer exploration. Historic items are limited to barrel hoops, and anthracite coal and forge clinker from blacksmithing. Recent artifacts include cable, a 5-gallon motor oil can, and 55-gallon drum. Although miners lived in the cabin, a cast iron stove is their only artifact. Otherwise, bottle fragments, food cans, and rubber boots were left by the recent exploration project.

The site offers no buried archaeological deposits. Privy pits could not be identified, and refuse dumps are absent.

Gloucester West Interpretation

Within several years of each other, two separate prospecting parties staked the Rainbow and Gloucester claims on veins that crossed. Both parties then drove prospect adits along their respective veins to sample content at depth. The Rainbow vein was a bust, but the Gloucester vein offered a small amount of ore too complex to be milled at a profit. The Gloucester vein thus went undeveloped until the 1940s or 1950s, when a small outfit lengthened the adit and extracted ore over the course of several years. Their surface facilities were limited to a frame tunnel house enclosing the adit portal and an ore sorting station. A portable compressor probably generated air for drilling. The simple facilities and small scale of the operation indicate that production was minor and capital investment minimal.

It remains unknown which party built the cabin, but the use of logs, wire nails, and grout for chinking suggest circa 1900-1910. Unfortunately, dateable artifacts capable of supporting this conclusion are absent. The workers who conducted the bulldozer exploration 1968-1978 used the

cabin as a shelter during their work. They left characteristic artifacts including colorless, machine-made bottle fragments, Spam cans, several 5-gallon motor oil cans, and a 55-gallon drum. The workers strongly suspected that the Rainbow vein had the greatest potential and focused their efforts on scraping off overburden. The result was two long and deep trenches in solid rock, which required considerable time and equipment use. The trenches, and less intensive scrapes to the south, revealed that the Rainbow and Gloucester veins had little to offer.

Gloucester West Condition and Integrity

The historical elements of the site, older than fifty years, are in poor condition. The southwestern Rainbow prospect adit collapsed and became a generic subsidence zone with no original form. The northwestern Gloucester adit has partially collapsed, while high winds and rockfall knocked away most elements of the associated tunnel house and buried the remaining debris with rubble. A road bulldozed to the adit caused additional damage. The Gloucester complex is now very difficult to interpret. The cabin ruin is the site's most-intact historic feature, offering standing log walls. But the roof fell in and buried the floor with rotten debris. Bulldozing south and east scraped the ground and disrupted the original artifact assemblage, and possibly erased traces of a privy pit. The ruin currently has very few early artifacts, and no identifiable privy pit.

The site's two adits were not the only prospect workings. At one time, additional cuts, trenches, and shafts existed on the topographic point, where the two crossing veins were probed and sampled. Earthmoving 1968-1978 destroyed all workings that existed on the point, leaving a confusion of bulldozed swaths, cuts, and push-piles.

As a whole, the site suffers severely impaired integrity because of extensive earthmoving 1968-1978. The earthmoving erased prospect workings and other features on the topographic point, leaving the site's original content unknown. Currently, only two adits remain from what had been a larger prospect complex. Due to the loss of historic features, and the presence of bulldozed cuts and swaths, the site no longer conveys its design, association, or feeling. The cabin, however, does embody its design, materials, and workmanship. But earthmoving compromised its context. The setting, which is characteristic of prospecting, is the only aspect of integrity that the site retains.

Gloucester West Eligibility Recommendations

The site is recommended not eligible for several reasons. In terms of *Criterion A*, the Rainbow adit was no more than an unimportant prospect. Similarly, the Gloucester adit was an unimportant mine that produced little ore in a brief time. Further, the Gloucester adit's timeframe cannot be confirmed, and its historical associations are therefore speculative. The same holds true for the cabin ruin, whose exact date of construction and occupation are unknown. Regarding *Criterion B*, archival research was unable to determine the presence of important people. Under *Criterion C*, deterioration and extensive bulldozing compromised the site's integrity. Due to feature and artifact loss, and disruption of feeling and association, the site no longer conveys prospecting, ore production, or associated residence. In terms of *Criterion D*, the site will not yield important information upon further study. All elements have been well documented, while buried archaeological deposits and complex artifact assemblages are absent.

Gloucester West Management Recommendations

The site faces two possible actions. The first involves a USFS study of water-quality problems at the nearby Brooklyn Mine. USFS is analyzing how to mitigate the mine's two large waste rock dumps, which might be sources of metal-bearing sediment. One method is to move some or all of the dumps to dry repositories. The Gloucester site lies on a flat topographic point that could be used as a repository. Further, the two deep bulldozed cuts (F3, F4) may be suitable for waste rock fill. Preparation would destroy the various bulldozed scrapes and the cabin ruin (F7), while the cuts would be buried. The Rainbow and Gloucester adits are likely to be avoided because they lie in extremely steep terrain. With the site recommended not eligible, any use will pose no effect. Further consideration is not warranted.

In the second action, the Gloucester adit (F5) might be closed in the future for safety reasons. The adit has partially collapsed, but a crown-hole currently permits entry. Based on similar work elsewhere in San Juan County, likely closure methods will be a steel grate, steel culvert, or native rock bulkhead, all installed within the portal. The area of potential disturbance is therefore confined to the portal alone, and the tunnel house ruin (F6) will be avoided. Regardless, with the site not eligible, closure will pose no effect.

Site 5SA.1620
Gloucester Mine: East Workings

The Gloucester Mine was a very simple and shallow operation on the eastern end of the Gloucester claim, which is patented. The claim overlapped the same vein developed through the Brooklyn Mine (5SA.751) downslope and southwest. Historically, the Gloucester involved a basic tunnel, several prospects, and a cabin on the northern rim of Browns Gulch. The tunnel and prospects are on a west-facing slope, while the cabin stood around the corner and southeast in a saddle between topographic rises. In 1936, Thomas H. Woods and J.E. Carney, who worked the Brooklyn Mine, diverted tunnel drainage into a wooden tank that they built on the tunnel's waste rock dump. The water was then piped to the mine for consumption. The Gloucester Mine is now an archaeological site amid spruce forest. Elevation is 11,540', and the forest was heavily logged to the north. USFS Road 825 ascends southeast through the site, while a minor two-track for logging contours north.

Gloucester East History

Prospectors staked the Gloucester claim to take in a vein trending southeast over a flat topographic point overlooking the main fork of Mineral Creek. The claim was oriented southeast on the vein, and terminated immediately next to the Brooklyn property. The prospectors probed the claim's northwestern end, and also drove a tunnel into the southeastern end. It remains unknown if they were interested in the Gloucester vein, or hoped to find another formation parallel to the Brooklyn. In any case, archival research found no information specific to workings on the Gloucester claim's eastern end.

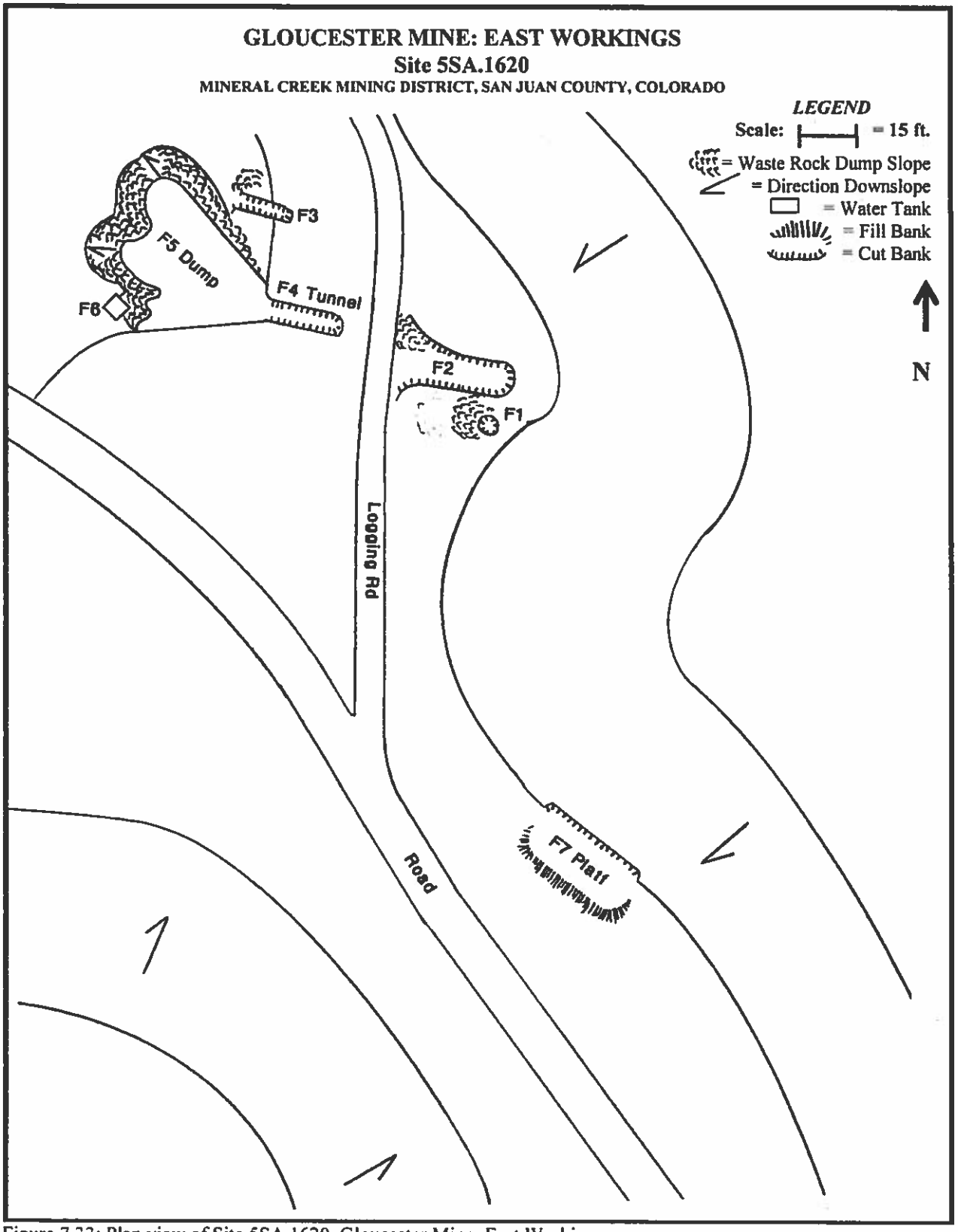

Figure 7.33: Plan view of Site 5SA.1620, Gloucester Mine: East Workings.

Gloucester East Description

Prospectors searched for ore-bearing formations underneath the Gloucester claim's eastern end. They probably sought veins that were parallel to the rich Brooklyn formation, which was a short distance farther east. The prospectors used the traditional methods of digging pits and trenches, three of which are evident. Timeframe is probably the 1890s.

The southeastern pit (F1) is 5'x6' in area and backfilled to a depth of 5', with waste rock shoveled downslope. The middle probe is a substantial trench (F2) around 12' wide, 34' long, and 10' deep, now filled with slumped earth. The northeastern probe is another trench (F3) 4' wide and 13' long with waste rock piled along the northern edge. The walls slumped and filled the interior to a depth of 2'.

The prospectors apparently had success with the middle trench, which apparently revealed a vein. They next drove a tunnel (F4) easterly to undercut the trench. The tunnel had been timbered to support loose ground, but has completely collapsed. The tunnel is now a subsidence 8' wide and 18' long with remnants of cap-and-post timbering in its slumped walls.

When working the tunnel, miners used ore cars to dump waste rock to the northwest. Over time, they spread out a fan (F5) of gray mineralized material 40'x48' in area and 5' thick. The miners made little effort to grade the top-surface flat, and the dump now has an irregular and hummocky texture.

Miners who initially worked the tunnel lived in a cabin to the southeast. Presently remaining is a cut-and-fill platform (F7) 15'x32' in area with several impressions left from log foundation footers. The cut and fill banks are distinct and the surface is neatly level. The platform backs against the base of a southwest-facing slope in a natural saddle, a location probably chosen for lightning protection. A few artifacts are scattered around, and buried archaeological deposits are absent.

Figure 7.34: Northwest view of the Gloucester Mine's water tank (F6).

In 1936, Brooklyn Mine workers installed a wooden tank (F6) in the dump's western flank. The tank drew water from the tunnel and piped it to the mine for consumption. The tank currently remains intact but in dilapidated condition. The tank itself is 6'x8' in plan and 6' deep countersunk into the dump. Workers assembled the walls with 2"x12" tongue-and-groove planks bound tight with iron tie rods at the corners and passing through the tank's center. On top is a superstructure with a shed roofline 4½' high at the southeastern side (front) and 1' high at the northwestern. The front features a 22"x46" doorway. The superstructure consists of corrugated sheet iron cladding over plank sheathing, nailed to a 2"x4" post-and-girt frame. A 2" pipeline carries water from the tunnel into the northeastern side. The line no longer flows, and the tank is only partially full from natural seepage. The outlet could not be traced.

The site's artifact assemblage is very sparse. A few logs remain from the tunnel's support timbering, while only a few more logs and pieces of lumber are scattered on the waste rock dump. The tunnel has no industrial refuse. Surprisingly, very little is associated with the cabin platform. Several logs, pieces of sheet iron, and window glass constitute the only structural materials, while domestic refuse is limited to a sprinkling of bottle fragments, several hole-in-cap can ends, a basin, and stove parts. The cabin platform also has no buried deposits. Privy pits could not be identified, and surrounding ground is devoid of materials.

Gloucester East Interpretation

The eastern workings on the Gloucester claim were either a very simple and short-lived mine, or a deep but unproductive prospect. The tunnel apparently had no surface facilities such as a blacksmith shop, ore bin, or sorting station. If the tunnel in fact yielded ore, output was minimal, and miners most likely maintained their tools in a forge at the cabin. Overall, the minimal improvements and small waste rock dump indicate that the underground workings were shallow, and that the outfit invested little capital in the operation.

Occupation was brief, according to the almost total lack of artifacts around the tunnel and cabin platform. Dateable items are few, but those present suggest that the principal period of activity was the 1890s. In particular, wire nails postdate 1890, while a hand-finished bottle base and several hole-in-cap can ends pre-date 1910.

Gloucester East Condition and Integrity

The site's condition is marginal. The tunnel collapsed and became an irregular subsidence trench, while the waste rock dump is a haphazard fan of hummocks. The tunnel and dump are also heavily overgrown with spruce saplings, and are generally difficult to interpret. The prospects have slumped in, but the cabin platform is well-formed and clear of vegetation. The water tank, erected in 1936, stands intact but is deteriorated.

The site has marginal integrity. The prospects, tunnel, and cabin platform appear randomly located and do not reflect planning or organization on a broad scale. The tunnel also lacks evidence of surface facilities. Without spatial organization or facilities, the site does not convey design. Thick vegetation, collapse of prospects and the tunnel, and general difficulty in discerning the site interfere with feeling. A location near the Brooklyn Mine and other prospects supports association, and the setting is characteristic of mining. Individually, the water tank embodies its design, materials, and workmanship.

Gloucester East Eligibility Recommendations

The site is recommended not eligible for several reasons. In terms of *Criterion A*, the site was a relatively unimportant prospect operation or mine with a brief life. Under *Criterion B*, archival research was unable to connect the site with important individuals. In terms of *Criterion C*, the site is not a good example of its resource type, a prospect complex or tunnel mine. The site appears as little more than a collapsed tunnel, hummocky waste rock pad, and a platform that is generic. Missing are character-defining elements and features necessary for eligibility, including a representative artifact assemblage and evidence of surface facilities. Better examples of prospect complexes and small mines exist elsewhere in San Juan County. Regarding *Criterion D*, the site will not yield important information upon further study because surface features and artifacts were thoroughly documented, and buried archaeological deposits are absent.

Gloucester East Management Recommendations

The site may become involved in water-quality actions at the nearby Brooklyn Mine. USFS is analyzing how to mitigate the Brooklyn's two large waste rock dumps, which might be sources of metal-bearing sediment. One method is to move some or all of the dumps to dry repositories. Most of the Gloucester site lies on flat topographic ground that could be used as a repository. Preparation would probably destroy the entire site. Further, the tunnel's mineralized dump (F5) itself might be moved to a repository. With the site recommended not eligible, any use will pose no effect. Further consideration is not warranted.

Site 5SA.1621 ***USFS# 2130802135***
Prospect Complex

A prospecting outfit suspected that a mineralized vein on the northern wall of Browns Gulch offered ore. The vein ascended north up the wall, and the prospectors probed it with two exploratory adits approximately 100' apart, one above the other. The adits are 11,650' elevation, and the surrounding slope is extremely steep, south-facing, and blanketed with spruce forest. The exploratory operation was simple and short-lived, the prospectors providing no facilities or improvements other than the adits. Today, the resource is an archaeological site with marginal integrity. The prospectors also had staked a claim in the past, but this has since reverted back into the public domain, with USFS now owner. It may be that a packtrail (5SA.1622) immediately below the site was an improvement to fulfill assessment requirements.

Prospect Complex History

No archival information specific to the site could be found. The property was never patented, historic maps do not depict the operation, and the Bureau of Land Management General Land Office possesses no records. Names are necessary for research. It can be observed, however, that discovery of the Brooklyn Vein stimulated a wave of prospecting during the late 1880s and early 1890s. Development of the Brooklyn and reports of rich ore shortly after 1900 also drew prospectors to the general area.

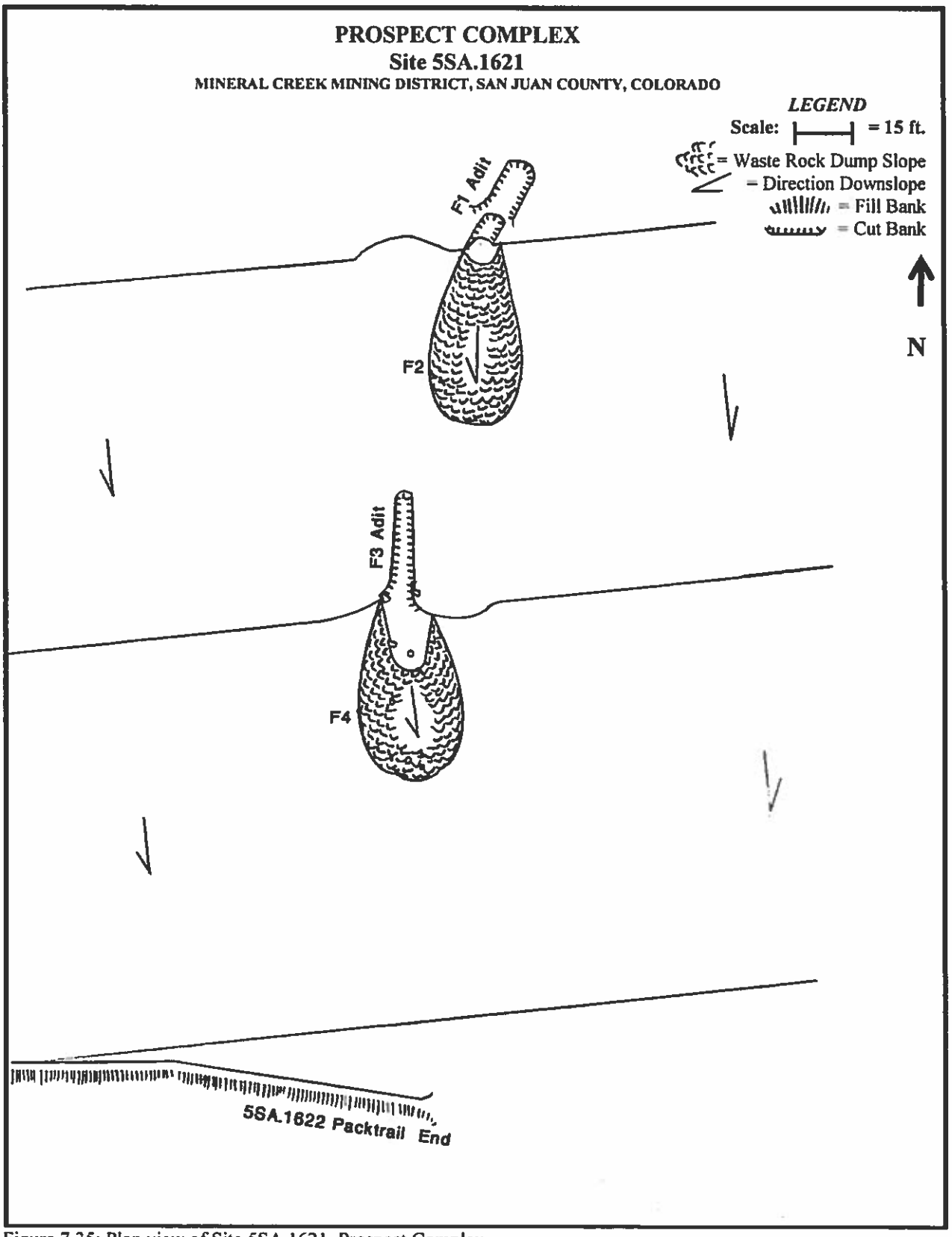

Figure 7.35: Plan view of Site 5SA.1621, Prospect Complex.

Prospect Complex Site Description

The site is limited to two short, collapsed prospect adits and their waste rock dumps. The prospectors never completed any other improvements nor provided surface facilities. It remains uncertain which adit the prospectors first drove. They could have started with the upper (F1), which angled northeast. The portal completely collapsed and became a two-tier subsidence zone 12' across and 30' long. Waste rock is a fan (F2) of mineralized material 27' wide, 45' long, and 2' thick.

The site's southern and lower adit (F3) was much like the upper one. The portal collapsed and became a linear subsidence 7' wide, 27' long, and 6' deep, seeping water. When driving the lower adit, the prospectors dumped waste rock at the portal. They built up a pad (F4) 30' wide, 30' long, and 4' thick with flattened top-surface. The dump is becoming overgrown.

The site offers no artifacts or buried archaeological deposits. In general, activity was limited to work underground, which tended not to generate cultural materials in volume.

Prospect Complex Interpretation

With almost no definitive material evidence, only several broad conclusions can be drawn about the site. Timeframe remains uncertain because the site has no dateable elements. A few prospectors began searching the general area during the early 1880s, and arrived in greater number following proof of ore in the Brooklyn Vein later in the decade. Limited prospecting apparently continued for another ten years.

The adits were a concerted effort to sample a mineralized vein at depth, and in two levels around 50' apart in elevation. The elevation difference may suggest that the prospectors were experienced, because veins were usually formally developed in 50' or 100' increments. But the adits discussed here were short and failed to strike ore, the prospectors moving on without completing surface facilities such as a blacksmith shop.

Prospect Complex Condition and Integrity

The site is in a poor state of preservation. Both adits collapsed and became linear subsidence zones with no original form. The waste rock dumps are simple fans with intact flanks, but the lower dump's top-surface is becoming overgrown with spruce saplings. Artifacts and surface facilities often associated with prospect adits are absent.

The site has very limited integrity primarily due to its simplicity. Unsupported by additional features, the adits alone do not clearly convey the prospect operation's general design or feeling. The site also offers nothing that embodies materials or workmanship. Association is vague. In general, prospect adits express association with a mineral exploration movement when near other prospects, or when offering evidence dating to an area's principal period of prospecting. The site discussed here is isolated and lacks dateable attributes. The mountainside setting is, however, characteristic of prospecting.

Prospect Complex Eligibility Recommendations

The site is recommended not eligible for several reasons. In terms of *Criterion A*, the site was a relatively unimportant prospect operation with brief life. In addition, the site cannot be

dated with certainty, and its historical associations are speculative. Under *Criterion B*, an association with important individuals cannot be confirmed. In terms of *Criterion C*, the site is not a good example of its resource type, a prospect complex. The site appears as little more than two linear subsidence zones and small waste rock fans, with no other character-defining elements. In general, eligible prospect complexes should have additional features such as evidence of a blacksmith shop or residence. Better examples of prospect complexes exist elsewhere in San Juan County. Regarding *Criterion D*, the site will not yield important information upon further study because surface features were thoroughly documented, and artifacts and buried archaeological deposits are absent.

Prospect Complex Management Recommendations

The prospect complex is included in this project because it lies within a survey area defined for environmental remediation at the Brooklyn Mine. Given the mountainside's extremely steep nature and the site's isolation, the site will almost certainly be avoided by cleanup activity. That said, the site could be damaged by logging and earthmoving. If so, the action would have no effect because the site is recommended not eligible. No further considerations are warranted.

Linear 5SA.1622 ***USFS# 2130802136***
Packtrail

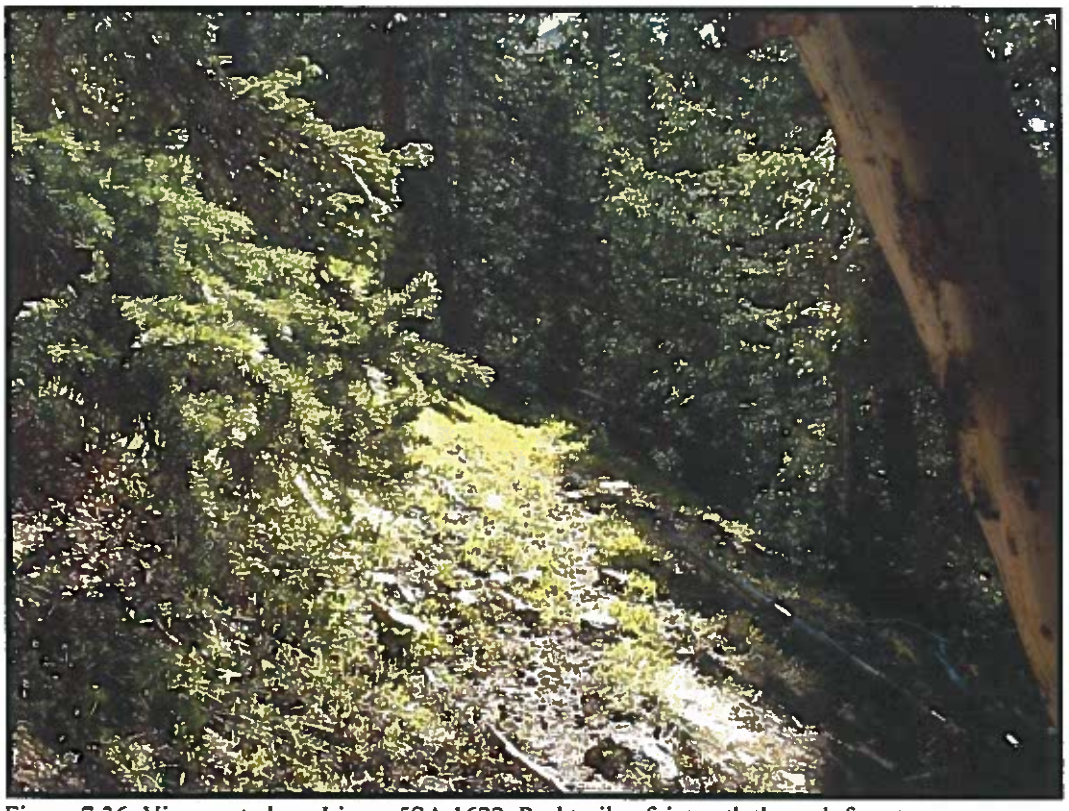

Figure 7.36: View east along Linear 5SA.1622, Packtrail, a faint path through forest.

At one time, an artery packtrail began at the Brooklyn Mine (5SA.751), ascended the northern rim of Browns Gulch, veered northeast, and connected with an inter-drainage system. Branch trails in turn provided access to various claims around the Brooklyn. Bulldozing and road grading largely erased the artery packtrail mostly by following its original route. But some of the claim-specific branches survive, including the resource discussed here. The claim-specific trail began near the Brooklyn, contoured east, and simply ended between two prospects. The upper, northern prospect is a small complex of two adits (5SA.1621), while the lower prospect is a short adit (IF 5SA.1632).

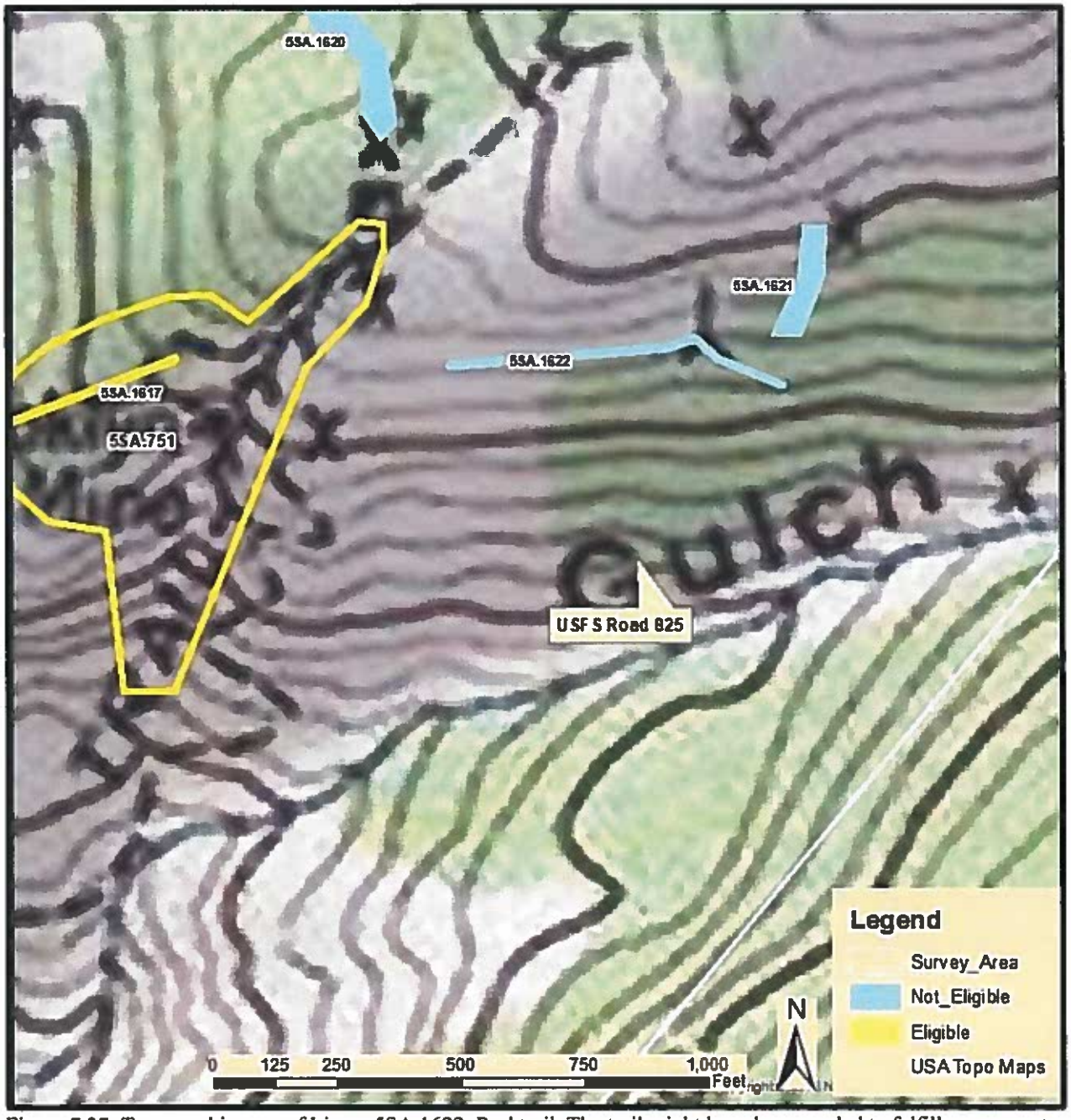

Figure 7.37: Topographic map of Linear 5SA.1622, Packtrail. The trail might have been graded to fulfill assessment work for the same claim as the prospect complex (5SA.1621) to the north.

Graded with cut-and-fill methods, the trail has been documented end-to-end as a linear resource. An extremely steep, south-facing slope and thick doghair spruce forest provide a poor preservation environment because the soil is prone to creep, and duff accumulates on level surfaces. The trail, around 11,500' elevation, can be followed only with difficulty.

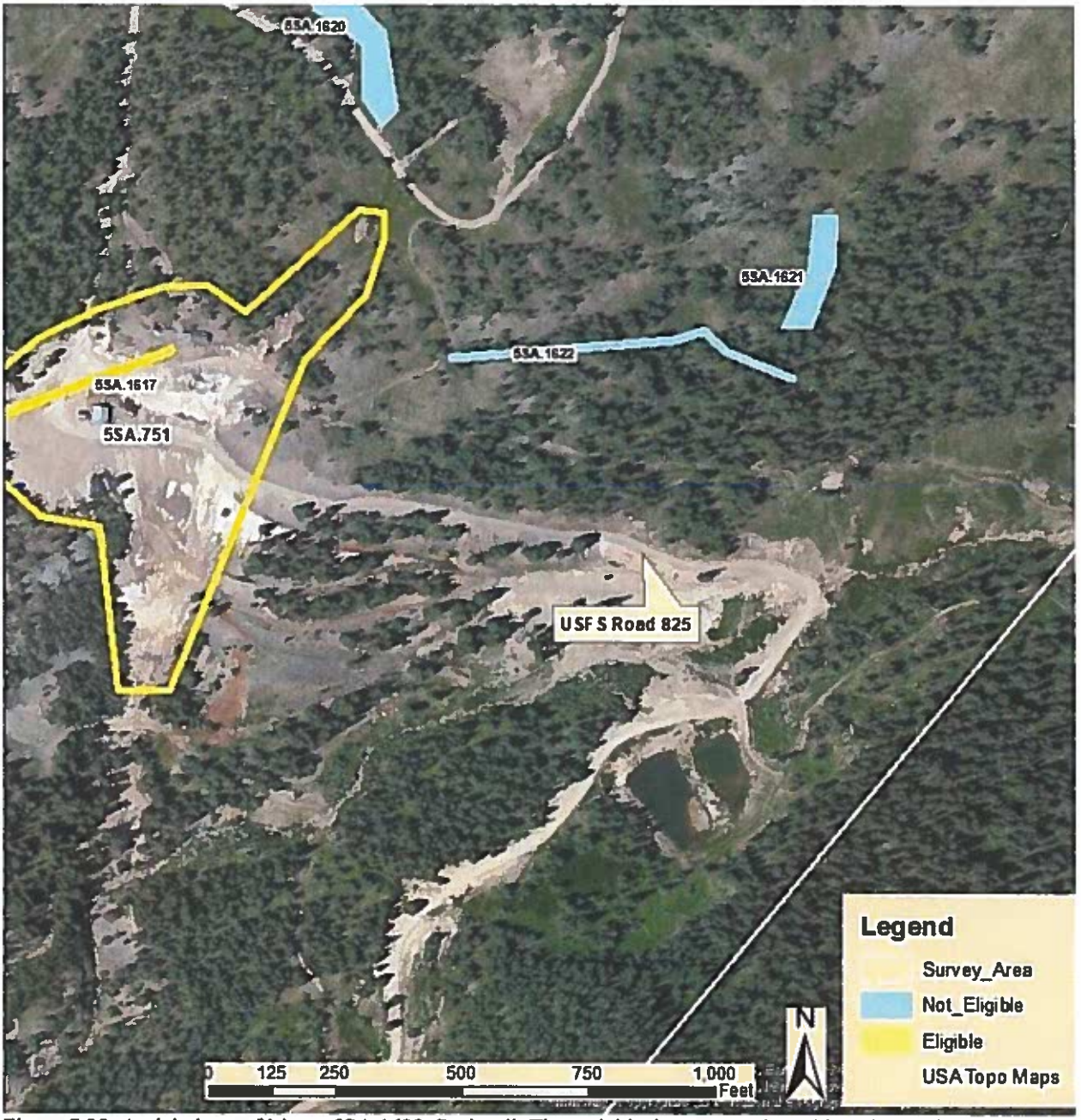

Figure 7.38: Aerial photo of Linear 5SA.1622, Packtrail. The aerial is the same scale and location as the topographic map above.

Packtrail History

Archival research found no information specific to the trail, but a very brief review of the immediate area's history provides at least some context, however meager. A few prospectors

began searching the general area during the early 1880s, and arrived in greater number following proof of ore in the Brooklyn Vein later in the decade. Limited searching apparently continued for another ten years. When they found a promising mineral formation, prospectors usually staked claims to reserve development rights. In general, a claim initially required a shaft or adit 10' in length, followed by annual assessment work to hold title. The trail discussed here may have been such assessment work.

Packtrail Description

The trail begins on the outside shoulder of a switchback in a bulldozed road northeast of the Brooklyn Mine. The bulldozer followed the route of what had been an artery trail switchbacking up from the Brooklyn and eventually ascending northeast. The trail discussed here starts as a widened place 10' across still featuring bulldozer tracks. The trail contours 500' easterly and then another 215' southeasterly in a single, uninterrupted segment, with a very subtle descent. The eastern end is almost exactly between a prospect complex (5SA.1621) upslope, and a prospect adit (IF 5SA.1632) downslope. The distinct tread dissipates and divides into well-beaten game trails that might be subtle continuations, but this is uncertain.

At the beginning, the trail constricts and assumes its historic nature. The trail appears to have been graded with cut-and-fill methods and has a tread 2' wide on an earthen bed 3' wide. The cut and fill banks are apparent but somewhat slumped. The trail's condition deteriorates after 150' and becomes narrower, more faint, and difficult to distinguish from a heavily used game trail. The tread is 1' wide and sloped, while the bed is 2' wide. After another 100', the trail resumes its historic appearance with a 2' tread and 3' bed. The cut and fill banks are more rounded and the tread slopes slightly. The trail thus alternates between preserved and eroded for the rest of its 715' length. No artifacts, buried deposits, or other features are associated.

Packtrail Interpretation

Uncertainty surrounds the packtrail's purpose. The trail was well-made with cut-and-fill methods for long-term service, and yet was only lightly used because it had no developed destination. Because it saw minimal use, the trail then deteriorated and became faint. A likely explanation for the trail is that it was assessment work to hold title to a mining claim, which was never patented. Claims required annual assessment work, and the trail might have been a product. The trail's terminus between the above-mentioned prospect complex and prospect adit support this conclusion.

Packtrail Condition and Integrity

The trail is in mixed condition, and still in use by large game. The beginning is on the outside shoulder of a bulldozed switchback, road grading having destroyed any historic connections with other trails. Some sections are well-defined and exhibit cut-and-fill construction, while others have become narrow, sloped paths through forest. The trail seemingly ends on a steep slope in forest. The overall route, however, is traceable.

The trail retains marginal integrity. Design of the overall route is unclear because bulldozing destroyed the western gateway and any other trails that might have been connected. The trail's eastern end is undefined, simply ending without direct connection to anything.

Regarding the trail itself, the tread and bed reveal cut-and-fill design, construction methods, and earthen materials. But the trail is too eroded to clearly reflect workmanship. Without a certain origin and destination, association and feeling are murky. The mountainside setting is characteristic.

Packtrail Eligibility Recommendations

The trail is recommended not eligible for several reasons. In terms of *Criteria A and B*, the trail's historical associations are unknown because it cannot be tightly dated, and its purpose and origins remain speculative. Under *Criterion C*, the trail is not a good example of its resource type, a packtrail, because of simplicity, unknown purpose, and faint tread in places. The trail appears as no more than a well-beaten game path without bold character-defining attributes. Regarding *Criterion D*, the trail lacks buried deposits, an artifact assemblage, and complex feature systems, and hence will not yield meaningful information upon further study.

Packtrail Management Recommendations

The packtrail is included in this project because it lies within a survey area defined for water-quality actions at the Brooklyn Mine. Given the mountainside's extremely steep nature and the trail's isolation east of the mine, the trail will almost certainly be avoided by cleanup activity. That said, the trail could be damaged by logging and earthmoving. If so, the action would have no effect because the trail is recommended not eligible. Further consideration is not warranted.

Site 5SA.1623
Jessica Prospect Complex

High on the northern wall of Browns Gulch, a prospect outfit probed a minor gully oriented north-south. The prospectors probably suspected that the gully concealed a mineralized vein that weathered away more quickly than surrounding rock, and hence caused the gully to form over time. The prospectors in fact confirmed the presence of a vein, staked the Jessica claim in 1896, and tracked the vein with a series of excavations. The series became around 330' long with six pits and trenches, but no camp or blacksmith work station. Today, the resource qualifies as an archaeological site. The gully descends very steeply through thick spruce forest to the gulch floor below. The site is 11,660' elevation, and several natural terraces are above and northeast. The Jessica claim is patented.

Jessica Prospect Complex History

Discovery of gold ore in the Brooklyn Vein drew prospectors to Browns Gulch around 1888. Various parties searched for parallel formations on the gulch's northern wall during the next several years and dug pits and trenches when indications seemed promising. Over the course of the next eight years, prospectors returned seasonally and found a number of mineralized seams ascending north and northeast up the gulch's wall. Each seam was staked with

a claim, until a small quiltwork of abutting properties took form. The quiltwork included the Eleventh Hour, Growler, Marina, Winning, and others. At the south end was the Jessica, where prospectors had identified a seam, tracked it with several probes, and staked the claim in 1896. At that time, George R. Hurlburt bought the entire group of properties because he believed that they probably featured a continuation of the rich Brooklyn Vein. Hurlburt was General Land Office Mineral Surveyor for the Ouray area and used his insider knowledge to make extra money speculating with promising properties. He had the Silverton area surveyor plat the claims for patent in 1896, and eventually sold the group. The Jessica saw no further work beyond the original pits and an isolated adit.[32]

Jessica Prospect Complex Site Description

It seems likely that the prospectors probed the vein from the bottom up, and began with a simple trench (F1) on the gully's western side. The prospectors gouged out soft and crumbling rock from in between harder bodies, breaking out a trench with ragged walls 5' wide, 15' long, and around 7' deep. The walls and slope above slumped in, filling the trench to a depth of 4'. Waste rock cobbles are scattered downslope.

The prospectors next shifted east and dug a series of probes up the gully's nadir. At the bottom of the series, the prospectors also used large rocks to create a 4'x5' circle (F3) on sloped ground. The purpose is uncertain, although the circle might mark the centerline of a claim staked over the gully prior to the Jessica.

The series of excavations ascends almost due north from the circle, and the excavations range in size, type and quality. The lower two excavations (F2, F4) appear as heavily slumped, faint, semicircular benches around 11' across and 7' deep with minimal waste rock. Above are two trenches (F5, F7) approximately 7' wide and 15' long mostly filled with rubble and slumped earth. In between is the site's smallest probe (F6), no more than a simple pit 5' in diameter.

The prospectors completed no other improvements, and maintained their tools at a camp somewhere off-site. As a result, the site lacks other features, artifacts, or buried archaeological deposits.

Jessica Prospect Complex Interpretation

The site represents a systematic effort to find a mineralized vein, and track and sample it once unearthed. The prospectors probably dug the southwestern trench (F1) first, moved east, and found the vein in the adjacent gully. Wasting little effort, they tracked the vein's northerly strike with a series of probes almost regularly spaced in 50' intervals. The minimal work, regular spacing, and neat alignment of the excavations indicates that the prospectors were experienced and knew how to find and trace mineralized formations. Further, they apparently understood local geology and focused on the gully, created by accelerated weathering of the softer vein in between more resilient volcanic rock.

A timeframe is extremely difficult to pinpoint for several reasons. On one hand, dateable artifacts and characteristics are absent. On the other hand, the vein could have been probed any time before the claim was actually staked in 1896.

[32] Mineral Claim Survey Plat: 11560.

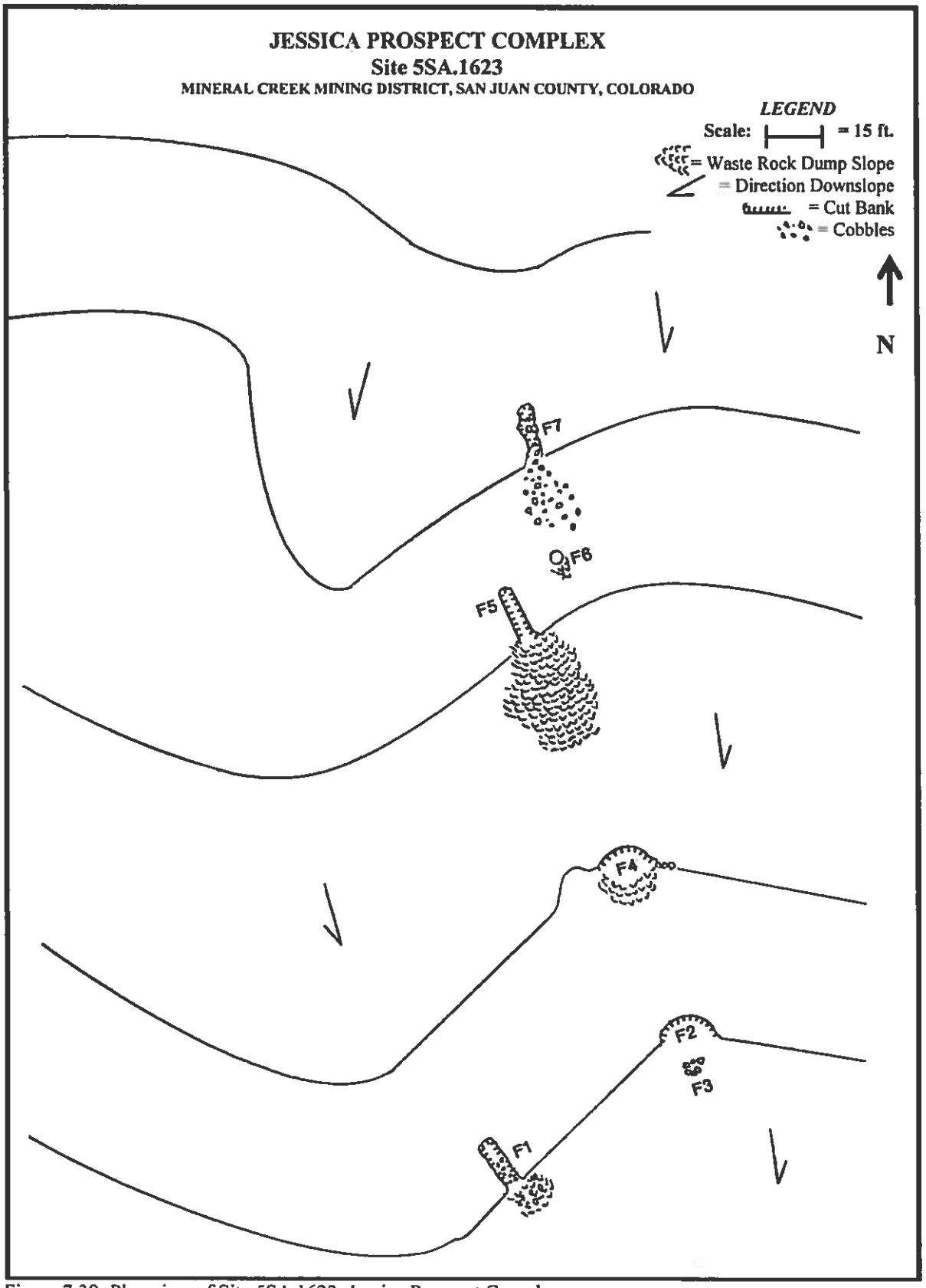

Figure 7.39: Plan view of Site 5SA.1623, Jessica Prospect Complex.

Jessica Prospect Complex Condition and Integrity

The site is in poor condition due to natural deterioration. On a steep slope prone to soil creep, all the prospects have slumped in and are now difficult to clearly identify. Most waste rock rolled away as well, and only what had been the deeper probes still exhibit distinct dumps. The site is also overgrown with forest, which is probably unchanged since the prospecting.

The site has very limited integrity. The prospects are in a clear north-south series and are evenly spaced, reflecting an organized sampling strategy, which is a design of sorts. But the site offers nothing to convey materials or workmanship. Feeling and association are weak because the site is isolated and the prospects are poorly preserved. The mountainside setting is characteristic of prospecting.

Jessica Prospect Complex Eligibility Recommendations

The site is recommended not eligible for several reasons. In terms of *Criterion A*, the site was a relatively unimportant prospect operation with brief life. In addition, the site cannot be dated with certainty, and its historical associations are thus speculative. Under *Criterion B*, an association with important individuals cannot be confirmed. Although George R. Hurlburt bought the property in 1896, mere ownership is an inadequate association. For the site to be eligible under Criterion B, Hurlburt would have to have spent an appreciable amount of time at the prospect complex. In terms of *Criterion C*, the site is not a good example of its resource type, a prospect complex. The site appears as little more than a series of slumped excavations that are difficult to identify and perceive. Further, character-defining elements necessary for eligibility, such as evidence of a blacksmith shop or residence, are absent. Better examples of prospect complexes exist elsewhere in San Juan County. Regarding *Criterion D*, the site will not yield important information upon further study because surface features and artifacts were thoroughly documented, and buried archaeological deposits are absent.

Jessica Prospect Complex Management Recommendations

The prospect complex is included in this project because it lies within a survey area defined for environmental remediation at the Brooklyn Mine. Given the mountainside's extremely steep nature and the site's isolation in the area's southeastern portion, the site will almost certainly be avoided by cleanup activity. That said, the site could be damaged by logging and earthmoving. If so, the action would have no effect because the site is recommended not eligible. No further considerations are warranted.

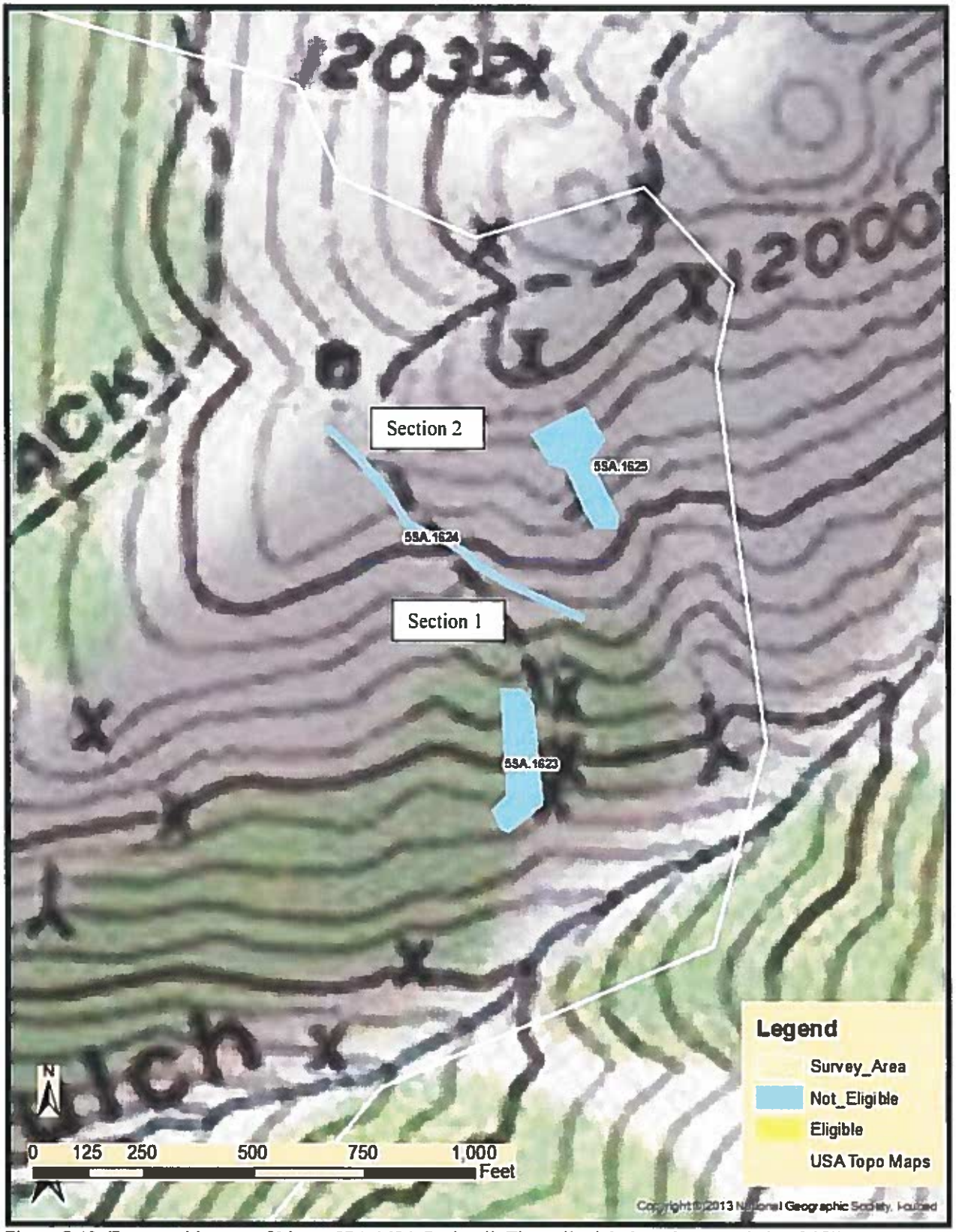

Figure 7.40: Topographic map of Linear 5SA.1624, Packtrail. The trail might have been graded to fulfill assessment work on a claim.

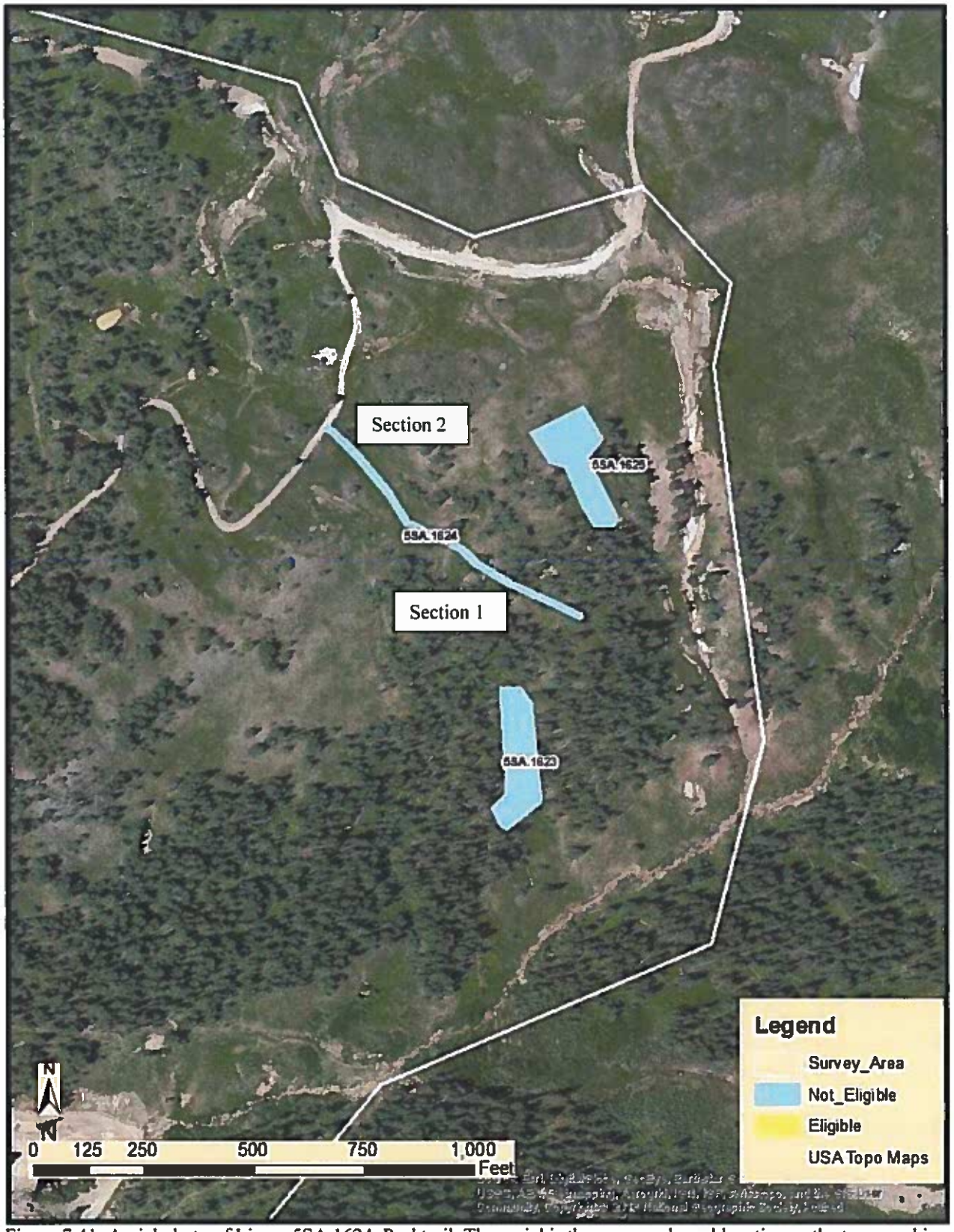

Figure 7.41: Aerial photo of Linear 5SA.1624, Packtrail. The aerial is the same scale and location as the topographic map above.


Figure 7.42: View northwest along Linear 5SA.1624, Packtrail. Shown is Section 2, an eroded rut in tundra.

Linear 5SA.1624
Packtrail

A packtrail ascended diagonally up the northern wall of Browns Gulch and crossed several patented claims on its 750' course. The trail began on a natural flat terrace on the Jessica claim high above the floor, climbed northwest across the Winning claim, and reached the gulch rim on the Roger claim. At this point, the train joined a larger artery trail that connected various prospects. Bulldozing and road construction followed the artery trail and erased its original features. The southeastern beginning point on the terrace is abrupt, and the terrace offers no evidence of a prospectors' camp or other logical destination. The northwestern end-point at one time joined the main artery, but road grading erased the junction's historic character.

The northern wall of Browns Gulch is extremely steep, and grades from mature spruce forest into alpine tundra. The trail begins around 11,600' elevation and ends at 11,900'. The trail qualifies as a linear resource and has been recorded in entirety in two sections, each differing slightly in character.

Packtrail History

Archival research found no information specific to the trail, but a very brief review of the immediate area's history provides a little context. A few prospectors began searching the general area during the early 1880s, and arrived in greater number following proof of ore in the Brooklyn Vein later in the decade. Limited searching apparently continued for another ten years. When

they found promising mineral formations, prospectors usually staked claims to reserve development rights. In general, a claim initially required a shaft or adit 10' in length, followed by annual assessment work to hold title. On the northern wall of Browns Gulch, several parties staked the Winning claim in 1891 and the Jessica in 1896. Both claims were then surveyed for patent in 1896. It may be that the trail discussed here was graded as assessment work to hold title to one of these claims, or others in the area, prior to patent.

Packtrail Description

The trail is described according to its two sections, from its origin point to the now-gone junction with the area's main artery. Section 1 begins on top of a low bedrock outcrop against the upslope edge of a natural terrace. An old-growth spruce tree marks the starting point. The trail ascends northwesterly and is well-defined and graded with cut-and-fill methods. The tread is 2' wide and slopes gently, while the bed is 3' wide. The trail features a few minor curves and becomes faint in places. After a distance of 325', the trail curves northwest and crosses a runnel in a minor gully. As it emerges on the western side, the trail abruptly changes character and transitions into Section 2.

Section 2 begins a steep ascent diagonally up a tundra slope. Originally, the section was graded with cut-and-fill methods, but historic traffic, game, and erosion have worn the away tread's flat surface. The trail now takes form as a trough 2' to 3' wide and 6" to 1' deep. The trough continues 425' up to the gulch rim and ends at a bulldozed road.

No artifacts, buried deposits, or other features are associated. The terrace, where the trail originates, seems like a good environment for a prospectors' camp, but there is no evidence.

Packtrail Interpretation

Uncertainty surrounds the packtrail's purpose. The trail was well-made with cut-and-fill methods for long-term service, and yet was only lightly used because it had no developed destination. With minimal use, the trail then deteriorated and became somewhat faint. A likely explanation for the trail is that it was assessment work to hold title to a mining claim. The claim name is unknown, and could have been the now-patented Winning or Jessica properties, or a neighboring claim.

Packtrail Condition and Integrity

The trail is in marginal condition. In Section 1, the tread is distinct in some areas, but faint and difficult to trace in others. In Section 2, the trail becomes a heavily eroded gully with little original form.

In its simplicity, the trail has little integrity. Without clear origins, destination, or purpose, the trail does not convey design, association, or workmanship. Thick vegetation interferes with feeling, while the tread is too simple for materials and workmanship. The mountainside setting is good.

Packtrail Eligibility Recommendations

The trail is recommended not eligible for several reasons. In terms of *Criteria A and B*, the trails historical associations are unknown because it cannot be dated, and its purpose and origins remain speculative. Under *Criterion C*, the trail is not a good example of its resource type, a packtrail, because of simplicity, unknown purpose, and lack of a clear destination. Much of Section 1 appears as no more than a faint, generic path without character-defining attributes. Section 2 is now an eroded gully. Regarding *Criterion D*, the trail lacks buried deposits, an artifact assemblage, and complex feature systems, and hence will not yield meaningful information upon further study.

Packtrail Management Recommendations

The packtrail is included in this project because it lies within a survey area defined for water-quality actions at the Brooklyn Mine. Given the mountainside's extremely steep nature and the trail's isolation east of the mine, the trail will almost certainly be avoided by cleanup activity. That said, the trail could be damaged by logging and earthmoving. If so, the action would have no effect because the trail is recommended not eligible. Further consideration is not warranted.

Site 5SA.1625
Winning Prospect Adit

A steep gully ascended the northern wall of Browns Gulch and ended in a craggy headwall of bedrock outcrops. Forming a natural retaining wall, the outcrops encouraged the formation of a small terrace rimmed with spruce trees. The terrace is around 11,700' elevation at treeline, with alpine tundra rising above and spruce forest extending below. General aspect is south-facing, and Browns Gulch's shoulder is higher and north.

Prospectors staked the Winning claim and drove an adit into the gully's head to probe a mineralized vein but found no ore. The claim was later patented. A camp of some sort existed on the terrace above, but material evidence is insufficient to tie it to the adit with certainty. The adit and camp have been recorded as a single archaeological site because of their proximity, but might not be historically associated. The area has been heavily grazed by sheep, which disrupted the camp's artifact assemblage.

Winning Prospect Adit History

Discovery of gold ore in the Brooklyn Vein drew prospectors to Browns Gulch around 1888. Various parties searched for parallel formations on the gulch's northern wall during the next several years and dug pits and trenches when indications seemed promising. Over the course of the next eight years, prospectors returned seasonally and found a number of mineralized seams ascending north and northeast up the gulch's wall. Each seam was staked with a claim, until a small quiltwork of abutting properties took form. The quiltwork included the Eleventh Hour, Growler, Marina, Winning, and others.

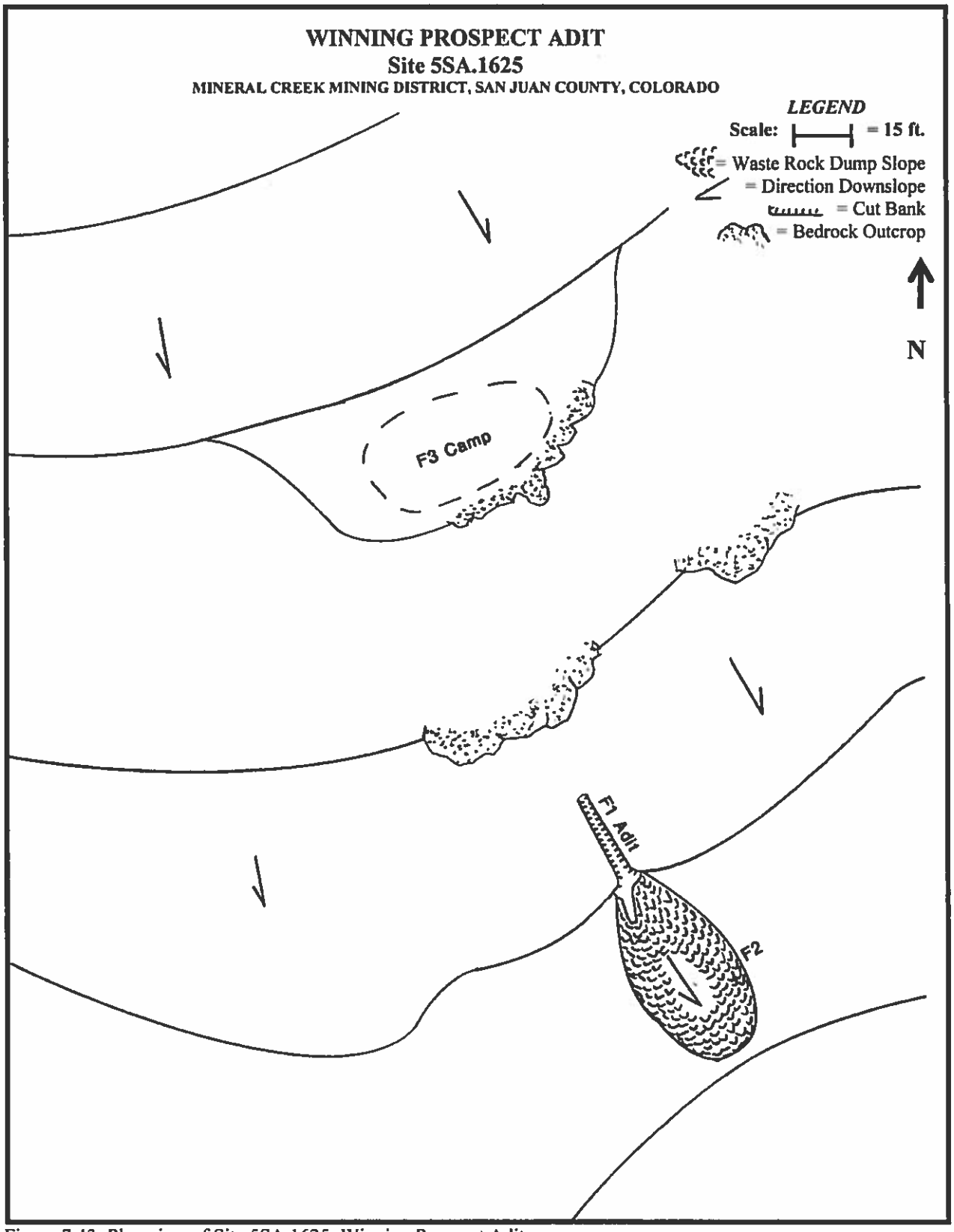

Figure 7.43: Plan view of Site 5SA.1625, Winning Prospect Adit.

Near the middle was the Winning, where prospectors had identified a seam trending northeast, and staked the claim in 1891. They excavated several cuts on the property and drove the adit discussed here into the northeastern end. In 1896, George R. Hurlburt bought the entire group of properties because he believed that they probably featured a continuation of the rich Brooklyn Vein. Hurlburt was General Land Office Mineral Surveyor for the Ouray area and used his insider knowledge to make extra money speculating with promising properties. He had the Silverton area surveyor plot the claims for patent in 1896, and eventually sold the group. The Winning saw no further work beyond the original cuts and the adit.[33]

Winning Prospect Adit Site Description

The adit is like others on Browns Gulch's northern wall in that it was a simple exploratory probe with no surface facilities. The adit (F1) extended northwest into the floor of an extremely steep gully. Prospectors dug a trench into the slope to provide a vertical space for the portal, and then continued underground. After abandonment, the trench walls and slope above slumped in and completely filled the trench with earth and rubble, blocking the adit. Presently, the adit is a linear scar 6' wide and 32' long seeping mineralized water.

When driving the adit, prospectors dumped waste rock at the portal. They deposited a fan (F2) of pale material 30' wide, 56' long, and 5' thick. Most of the material slid downslope, preventing a buildup of a flat surface. Spruce trees now grow on top.

It may have been the original prospectors who initially made use of the natural terrace above the adit as a temporary camp. The terrace saw brief occupation in later years, as well. The terrace is 45' wide, 100' across, and slopes gently south. Truly flat space is small, limited to a 15'x12' area on a low bedrock outcrop. A sparse artifact assemblage (F3) uncharacteristic of prospecting camps is scattered over a 27'x54' area on the terrace's center. The assemblage includes the base of a cast iron heating stove, but none of the other parts. A few log segments and milled timber blocks, one with a bracket bolted to it, are present as well. Domestic refuse such as food cans reflecting residential occupation is absent, while there are no boards, leveled areas, or footprints typical of prospectors' wall tents. The only dateable artifact is a church-key beverage can, which ranges in age from the 1930s through 1960s, probably left by hunters or sheep herders. Prospecting had long ended by this period.

Regarding artifacts, the scatter on the terrace noted above offers the only items. Nothing remains at the adit. The terrace has no buried archaeological deposits because occupation was too brief for an accumulation of materials, and thin soil provides a poor environment.

Winning Prospect Adit Condition and Integrity

The site is in poor condition on an archaeological level. In an environment prone to storm runoff, the adit collapsed and is now a subsidence trench, while its waste rock dump is eroded with overgrown top-surface. The natural terrace above has not changed much in decades, but lacks clear evidence of occupation other than a very generic artifact assemblage lacking items typical of residential use. Domestic refuse and a tent footprint are absent.

The site has poor integrity. The feature assemblage is too simple to convey a design of the adit or camp. There is also nothing to embody materials or workmanship. With the site being

[33] Mineral Claim Survey Plat 11560.

isolated, and the camp lacking a character-defining artifact assemblage, the site also has little association or feeling. The mountainside setting is evocative of prospecting.

Winning Prospect Adit Eligibility Recommendations

The site is recommended not eligible. Regarding *Criterion A*, the adit cannot be dated with certainty, and its exact associations with San Juan County's long mining history are unknown. The camp area also cannot be tied to specific trends because its date and reason for existence cannot be defined. The adit and camp were also unimportant. In terms of *Criterion B*, archival research was unable to identify involved individuals. Under *Criterion C*. the site is not a good example of its resource type, a prospect adit with associated camp. The adit is poorly preserved, generic, and lacks character-defining features necessary for eligibility. Necessary features include evidence of a blacksmith shop, and a camp with better evidence of occupation. The camp has no tent footprint or period artifact assemblage. Regarding *Criterion D*, the site will not yield important information upon further study because surface features and artifacts were thoroughly documented, and buried archaeological deposits are absent.

Winning Prospect Adit Management Recommendations

The site is included in this project because it lies within a survey area defined for water-quality actions at the Brooklyn Mine, far to the west. Although the site will probably be avoided by activity at the Brooklyn, it might be targeted for cleanup in itself. The adit and its dump could be sources of metals and acidic drainage water. If so, then the dump could be removed to a repository, or contoured and vegetated in-place. The adit's drainage water might be diverted or captured and treated in a small facility. Such actions would destroy the two features, but will have no effect because the site is recommended not eligible. Further considerations are not warranted.

Brooklyn Mine Survey Area Isolated Finds

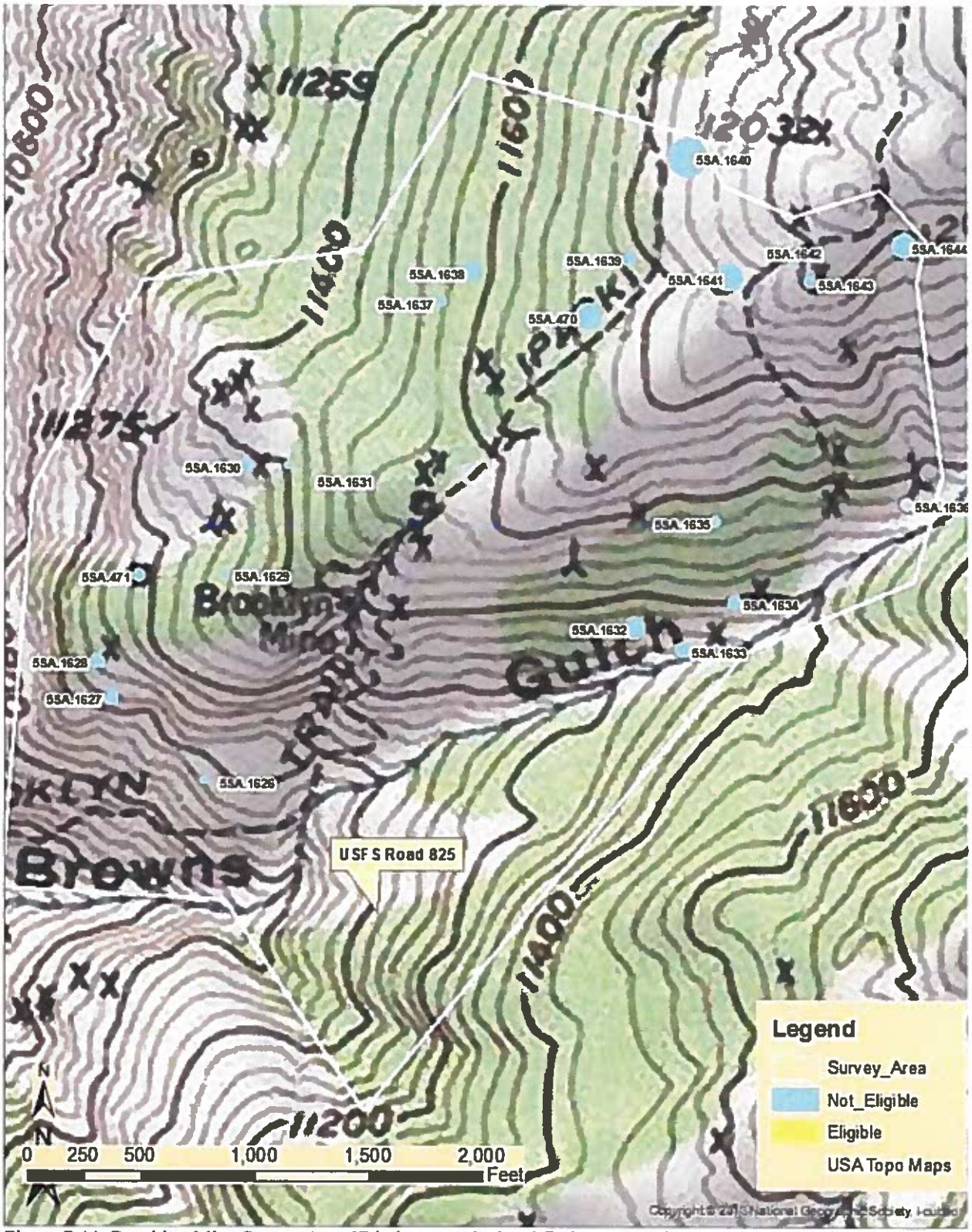

Figure 7.44: Brooklyn Mine Survey Area IF index map. Isolated finds are superimposed over the survey area. The map is an enlarged GIS digital version of Silverton (7.5') 1955.

Figure 7.45: Brooklyn Mine Survey Area IF index aerial photo depicting inventoried Isolated Finds and the survey area. The aerial is the same scale and location as the map above.

IF 5SA.470
Venetian Prospect Adit

The Venetian Prospect Adit was a crosscut driven in search of the Brooklyn Vein. In general, crosscuts were oriented 90 degrees to the strike of an area's veins, thus maximizing the extent of ground sampled. The Brooklyn Vein trended northeast, and the adit discussed here angled southeast. The adit is amid spruce forest on a steep west-facing slope, 11,760' elevation.

DRMS registered the adit as the Growler Mine under 5SA.470 in 1996. The adit was registered in that a few basic facts were provided on an in-house mine closure form, with almost no information specific to the resource. The form for 5SA.470 is confusing, however. The location corresponds to the adit discussed here, while the rest of its data pertains to a different resource somewhere else. The name Growler is also confusing because the adit is actually on the Venetian claim, while the Growler claim is far to the northeast. The adit should now be known as the Venetian. DRMS bulldozed the adit closed.

Venetian Prospect Adit History

The Venetian claim was initially staked in 1883 by an unknown party. Ouray area General Land Office mineral surveyor George R. Hurlburt bought it and surrounding claims in 1896 and had the group surveyed for patent shortly afterward. The adit existed by 1896.

Figure 7.46: View east at IF 5SA.470, Venetian Prospect Adit. The adit, bulldozed closed, is at center.

Venetian Prospect Adit Description

The adit is marked by a bulldozed cut with a triangular footprint. Opening to the northwest, the cut is 40' wide at the mouth, 75' long, and 9' wide at the southeastern back. The

waste rock dump was completely bulldozed and is now a pad of smeared earth 75' across and 30' wide with no historic attributes. In total, the IF is 75'x110' in area.

Venetian Prospect Adit Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criterion A*, the adit was an unimportant prospect and not associated with significant events. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a bulldozed prospect adit with no integrity. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because all features and artifacts have been fully documented.

The adit is incidental to water-quality work at the Brooklyn Mine, far southwest. But the adit is within a larger survey area proposed for work, and could be damaged by logging, earthmoving, and other activities. Disturbance will have no effect because the adit is recommended not eligible.

IF 5SA.471
Prospect Shaft

At one time, prospectors sank a shaft to sample a vein trending northeast up an extremely steep west-facing slope. The same vein may have also been probed through a prospect adit (5SA.1618) located to the northeast. Between 1968-1978, operators of the Brooklyn Mine (5SA.751) bulldozed a road from the adit down to the shaft and continued southwest, possibly as assessment work to hold title to a claim. The shaft is amid spruce and aspen forest.

The shaft featured log cribbing and a pad of waste rock partially spread by bulldozing. In 1996, DRMS registered the shaft as Rainbow, Glouchester under number 5SA.471, providing a few facts regarding the resource on an in-house closure form, but almost no documentation of the resource's physical attributes. Despite no supporting information, DRMS recommended the shaft not eligible, and OAHP concurred. DRMS then bulldozed the shaft closed. As recorded in 2017, the shaft now qualifies as an IF, and its name has been changed to Prospect Shaft with respect to its resource type. The original name of Rainbow, Glouchester refers to several claims to the north, which are actually unrelated to the shaft. The IF is really on USFS land.

Prospect Shaft History

Archival research found no information regarding the shaft. It was on a mining claim when sunk, but records were lost long ago. Timeframe could span the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Prospect Shaft Description

Currently, the shaft is not recognizable for what it had been. The shaft is a scar 12' in diameter marked by a pipe closure monument on the road's upslope, eastern side. Logs removed during closure are piled on the road. The waste rock dump is no more than a bulldozed wide place in the road 32'x55' in area. The resource has no intact elements, and is 36'x81' in area.

Figure 7.47: View north at IF 5SA.471, Prospect Shaft. The shaft is now a pile of earth at right, while bulldozed waste rock extends left.

Prospect Shaft Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the shaft was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a bulldozed shaft with no integrity. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The shaft is incidental to environmental work at the nearby Brooklyn Mine. But the shaft is within a larger survey area proposed for work, and could be impacted by logging or earthmoving. Disturbance will have no effect because the shaft is recommended not eligible.

IF 5SA.1626
Prospect Trench

Prospectors dug a simple trench on the southwestern shoulder of a natural, flat bench, on the northern side of Browns Gulch. The bench is a semicircular topographic point 10,980' elevation featuring spruce forest, on USFS land.

Prospect Trench History

Archival research found no information regarding the trench. Timeframe spans the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Figure 7.48: View southeast at IF 5SA.1626, Prospect Trench. The IF is at center.

Prospect Trench Description

The trench is a linear excavation 5' wide, 15' long, and 4' deep oriented northwest-southeast. Prospectors shoveled waste rock along the downslope, southwestern side, leaving a fan of material 7' wide and 12' long. The trench rim has slumped in, and the interior is filled with earth.

Prospect Trench Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the trench was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect trench with no other features or artifacts. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The trench is incidental to environmental studies of the nearby Brooklyn Mine. But the trench is within a larger survey area proposed for work, and could be affected by logging, earthmoving, and other activities. Disturbance will have no effect because the trench is recommended not eligible.

Figure 7.49: View east at IF 5SA.1627, Prospect Trench. The IF is at center.

IF 5SA.1627
Prospect Trench

Prospectors dug a linear trench in search of a mineralized vein west of and downslope from the Brooklyn Mine. In general, veins in the area tended to strike northeast-southwest. The trench is on an extremely steep southwest-facing slope 11,090' elevation, amid mixed spruce and aspen forest. Soil is medium-brown sandy loam 15 cm thick. The land is USFS.

Prospect Trench History

Archival research found no information regarding the trench. Timeframe spans the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Prospect Trench Description

The trench is 5' wide and 10' long with a blotch of waste rock 18'x75' in area on the western side. The trench sides slumped in, filling the interior with earth to a depth of 2'. Between 1968-1978, operators of the Brooklyn Mine bulldozed a road northwest to the trench and cut a crescent-shaped pad 18' wide and 75' long immediately below. The pad may have been assessment work to hold title to a claim. The trench is now very difficult to discern. Total size is 30'x75' in area.

Prospect Trench Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the trench was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect trench with no other features or artifacts. Further, the trench is poorly preserved. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The trench is incidental to environmental studies of the nearby Brooklyn Mine. But the trench is within a larger survey area proposed for work, and could be affected by logging, earthmoving, and other activities. Disturbance will have no effect because the trench is recommended not eligible.

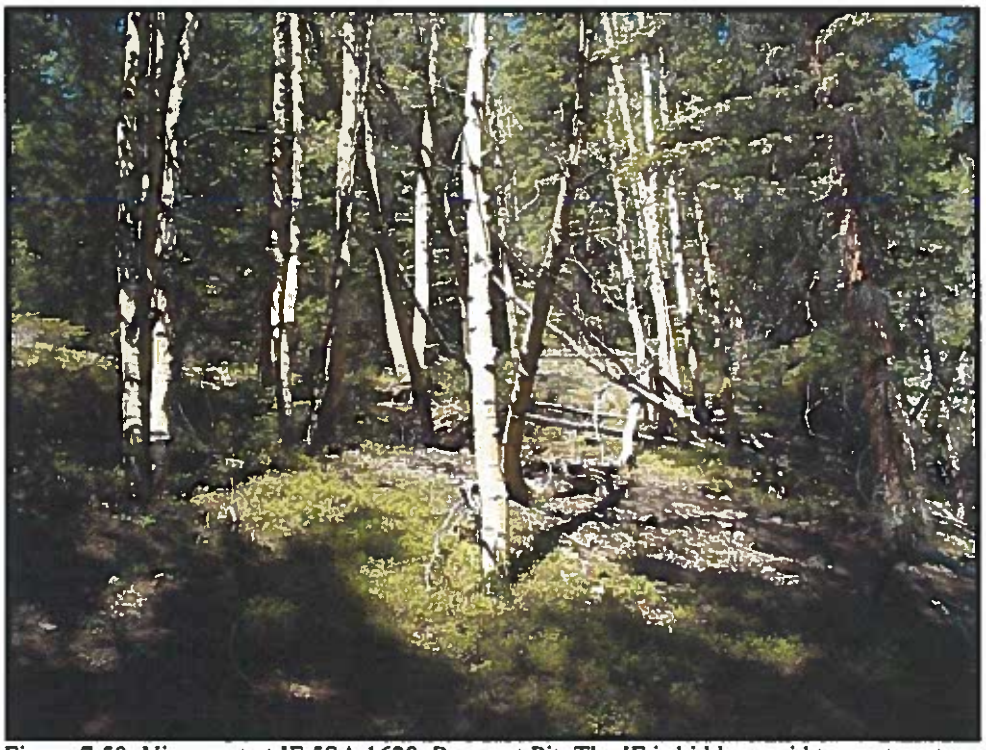

Figure 7.50: View east at IF 5SA.1628, Prospect Pit. The IF is hidden amid trees at center.

IF 5SA.1628
Prospect Pit

The pit was a simple excavation dug in search of a mineralized vein striking northeast-southwest. The pit is west of and downslope from the Brooklyn Mine, on an extremely steep southwest-facing slope 11,110' elevation, amid mixed spruce and aspen forest. Soil is medium-brown sandy loam 15' cm thick. The land is USFS.

Prospect Pit History

Archival research found no information regarding the pit. Timeframe spans the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Prospect Pit Description

The pit is 6'x9' in area, filled with slumped earth and duff, and difficult to perceive. Waste rock is a faint fan of gravel and earth 6' wide and 12' long becoming overgrown. Total size is 6'x22' in area.

Prospect Pit Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the pit was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect pit with no other features or artifacts. Further, the pit is poorly preserved. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The pit is incidental to environmental studies at the nearby Brooklyn Mine. But the pit is within a larger survey area proposed for work, and disturbance will have no effect because the pit is recommended not eligible.

Figure 7.51: View southwest at IF 5SA.1629, Prospect Pit. The IF is hidden behind trees at center.

IF 5SA.1629
Prospect Pit

The IF is a two-chamber prospect pit excavated into an extremely steep, west-facing slope 11,640' elevation. The area, on USFS land, is around the northern rim of Browns Gulch and thickly forested with spruce trees. The Brooklyn Mine is a short distance upslope, and a road was bulldozed northwest past the prospect pit's upper side, on its way to other prospects, which are scattered to the west.

Prospect Pit History

Archival research found no information regarding the pit. Timeframe spans the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Prospect Pit Description

The IF features adjoining pits aligned northeast-southwest. The southwestern pit is a ragged hole in rock 5'x7' in area and 5' deep. The northeastern pit is a rounded excavation 5'x7' in area and filled with slumped earth. A wire and insulator from the Brooklyn Mine above lies on the pits' combined waste rock mound, which is 7'x15' in area and 2' thick.

Prospect Pit Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the pit was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect pit with no other features or artifacts. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The pit is incidental to environmental studies at the nearby Brooklyn Mine. But the pit is within a larger survey area proposed for work, and disturbance will have no effect because the pit is recommended not eligible.

IF 5SA.1630
Prospect Complex

Prospectors dug several probes to unearth a geological contact between bodies of blocky volcanic rock. The contact was at the head of a minor gully descending southwest from a glaciated knoll. General slopes are southwest-facing, 11,410' elevation, and blanketed with moss and duff. The contact is on the border between spruce forest to the east and tundra to the west, on USFS land.

Prospect Complex History

Archival research found no information regarding the prospects. Timeframe spans the

mid-1880s through early 1900s, which was the area's principal period of prospecting.

Figure 7.52: View southeast at IF 5SA.1630, Prospect Complex. The lower trench is at center.

Prospect Complex Description

The excavations include a prospect trench and prospect pit aligned northeast-southwest with the contact. The trench, at bottom, is 2½' wide, 10' long, and filled with earth to a depth of 1'. Waste rock is a 6'-diameter blotch to the south. The pit, 18' northeast, is 6'x9' in area and 2' deep with a scatter of cobbles to the south. Both excavations are faint and difficult to perceive.

Prospect Complex Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the pit and trench were an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect with no other features or artifacts. Further, the pit and trench are poorly preserved. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The prospect is incidental to environmental studies at the nearby Brooklyn Mine. But the prospect is within a larger survey area proposed for work, and disturbance will have no effect because the prospect is recommended not eligible.

Figure 7.53: View north at IF 5SA.1631, Claim Post. The post stood in the rocks at one time, but has fallen left.

IF 5SA.1631
Claim Post

A prospecting party staked a claim in hopes of taking in a mineralized contact. They may very well have been the same individuals who dug several probes (IF 5SA.1630) to the northwest, but this is uncertain. In any case, the prospectors erected posts to define their claim. The IF discussed here is one of the posts, while the others could not be found. The post is in thick spruce forest on a west-facing slope 11,420' elevation. The land is USFS.

Claim Post History

Archival research found no information regarding the claim post. Timeframe spans the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Claim Post Description

The post was a hewn log 4' high set in a rock cairn built against a small bedrock projection. The cairn was 2'x3' in area and 18" high. The post fell over to the west long ago and is now heavily decayed.

Claim Post Eligibility and Management Recommendations

The post is recommended not eligible for several reasons. Under *Criteria A and B*, the post was an unimportant claim marker and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a

fallen claim post with no other features or artifacts. Further, the post is poorly preserved. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The post is incidental to environmental studies at the nearby Brooklyn Mine. But the post is within a larger survey area proposed for work, and disturbance will have no effect because the post is recommended not eligible.

Figure 7.54: View northwest at IF 5SA.1632, Prospect Adit. Now bulldozed, the adit was in the road's cut-bank at right.

IF 5SA.1632
Prospect Adit

A prospect outfit drove an adit into the northern wall of Browns Gulch to sample a mineralized vein trending north-south. The vein is the same one probed by several other adits (5SA.1621) far upslope. The surrounding ground is extremely steep, south-facing, 11,390' elevation, and vegetated with a mix of grass and spruce stands. The land is USFS.

Prospect Adit History

Archival research found no information regarding the adit. Timeframe spans the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Prospect Adit Description

When intact, the adit was like many others with a portal and waste rock dump. Between 1968-1978, operators of the Brooklyn Mine bulldozed a logging road across the IF, separating the adit from its dump. The road, around 9' wide, sliced away the adit portal and spread out the dump, both of which are now very difficult to distinguish. The adit is a circular recess 25' wide and 15' long with a headwall 9' high, seeping water. The dump is an irregular, pale deposit 36'x55' in area. Total size is 54'x62' in area.

Prospect Adit Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the adit was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a bulldozed prospect adit lacking integrity. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The adit is incidental to environmental studies of the nearby Brooklyn Mine. But the adit is within a larger survey area proposed for work, and could be affected by logging, earthmoving, and other activities. Disturbance will have no effect because the adit is recommended not eligible.

Figure 7.55: View east at IF 5SA.1633, Prospect Trench. A trench is in trees at left, while waste rock descends right.

IF 5SA.1633
Prospect Trench

Prospectors discovered a seam of hydrothermally altered rock exposed on the northern side of Browns Gulch's floor. They dug a trench around 50' above the floor and its cascading stream, in an extremely steep earthen and rocky slope 11,340' elevation. The slope is too steep for vegetation except for clumps of grass and brush. The land is USFS.

Prospect Trench History

Archival research found no information regarding the trench. Timeframe spans the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Prospect Trench Description

Mostly filled with slumped earth and talus, the trench is a scar 9' wide, 18' long, and only 1' deep. Waste rock is a mound 12'x18' in area and 18" thick. The dump is obvious but the trench is not, and total IF size is 12'x40' in area.

Prospect Trench Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the trench was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect trench with no other features or artifacts. Further, the trench is poorly preserved. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The trench is incidental to environmental studies of the nearby Brooklyn Mine. But the trench is within a larger survey area proposed for work, and could be affected by logging, earthmoving, and other activities. Disturbance will have no effect because the trench is recommended not eligible.

IF 5SA.1634
Jessica Prospect Trench

Prospectors dug a trench to sample a hydrothermally altered, mineralized vein on the southern end of the Jessica claim, which is patented. The trench is on the northern side of Browns Gulch, where a natural flat terrace meets an extremely steep, south-facing slope. Elevation is 11,410', and the terrace is blanketed with meadow while the slope above is forested with spruce trees.

Jessica Prospect Trench History

Prospectors began examining the northern wall of Browns Gulch for mineralized veins

during the mid-1880s, and intensified around 1890. One party found a vein sometime during the early 1890s and staked the Jessica claim in 1896. The trench discussed here could have been excavated during this period. George R. Hurlburt bought the claim shortly afterward and had it surveyed for patent.

Figure 7.56: View northwest at IF 5SA.1634, Jessica Prospect Trench, at center.

Jessica Prospect Trench Description

The trench is well-formed, and 5' wide and 14' long. Slumped earth and rubble fill it to a depth of 4'. Waste rock is a mound 16'x20' in area and 18" thick featuring young spruce trees. The IF is 16'x36' in area total.

Jessica Prospect Trench Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the trench was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect trench with no other features or artifacts. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The trench is incidental to environmental studies of the nearby Brooklyn Mine. But the trench is within a larger survey area proposed for work, and could be affected by logging, earthmoving, and other activities. Disturbance will have no effect because the trench is recommended not eligible.

Figure 7.57: View east at IF 5SA.1635, Winning Prospect Pit. The pit is at center, and waste rock extends right.

IF 5SA.1635
Winning Prospect Pit

The IF is no more than a simple pit on the Winning claim's southwestern end. Prospectors dug the pit in the north wall of Browns Gulch, 11,600' elevation, in deep spruce forest. The slope is extremely steep, south-facing, and blanketed with duff. The Winning claim is patented.

Winning Prospect Pit History

Prospectors began examining the northern wall of Browns Gulch for mineralized veins during the mid-1880s, and intensified circa 1890. One party found a vein around this time and staked the Winning claim in 1891. The pit discussed here was excavated during this period. George R. Hurlburt bought the claim and had it surveyed for patent in 1896.

Winning Prospect Pit Description

The pit is an ovoid excavation 6'x10' in area and filled with slumped earth to a depth of 2½'. Waste rock is a mound of mineralized material 16'x18' in area and 18" thick with mature spruce trees. Total IF size is 18'x30' in area.

Winning Prospect Pit Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the pit was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect pit with no other features or artifacts. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The pit is incidental to environmental studies at the nearby Brooklyn Mine. But the pit is within a larger survey area proposed for work, and disturbance will have no effect because the pit is recommended not eligible.

Figure 7.58: View east at IF 5SA.1636, Marina Prospect Complex. A pit and trench are difficult to perceive on the slope at center.

IF 5SA.1636
Marina Prospect Complex

Prospectors were interested in an outcrop of hydrothermally altered rock on the northern wall of Browns Gulch. The outcrop is on a precipitous south-facing slope, 11,580' elevation, featuring bare earth and clumps of grass. The prospectors probed the formation with a trench and pit.

Marina Prospect Complex History

Prospectors began examining the northern wall of Browns Gulch for mineralized veins during the mid-1880s, and intensified circa 1890. One party became interested in an outcrop of mineralized rock and staked the Marina claim in 1896. The probes discussed here were excavated between circa 1890 and 1896. George R. Hurlburt bought the claim and had it surveyed for patent in 1896, along with the adjoining Jessica.

Marina Prospect Complex Description

The IF features a completely collapsed prospect trench and an adjacent pit totaling 36'x45' in area. The trench had been 4' wide and 13' long with a headwall 10' high. The blocky outcrop above crumbed and filled the trench, which is now a rubble-filled scar surrounded by rock. Waste rock is a fan 15'x23' in area. The pit is around 6' southeast and is a circular scar 5'x6' in area. Its waste rock is another fan 8'x14' in area.

Marina Prospect Complex Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the complex was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a pair of simple excavations with no other features or artifacts. Further, the excavations are poorly preserved. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The complex is incidental to environmental studies at the nearby Brooklyn Mine. But the complex is within a larger survey area proposed for work, and disturbance will have no effect because the complex is recommended not eligible.

Figure 7.59: View north at IF 5SA.1637, Prospect Complex. The IF is hidden behind trees at center.

IF 5SA.1637
Prospect Complex

In the area, mineral veins tended to weather faster than surrounding rock, and thus eventually became erosional gullies and drainages. Prospectors probed one such gully descending a west-facing slope, north of Browns Gulch. The vein within trended east-northeast, and was an extension of the same one on the Venetian claim, to the east. The IF is on USFS land. The prospectors dug trenches on the gully's northern and southern sides, at 11,570' elevation. The area features thick second-growth spruce forest, the first generation having been logged during the 1970s.

Prospect Complex History

Prospectors began examining the northern wall of Browns Gulch for mineralized veins during the mid-1880s. One party found a vein north of the gulch, probed and tracked it with excavations, and staked it as the Venetian in 1883. On the same vein, the IF discussed here was either a product of the same party, or of another group trying to find an extension of the Venetian vein. In any case, the IF probably dates to 1882 or 1883.

Prospect Complex Description

The IF consists of two prospect trenches separated by 36', flanking a west-descending gully. The northern trench is 5' wide and 14' long, now slumped closed. Its dump is a mound 15' in diameter. The southern trench is a well-formed incision in rock 4' wide, 16' long, and 5' deep. Waste rock is a fan 13'x15' in area. Total size is 26'x46' in area.

Prospect Complex Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the complex was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a pair of simple trenches with no other features or artifacts. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The complex is incidental to environmental studies at the nearby Brooklyn Mine. But the complex is within a larger survey area proposed for work, and disturbance will have no effect because the complex is recommended not eligible.

IF 5SA.1638
Prospect Adit

Prospectors drove a short adit to sample a vein at depth. The adit extended easterly into a steep west-facing slope 11,670' elevation, on USFS land. The area features patchy second-growth spruce forest, the first-generation trees having been cut during the 1970s.

Figure 7.60: View southeast at IF 5SA.1638, Prospect Adit. The IF is at center.

Prospect Adit History

Archival research found no information regarding the adit. Timeframe spans the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Prospect Adit Description

The prospectors excavated a trench around 4' wide and 27' long to provide a solid face for the adit, and then continued underground. They used wheelbarrows to dump waste rock to the west, depositing a pad of cobbles 15'x26' in area and 3' thick. The adit has since collapsed, and the trench walls slumped in. The dump is as created, but overgrown with spruce saplings. Deadfall lies across the trench and dump. Total size is 15'x60' in area.

Prospect Adit Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the adit was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect adit with no other features or artifacts. Further, the adit is poorly preserved. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The adit is incidental to environmental studies of the nearby Brooklyn Mine. But the adit is within a larger survey area proposed for work, and could be affected by logging, earthmoving, and other activities. Disturbance will have no effect because the adit is recommended not eligible.

Figure 7.61: View south at IF 5SA.1639, Venetian Prospect Pit, at center.

IF 5SA.1639
Venetian Prospect Pit

The IF is a simple pit dug in search of a vein, or alternatively excavated as annual assessment to hold title to the Venetian claim, which is patented. The pit is on a hummocky and steep west-facing slope around 11,800' elevation, north of Browns Gulch. The area is a mix of meadow and spruce forest. A bulldozed pond is a short distance northwest.

Venetian Prospect Pit History

Prospectors began examining the northern wall of Browns Gulch for mineralized veins during the mid-1880s. One party found a vein north of the gulch, probed and tracked it with excavations, and staked it as the Venetian in 1883. The IF discussed here was a product of the effort and probably dates to 1882 or 1883.

Venetian Prospect Pit Description

The pit is a simple excavation 8' in diameter intended to expose the base of a small blocky bedrock outcrop. Prospectors shoveled waste rock northwest, depositing a fan of material 7'x9' in area. The pit's walls slumped, filling the interior to a depth of 2'.

Venetian Prospect Pit Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the pit was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect pit with no other features or artifacts. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The pit is incidental to environmental studies of the nearby Brooklyn Mine. But the pit is within a larger survey area proposed for work, and could be affected by logging, earthmoving, and other activities. Disturbance will have no effect because the pit is recommended not eligible.

Figure 7.62: View south at IF 5SA.1640, Prospect Adit. The view is across the waste rock dump at the adit, which is collapsed and difficult to perceive in the background. The area at right has been bulldozed.

IF 5SA.1640
Prospect Adit

Prospectors drove a crosscut adit in search of the Brooklyn Vein. The adit is on a very steep, hummocky, west-facing slope 11,880' elevation. Spruce forest descends downslope while tundra extends above. The entire area was extensively bulldozed for annual claim assessment sometime 1960s-1980s, severely damaging the adit in the process. Ownership is USFS.

Prospect Adit History

Archival research found no information regarding the adit. Timeframe spans the mid-1880s through early 1900s, which was the area's principal period of prospecting.

Prospect Adit Description

The adit extended southeast from the end of a trench around 7' wide and 30' long. Prospectors used ore cars to dump waste rock northwest and downslope, depositing a lobe of mineralized gravel 27' wide, 55' long, and 3' thick. Two logs on the surface retained a bed for the track. The adit since collapsed and filled the trench with rubble, and a bulldozer scraped the ground along the entire southwestern side. Any features other than the adit and dump have thus been destroyed. The dump is preserved and features a few logs and lumber. Total IF size is 27' wide and 130' long.

Prospect Adit Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the adit was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect adit with little integrity. Further, character-defining features are absent. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The adit is incidental to environmental studies of the nearby Brooklyn Mine. But the adit is within a larger survey area proposed for work, and could be affected by logging, earthmoving, and other activities. Disturbance will have no effect because the adit is recommended not eligible.

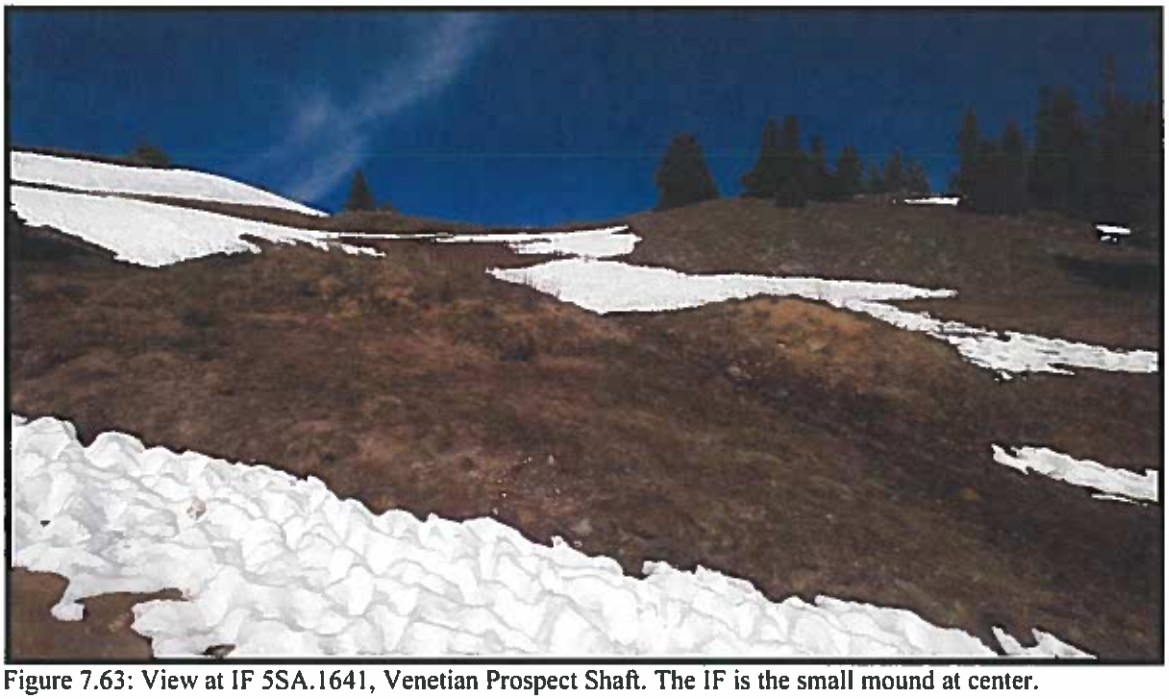

Figure 7.63: View at IF 5SA.1641, Venetian Prospect Shaft. The IF is the small mound at center.

IF 5SA.1641
Venetian Prospect Shaft

At one time, a prospect shaft existed near the northeastern end of the Venetian claim, high on a west-facing slope north of Browns Gulch. The claim is patented. Prospectors sank the shaft to evaluate a mineralized vein and dumped waste rock downslope. In recent decades, a road was bulldozed between the shaft and dump, destroying both features. The area is 11,920' elevation and on the edge of treeline. Spruce trees stand amid rolling tundra. The IF was 70 percent snow-free when recorded, and was field-checked after snow-melt.

Venetian Prospect Shaft History

Prospectors began examining the northern wall of Browns Gulch for mineralized veins during the mid-1880s. One party found a vein north of the gulch, probed and tracked it with excavations, and staked it as the Venetian in 1883. Sometime later, they sank a shaft on the claim's northeastern end, which is the IF discussed here.

Venetian Prospect Shaft Description

The shaft either collapsed or was backfilled, and is now a depression 18'x28' in area with earthen berms along the western edge. West and across the road, the dump manifests as two mounds of gray material 15'x24' in area and 2' thick. The total size is 42'x95' in area.

Venetian Prospect Shaft Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the shaft was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple shaft with no other features or artifacts. Further, the shaft has no integrity due to bulldozing. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The shaft is incidental to environmental studies of the Brooklyn Mine. But the shaft is within a larger survey area proposed for work, and could be affected by earthmoving and vehicle traffic. Disturbance will have no effect because the shaft is recommended not eligible.

IF 5SA.1642
Venetian Prospect Cut

The IF is limited to a simple and shallow prospect cut on the northern end of the Venetian claim, which is patented. Prospectors scraped soil off the side of a bedrock outcrop on a tundra slope 11,990' elevation. The slope is west-facing and north of Browns Gulch's northern rim. The IF was 70 percent snow-free when recorded, and was field-checked after snow-melt.

Venetian Prospect Cut History

Prospectors began examining the northern wall of Browns Gulch for mineralized veins during the mid-1880s. One party found a vein north of the gulch, probed and tracked it with excavations, and staked it as the Venetian in 1883. The IF discussed here was a product of the effort and probably dates to 1882 or 1883.

Figure 7.64: View at IF 5SA.1642, Venetian Prospect Cut, at center.

Venetian Prospect Cut Description

In scraping away soil and breaking into rock, the prospectors created a cut of sorts 15' wide and 50' long. The surface is ragged, crumbed rock with showings of mineralization, and the cut is almost indistinguishable. The amount of ground disturbed was insufficient to generate a waste rock pile.

Venetian Prospect Cut Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the cut was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect cut with no other features or artifacts. Further, the cut is very difficult to discern. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The cut is incidental to environmental studies of the Brooklyn Mine. But the cut is within a larger survey area proposed for work, and could be affected by earthmoving. Disturbance will have no effect because the cut is recommended not eligible.

IF 5SA.1643
Survey Monument

The IF encompasses what appears to have been a monument for surveying claims in the Browns Gulch area. The monument is on an exposed knoll 12,000' elevation, commanding a sweeping 180-degree view of mountains, ridges, and drainages. The knoll is on a general west-facing slope north of Browns Gulch.

Survey Monument History

An 1896 mineral claim survey plat depicts the survey monument as a marker for the Venetian claim's eastern corner, which abutted the Growler claim. The Venetian was staked in 1883 and the Growler in 1888, and both were patented in 1896. But the monument is larger than typical corner markers, and features lumber, which is atypical.

Figure 7.65: View at IF 5SA.1643, Survey Monument, a cairn at center.

Survey Monument Description

The monument features a rock cairn 4'x5' in area, which is mostly collapsed. Planks with wire nails are scattered to the south. The planks were probably for some sort of small construct, but no clear evidence suggesting type, size, location, or function remains. A foundation, footprint, or level area suitable for a building are absent.

Survey Monument Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criterion A*, archival research was unable to demonstrate the monument's importance. The only documented reference is that the monument was a corner marker for the Venetian claim. Regarding *Criterion*

C, the monument is not a good example of a survey station because of its simplicity and generic nature. The monument is, however, an example of a claim corner marker, which is a very common resource type in Colorado. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The monument is incidental to environmental studies of the Brooklyn Mine. But the monument is within a larger survey area proposed for work, and could be affected by earthmoving. Disturbance will have no effect because the monument is recommended not eligible.

Figure 7.66: View at IF 5SA.1644, Eleventh Hour Prospect Complex. The IF is marked by the waste rock mound at center.

IF 5SA.1644
Eleventh Hour Prospect Complex

Prospectors were curious about mineralized rock formations at the barren and discolored head of a deep gully plummeting straight down Browns Gulch's northern wall. The gully begins as an eroded and furrowed basin high on the gulch's northern shoulder, 12,020' elevation. Tundra surrounds the sides, and the basin seeps reddish, mineralized water. The prospectors investigated the rock formations via several excavations. The IF was 70 percent snow-free when recorded, and was field-checked after snow-melt.

Eleventh Hour Prospect Complex History

Prospectors staked a north-south vein as the Eleventh Hour in 1891. The prospectors then did little more work and sold to George R. Hurlburt in 1896, and he had the claim surveyed for patent along with others.

Eleventh Hour Prospect Complex Description

The prospectors dug two excavations east-west across the gully head in hopes of unearthing veins, which trended north-south. The western excavation is a trench oriented northwest, and 14' wide and 36' long. The prospectors piled waste rock along the downslope side, forming a berm 12' wide, 40' long, and 3' thick. The prospectors moved east 27' and dug a pit 12'x30' in area and 3' deep. They shoveled waste rock to the south, building up a mound 20'x40' in area and 2½' thick. The pit is now overgrown with grass and willows. Total IF size is 34'x110' in area.

Eleventh Hour Prospect Complex Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the complex was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, several simple prospects with no other features or artifacts. Further, the pit is poorly preserved. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The complex is incidental to environmental studies at the Brooklyn Mine. But the complex is within a larger survey area proposed for work, and disturbance will have no effect because the complex is recommended not eligible.

Bandora Mine Survey Area

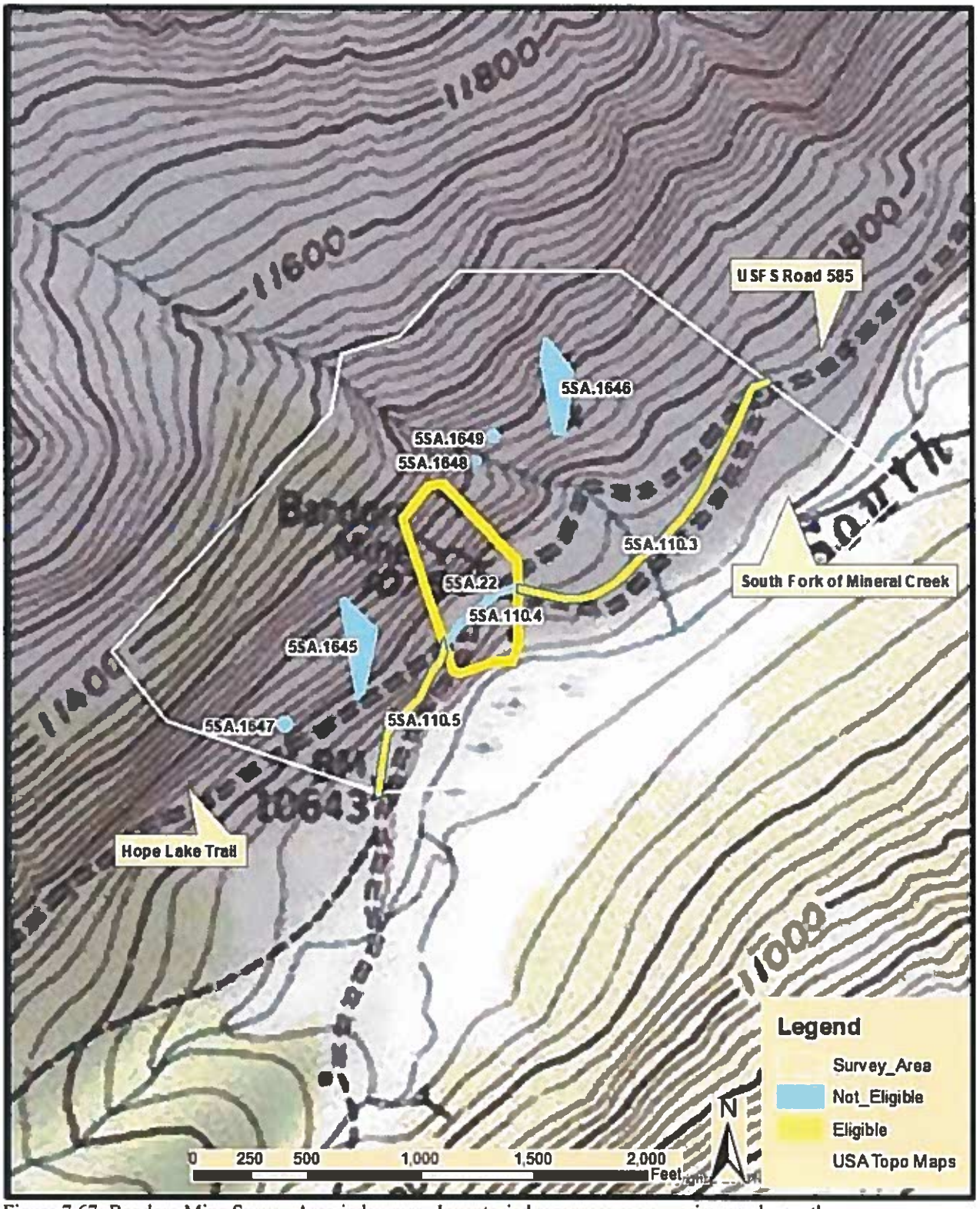

Figure 7.67: Bandora Mine Survey Area index map. Inventoried resources are superimposed over the survey area. The map is an enlarged GIS digital version of Ophir (7.5') 1955.

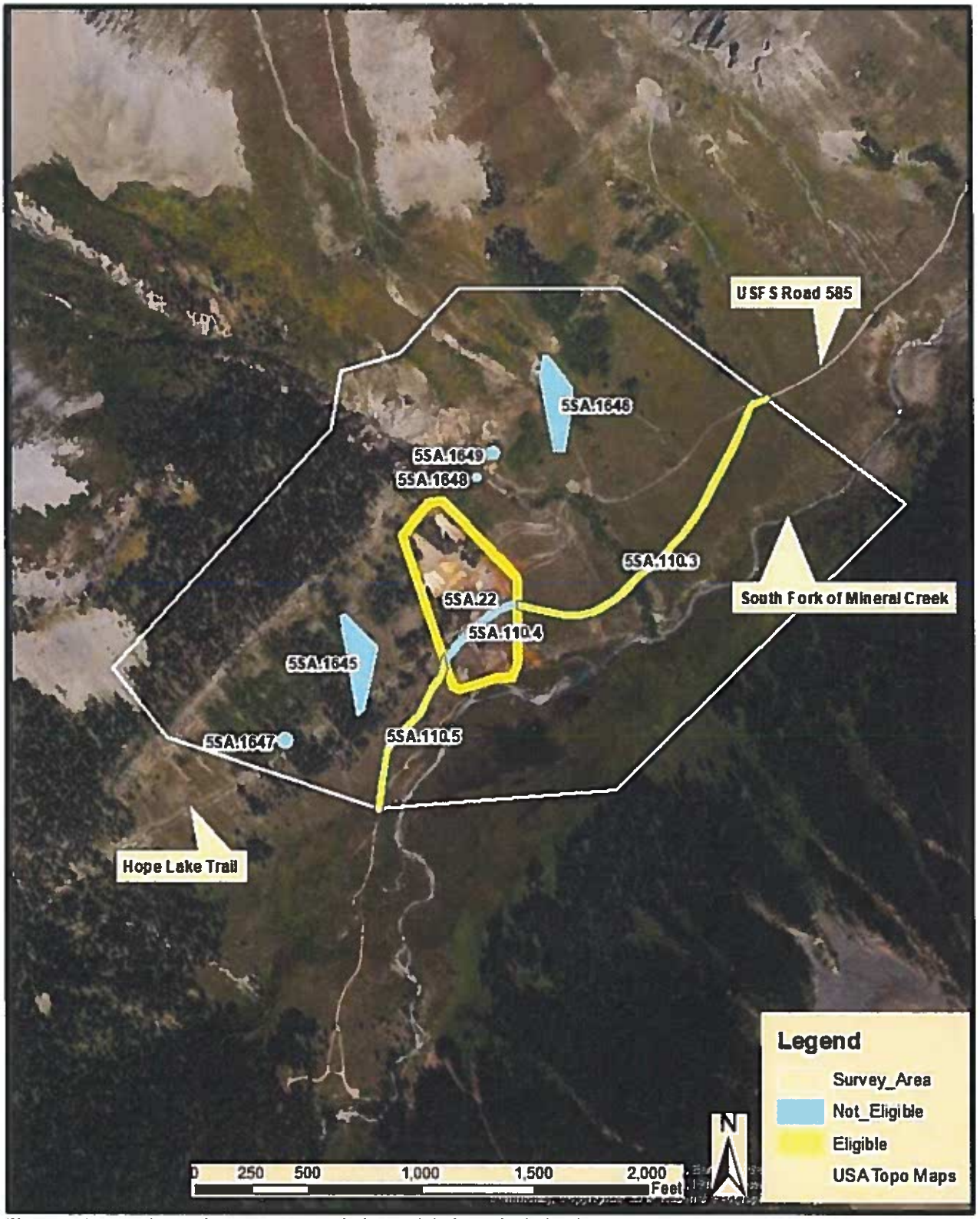

Figure 7.68: Bandora Mine Survey Area index aerial photo depicting inventoried sites and the survey area. The aerial is the same scale and location as the map above.

Table 7.4: Bandora Resource Summary

Resource #	Resource Name	Resource Type	Eligibility Status	Ownership	Project Effect
5SA.22	Bandora Mine	Tunnel Mine	NRHP A and C	Private	No adverse eff
5SA.110.3	Rico-Silverton Wagon Road	Wagon Road	NRHP A and C	USFS	No adverse effect
5SA.110.4	Rico-Silverton Wagon Road	Wagon Road	No; lack integrity	Private	No effect
5SA.110.5	Rico-Silverton Wagon Road	Wagon Road	NRHP A and C	USFS	No adverse effect
5SA.1645	Prospect Complex	Prospect Complex	No; unimportant	USFS	No effect
5SA.1646	Lady Ellen Mine	Tunnel Mine	No; lack integrity	Private	No effect
5SA.1647	Prospect Adit	Prospect Adit	No; IF	USFS	No effect
5SA.1648	Cataract Prospect Cut	Prospect Cut	No; IF	Private	No effect
5SA.1649	Cataract Prosp Cmplx	Prospect Complex	No; IF	Private	No effect
Total: 9			**Total eligible: 3**		**No adverse effect**

Site 5SA.22 USFS # 02130100033
Bandora Mine

The Bandora was the lifelong project of local Silverton miner William Sullivan. He discovered the Bandora Vein system in 1881 and worked it sustainably on a small scale until amassing $200,000 by 1891. The operation gradually grew from one to five tunnels with several thousand feet of underground workings, but no facilities beyond a simple boardinghouse, blacksmith shop, and stable. Sullivan extracted ore featuring silver, lead, zinc, copper, and gold from several parallel veins that trended north-northwest. The ore was very complex and difficult to treat, Sullivan thus focusing on the highest grades for a time. Investors bought the property in 1891, gutted the veins, went bankrupt, and turned it back over to Sullivan. No longer dependent entirely on the mine's income, he then spent twenty-years developing the veins as perfectly as he could. Sullivan retired in 1920 and operations ceased, and lessees reopened the mine in 1934. They instituted the first major surface improvements that the mine had yet seen, including mechanization. The Bandora then produced regularly into 1948.

The Bandora is now an archaeological site with distinct and prominent waste rock dumps on the South Fork of Mineral Creek. The site is near the valley's head, on the western wall, around eight miles southwest of Silverton. The site sprawls over an extremely steep southeast-facing slope overwhelmed by mixed aspen and spruce forest. The ground consists of thin soil over blocky, friable volcanic gravel and cobbles constantly shifting and creeping. The South Fork meanders northerly past the site's toe, which is a mix of alpine wetland and flat areas boggy with metals-rich sediment. Elevation is 10,640'. USFS Road 585, originally the Rico-Silverton Wagon Road (5SA.110.3-5SA.110.5), curves through the site's middle. A road bulldozed southwest to Hope Lake is now a recreational trail, with parking on the platform where the Bandora's boardinghouse and shop once stood.

As of the 1940s, the mine's surface plant included ore car trestles, ore bins, two shops, a compressor house, storehouse, change room, at least one boardinghouse, and a stable. Most of these components were dismantled during the 1950s, except for the stable, a never-used mill foundation dating to 1939, and an ore bin erected in 1943. Soil creep, minor bulldozing, tunnel drainage, and recreational use have erased evidence of nearly all the other facilities. The same forces have reduced the artifact assemblage to a small fraction of what it had been at one time.

The Bandora is included in this project because its dumps and tunnel drainage water are sources of acid and metals. Although the site lies entirely on patented claims, the Government has undertaken a study of how best to address potential environmental problems. Solutions for tunnel drainage may involve capture-and-treat in a small facility, or diversion to settling ponds on the valley floor. The dumps might be addressed with run-on runoff control ditches, wholesale removal to a repository, or stabilization in place with contouring and revegetation. Depending on study results, actions could destroy the dumps and associated features thereon. The site is recommended eligible under Criteria A and C, but only the stable and 1943 ore bin are contributing elements. The rest of the site is non-contributing because of integrity problems. Water-quality actions will avoid the stable and bin, and pose no adverse effect.

Previous projects have documented the Bandora as a historic resource to some degree, but none fully. K. Zeller registered the site as 5SA.22 in 1974, providing a few notes, photographs, and location map, but nothing substantive. DRMS did likewise in 1996 in preparation for closing several open tunnels. DRMS recommended the site not eligible, but OAHP thought otherwise and determined the site as Needs Data. USFS contributed the best information thus far in 2013 for a better record. USFS outlined the site, recorded the stable, mill foundation, and 1943 ore bin, and provided a brief summary of a few other features. USFS recommended the site eligible for the NRHP under Criterion A. But without a clear significance statement, OAHP did not concur and left the official determination as Need Data. The site was documented in detail in 2017 to provide a more complete record and evaluation. Two Dog Archaeological Consultants surveyed the valley floor around the site for prehistoric resources, and nothing was found.

Figure 7.69: Southwest overview of Site 5SA.22, Bandora Mine. The three dumps at center mark the upper workings. The lower dump and ore bin are the middle workings. The lower workings are left and out of view.

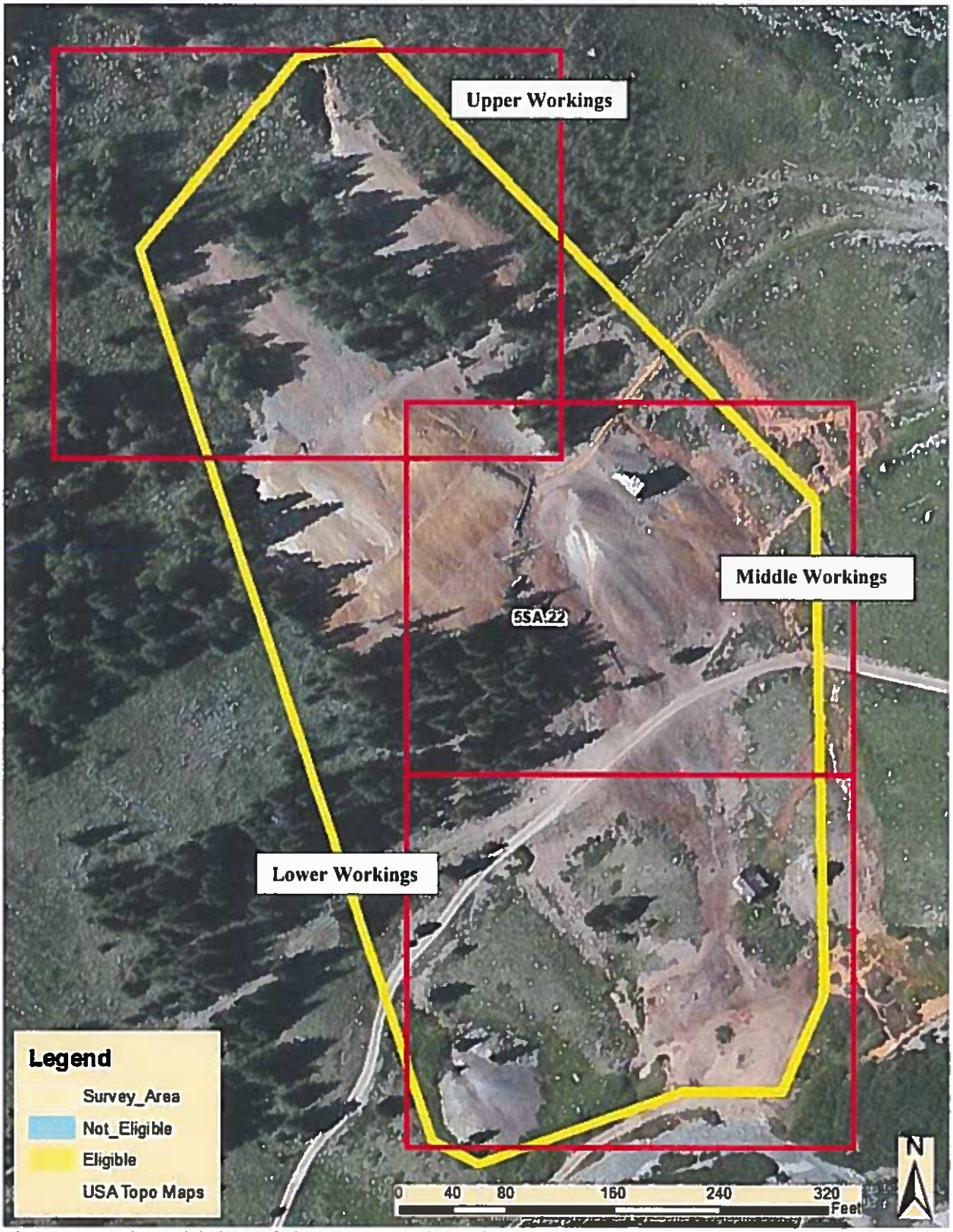

Figure 7.70: Index aerial photo of Site 5SA.22, Bandora Mine. The rectangles outline the upper, middle, and lower workings. Detail maps are provided below.

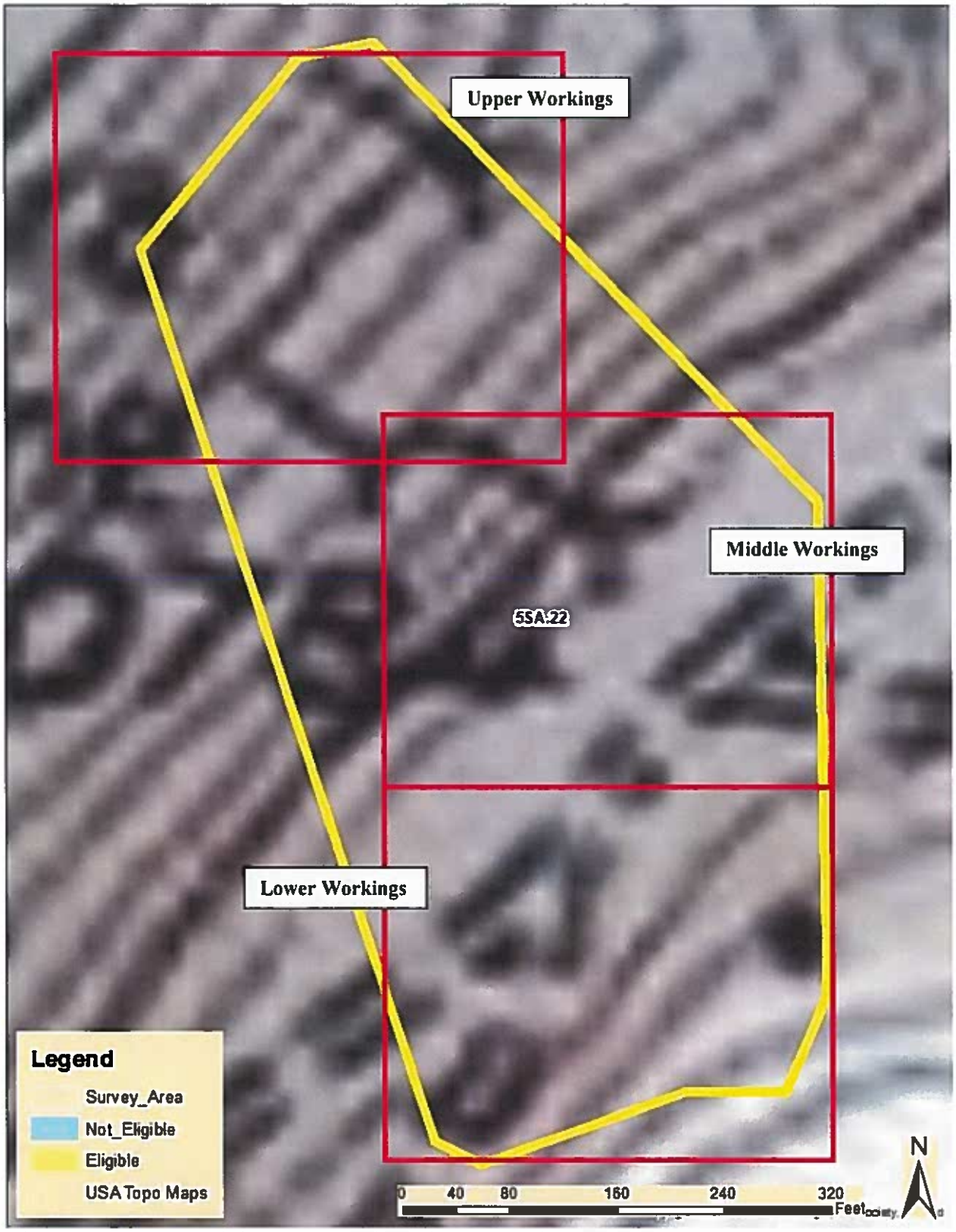

Figure 7.71: Index map of Site 5SA.22, Bandora Mine. The map is the same location and scale as the aerial above.

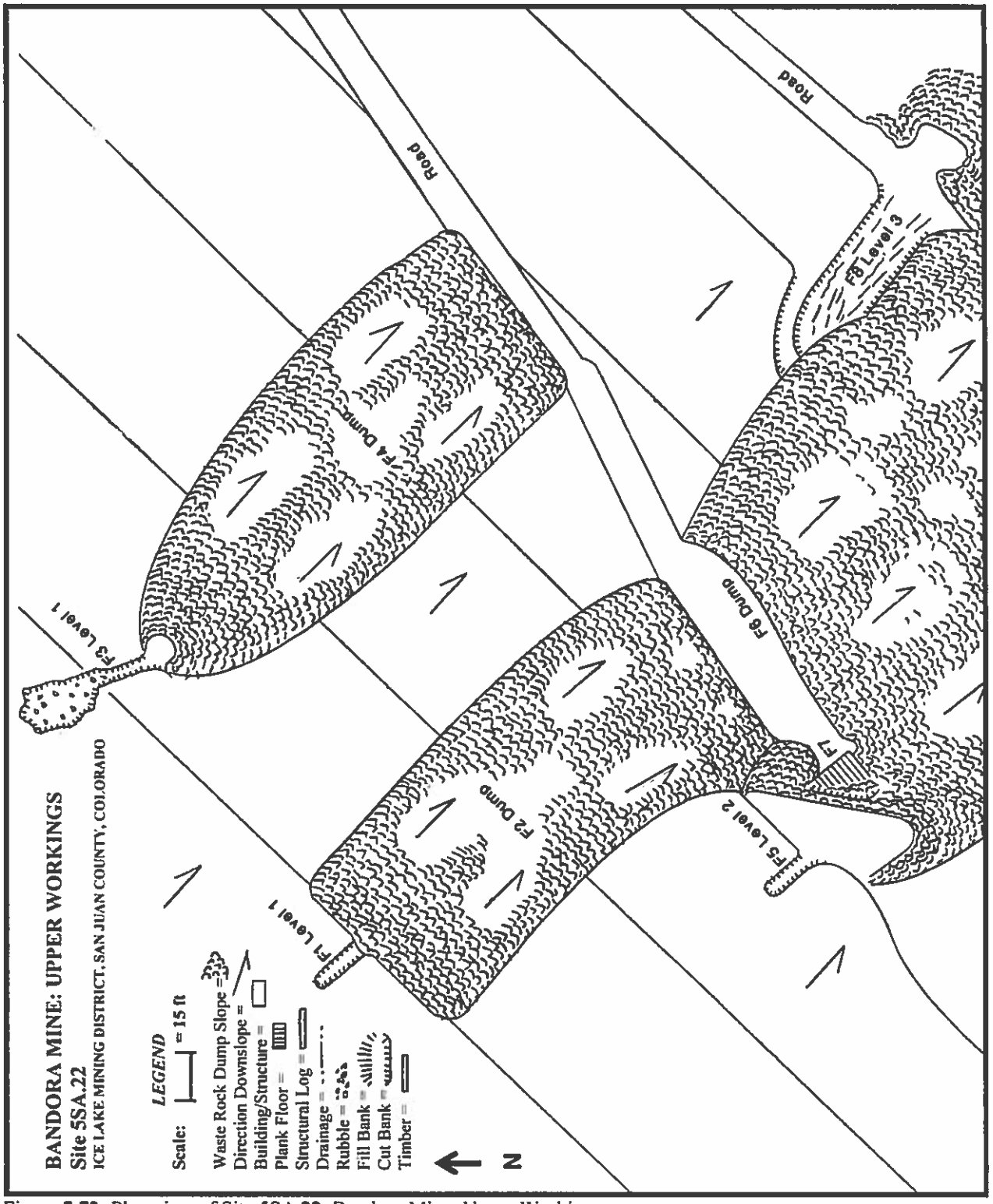

Figure 7.72: Plan view of Site 5SA.22, Bandora Mine, Upper Workings.

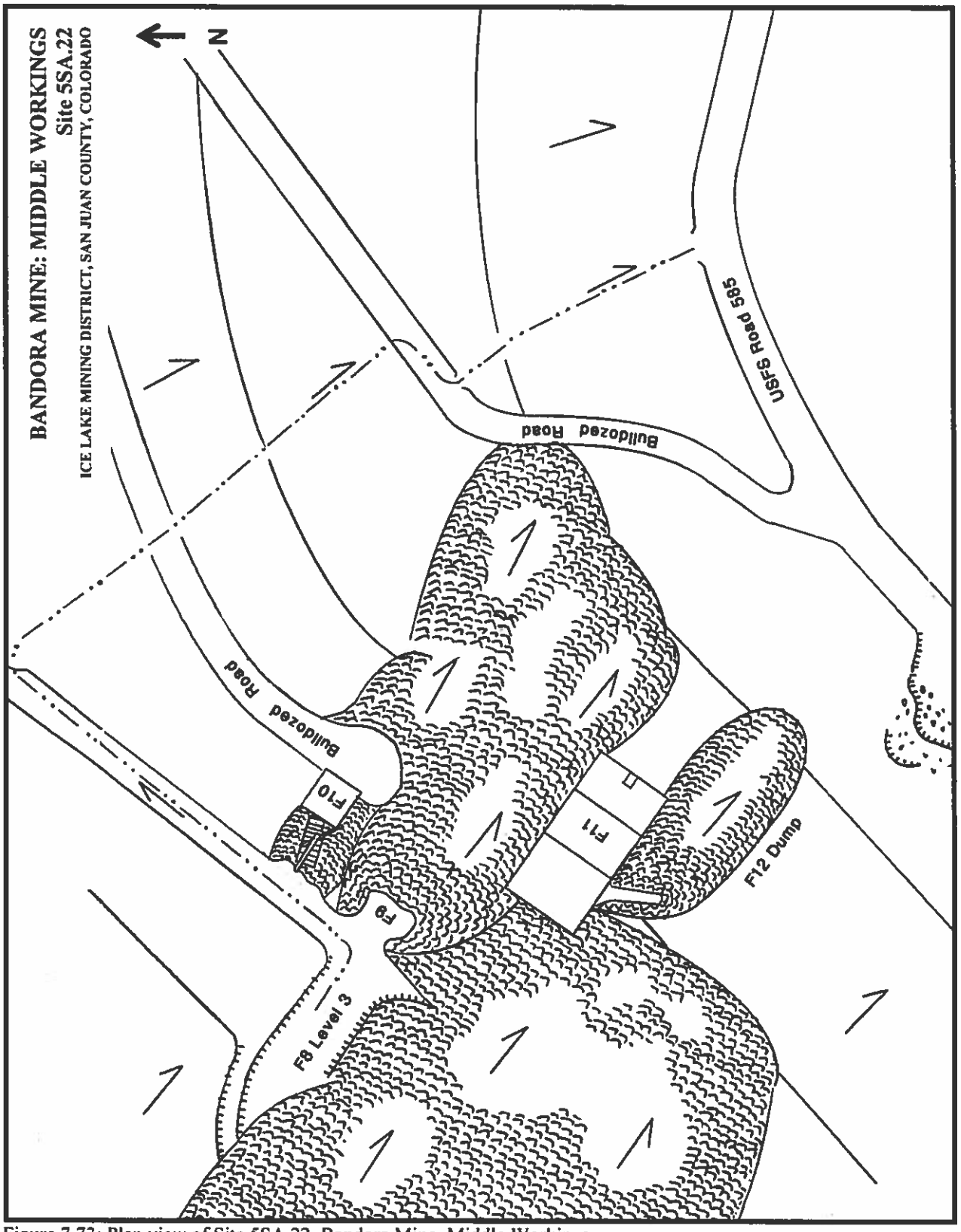

Figure 7.73: Plan view of Site 5SA.22, Bandora Mine, Middle Workings.

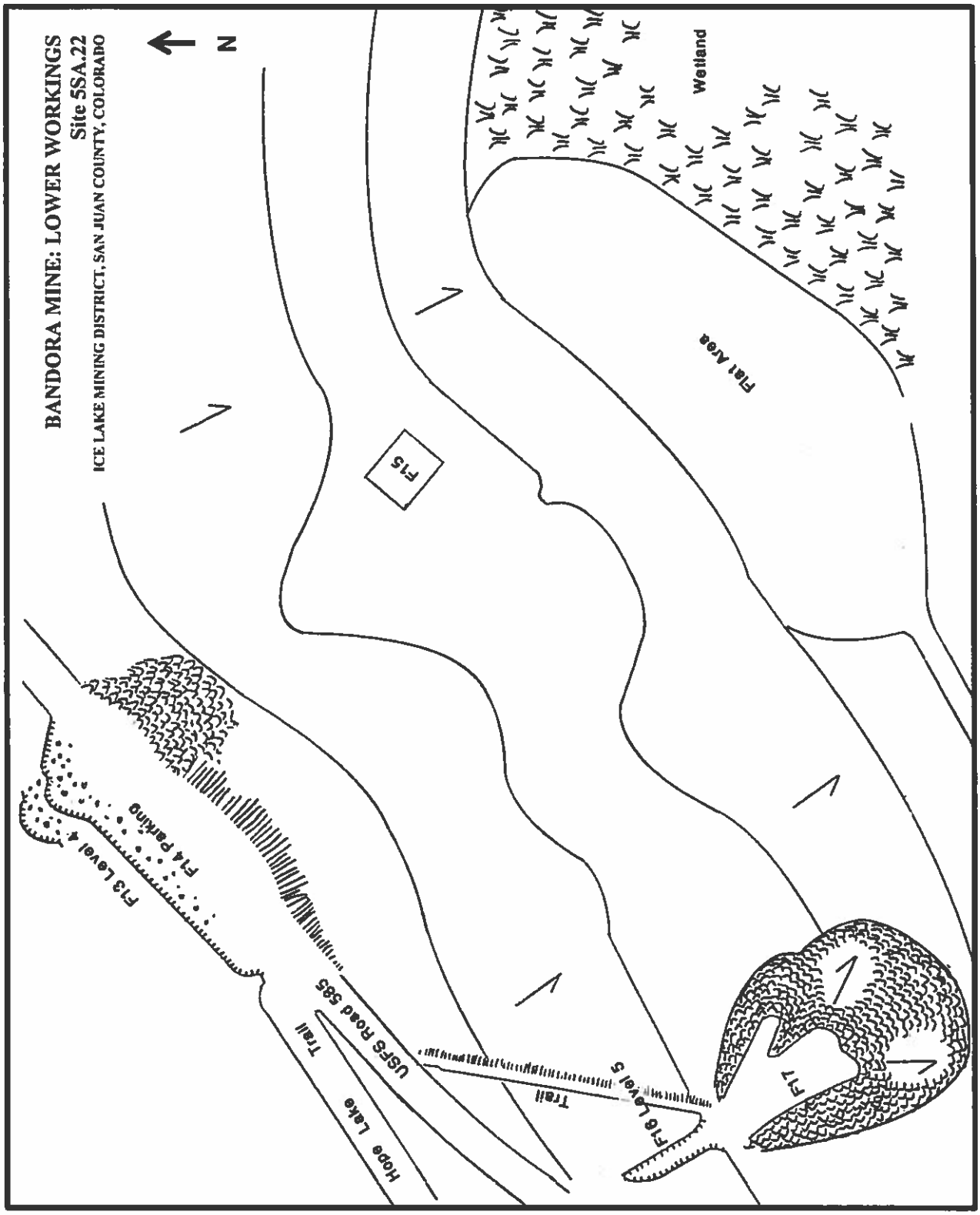

Figure 7.74: Plan view of Site 5SA.22, Bandora Mine, Lower Workings.

Bandora Mine History

Like many of San Juan County's mines, the Bandora got its start during the early 1880s boom. Local prospector William Sullivan suspected that the South Fork of Mineral Creek probably offered ore-bearing veins and spent the working season of 1881 exploring the drainage. The deep valley was remote, and he faced little competition from other wealth-seekers because the valley head was around eight miles southwest of Silverton. On the flank of Fuller Peak, separating the valley from the Ophir drainage basin to the west, he found what he sought. Amid bedrock cliffs and talus, Sullivan discovered a bold vein climbing up the peak's flank, and staked it as the Bandora in 1881.[34]

The Bandora was similar to other mines in the region not only in its beginnings, but also in the character of its ore. The Bandora Vein was a fat band of mineralization carrying silver, gold, lead, zinc, and copper trending north-northwest and angled almost vertically. The portfolio of metals and mineral matrix made the ore very complex. The upper expression high on the peak lent itself to discovery through pits and short adits, as was common, while the lower southeastern end was favorable for development at depth through tunnels.

Underground exploration revealed that the Bandora Vein itself was not the only ore formation, and was actually accompanied by four more parallel bands. Sullivan staked the Little Tod claim east of the Bandora, and added several more claims to the north to take in the entire vein system. He then focused on developing the Bandora Vein and produced ore in a simple and labor-intensive pay-as-you-go operation. Thick winter snow ensured that activity was ruled by the seasons, Sullivan developing the vein in spring, and producing out ore in summer and fall. Because the ore was difficult and costly to mill, Sullivan focused on only the highest grades, shipped by pack-train in small batches to Silverton.

The operation remained simple and economically sustainable through the 1880s, the Bandora becoming Sullivan's career and source of regular income. He had much to show by 1888, completing three tunnels with around 1,000' of workings, which represented at least as many days of unproductive development. Income exceeding $100,000 more than repaid Sullivan's labor, winter downtime, and costs, which he carefully kept to a minimum.

The Bandora could have generated more money, and perhaps even joined the ranks of the county's great operations, with better facilities and wagon access. The Rico-Silverton Wagon Road had been graded up the valley around 1881, but was now impassable. Capital for improvements proved to be elusive during the late 1880s because mining investors were wary as the value of silver had been steadily declining. Sullivan tried selling the property in 1889 and came close to a deal, only to have the buyers balk at the last minute.

Sullivan decided to keep the Bandora and systematically develop the vein system to make the property even more attractive. In 1890, he hired a crew of fourteen, and they worked around the clock in three eight-hour shifts. The miners lengthened what became known as Levels No.1 through No.3, and bored a bottom tunnel termed Level No.5. The surface facilities were simple, being limited to a blacksmith shop, stable, and cramped boardinghouse between Level No.3 and No.5. Unlike most other mines, no facilities existed at the tunnel portals, possibly to save costs. The miners then started Level No.4 at the boardinghouse, and repaired the Rico-Silverton Wagon

[34] Mine Inspection Reports: Bandora, *Silverton Standard* 6/22/1907.

Road for wagon access. A rich strike on the Little Tod Vein contributed heavily to the mine's yield, which reached $200,000 in 1890.[35]

With the veins blocked out, road access complete, and a weighty record of production, the Bandora was now a noteworthy operation. Passage of the Sherman Silver Purchase Act in 1890, which increased silver's value, created a positive investment climate, and Sullivan easily found a buyer. In 1891, he sold a majority interest in the Bandora to Colorado Springs businessmen, who organized the Bandora Mining & Milling Company. They paid $65,000, while Sullivan retained a share of the claims.[36]

Bandora Mining & Milling hired H.H. Daniels as superintendent, and he split the crew between two tasks. One was to produce as much ore as possible in minimal time, and the other was to drive development workings in search of more. The operation was seasonal but still yielded heavily into late 1893, when the Silver Crash halved silver's value and precipitated one of the worst financial depressions the nation had seen in decades. With the Bandora's ore worth much less than before, and the company directors tightfisted with their money, the crew was laid off and the mine went idle.[37]

The company directors had capital tied up in the Bandora and were unwilling to let it go to waste for long. But rather than run the mine themselves, they leased it to James B. Snow in 1896. In general, companies leased out their mines when the best ore was gone, or during economic depressions, thereby shifting operating costs over to the lessees. The problem with the practice, however, was that lessees usually focused on ore extraction to maximize income, and neglected development, safety, and needed maintenance. So it was with Snow and his crew of twenty-five, followed by Johnson & Patterson next year. As the economy improved in 1898, Bandora Mining & Milling resumed its presence and also focused on production. Later in the year, the company went bankrupt due to mismanagement and lack of funds to find more ore. Sullivan had wisely held onto his share of the property all this time, and took possession several years later.[38]

Leasing and inept oversight by Daniels had left the Bandora a wreck. Sullivan and several miners spent 1904 cleaning up the property, rehabilitating the underground workings, and evaluating the mine's ore reserves. Happy to be back at the Bandora, Sullivan was convinced that the mine had a long life ahead, and resumed his earlier pattern of vein development followed by extraction of high-grade ore stringers. None of the previous operators invested much in the property, and so the surface facilities were largely the same as before, but the five tunnels now totaled at least 2,000' of horizontal workings, not including stopes created by ore removal.

The workings were too vast for Sullivan, so he leased out one or two levels to Baily & Company, which long coveted an opportunity to work the mine. Sullivan and Baily shared the cramped surface facilities, and Sullivan ensured that the lessee's conduct was above the previous operators. Both groups shipped their ore to the new Ross Smelter in Silverton, whose treatment process was well-suited to the Bandora material. The Bandora ore had become more complex and copper-rich with depth, and the Ross outfit found that it was high enough in grade to actually serve as a fluxing agent in its furnaces. In general, flux was critical for successful smelting, and often in short supply in the Rocky Mountains. Flux was a softer ore with high proportions of

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[35] *Silverton Standard* 4/19/90 p2; *Silverton Standard* 6/28/90 p2; *Silverton Standard* 7/26/1890; *Silverton Standard* 7/1/1911; *Silverton Standard* 8/17/1912.

[36] "Mining News" *EMJ* 10/3/91 p393; *Silverton Standard* 6/22/1907.

[37] *Silverton Standard* 1/16/1892; *Silverton Standard* 4/8/1893; *Silverton Standard* 7/31/1915.

[38] *Colorado Mining Directory*, 1898:294; "Mining News" *EMJ* 4/17/97 p384; *Silverton Standard* 8/1/96 p3; *Silverton Standard* 6/25/1904.

lead, copper, or iron, which melted easily. When mixed with harder ore in a furnace, the flux liquefied, coated the more resilient material, and helped it melt as well. The Ross outfit was keenly aware of these factors and convinced Sullivan to grant them a lease in 1906.

Sullivan reconsidered his strategy for the Bandora in response to two events in 1907. A sharp economic recession reduced demand for, and hence prices of, industrial metals such as lead, copper, and zinc. San Juan County was quickly affected because much of its ore included these metals, and a number of mines suspended. Without a constant input of ore, and due to the low prices, the Ross Smelter closed. Ross pulled out of the Bandora, and Sullivan now had to ship to the Durango Smelter instead, which provided a lower return.

But Sullivan's needs had been simple all the while, and he still had money left over from previous output and the Bandora Mining & Milling Company deal. Not reliant on a high income, he saw no reason to gut his mine of its good ore and send it off for meager returns. Also, the on-again off-again development and disorder left by the past lessees bothered him. Sullivan decided to perfect the mine for long-term, regular production in what became a multi-year project. Old-fashioned, he thought little of mechanization and still conducted drilling, shoveling, and tramming ore cars by hand. He expected the same of his small number of employees, and so instituted no major improvements to the surface facilities. As before, he once again focused on the underground workings, blocking out large portions of the veins via the five levels, and putting everything in fine condition. Periodic strikes of extremely rich ore paid for the project, while Sullivan left vast tonnages of low-grade ore in place for the time when prices would rebound. But really, he was more interested in preparing the mine than in production.

The project continued into 1920. In the thirteen years since 1907, he negotiated two sale deals and was quietly relieved when the buyers ultimately declined. He lengthened the underground workings to more than 3,500' and still introduced no new facilities. He also organized the Bandora Mining Company to better manage the affair because he was aging and unable to attend to everything. Curiously, Sullivan did not respond to the 1915 increase in metals demand and prices fostered by World War I, and kept on developing the veins instead.

Finally, in 1920, Sullivan conceded that he could no longer run the Bandora, and so became serious about selling. Henry and Jesse E. Wykoff had an easy time interesting Denver investors in the ready-made ore producer, and they organized the Silverton Mines Company. This time, Sullivan received $100,000 and retained a share of the property. Silverton Mines began production and realized that building a concentration mill on-site would render the low-grade ore left by Sullivan even more profitable to ship. The company then completed the first new surface facilities that the mine had received since the 1880s. In particular, the company built a new 16'x35' two-story boardinghouse, complementing the existing accommodations and blacksmith shop. The company planned to buy the Yukon Mill on Cement Creek and move it to the Bandora, but another deep recession wrecked the mining industry in 1921. The Bandora reverted back to Sullivan, who died later in the decade and left it to his son John J.[39]

Arrival of the Great Depression in 1929 dashed any hopes that John might have had of running the Bandora himself. Metals demand and prices were at an all-time low, capital and credit were unavailable, and industry was stagnant. President Franklin Delano Roosevelt brought needed change in 1934 with the Gold Reserve and Silver Purchase acts, increasing the values of gold and silver. The acts had their intended effect of reviving mining in the West, and especially San Juan County. Not the hands-on miner that his father had been, John sought someone else to

[39] Colorado Mine Inspectors' Reports: Bandora, "Mining News" *EMJ* 8/21/20 p382; "Mining News" *EMJ* 11/13/20 p968; *Silverton Standard* 7/24/20 p1.

lease the Bandora. In 1936, he connected with Denver mine operator Wilbur Maxwell, who then pledged to put the Bandora back into good condition and operate it properly.[40]

Maxwell hired three workers who fulfilled the agreement, confirmed that the mine was very well developed, and began extracting small lots of high-grade ore. In need of a little more capital, Maxwell interested experienced leaser Red Brinker, and they organized the Blanco Mining Company in 1937. The company then increased the workforce to around five miners carefully chosen for their expertise and experience. During the year, the company conducted a bit more development and rehabilitation, and then began producing lower grade ore in higher tonnages.[41]

Brinker and Maxwell came to the same conclusion as the Wykoffs before them, realizing that a concentration mill would render even lower grades of ore profitable to produce. With mills expensive and credit still tight due to the Depression, the company planned to build the plant over time. Both the first and last step occurred in 1939 as the miners poured a concrete foundation at Level No.3 tunnel. Probably lacking enough money at any one time to finish the mill, the company abandoned the idea and never used the foundation for anything.[42]

The United States' entry into World War II brought major change to the Bandora. Blanco had been producing since 1939, and saw opportunity to improve the operation in an almost unprecedented wartime demand for industrial metals. Eager to encourage mining, the War Production Board advertised low-cost if not free loans to operations such as the Bandora. Blanco took a modest loan and used the money for new surface facilities, including the first mechanization that the mine had ever seen. At one of the tunnels, probably Level No.3, Blanco installed a gasoline compressor, in a frame compressor house, so miners could more efficiently bore blast-holes with rockdrills. A shop, storage building, and ore car trestle also went up, and the Rico-Silverton road was further improved for heavier trucks. The crew of five was now able to live in Silverton and commute by auto.[43]

In 1943, several Blanco directors left and the company dissolved. Manager A.J. Yahn immediately took over the lease and added yet more surface facilities. At Level No.3, Yahn provided a substantial ore bin and trestle, and continued regular production for a year.[44]

Yahn moved on in late 1944, probably realizing that the Bandora's best days were over. The firm Esmeralda Lease took over the property and became the last operator of note. A small party of miners secreted out the last major bodies of high and medium grades of ore, generating around two tons per day on a seasonal basis into 1948. An exploration outfit conducted minor bulldozing during the early 1980s and reopened the main tunnel, but did little more beyond underground exploration.[45]

Bandora Mine Site Description

The Bandora Mine is best described from the top down, according to its five levels. Level No.1 featured two tunnels driven by Sullivan during the early 1880s on different veins. The tunnels are in poor condition and overwhelmed with slumped talus and aspen saplings.

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[40] Colorado Mine Inspection Reports: Bandora.
[41] Colorado Mine Inspection Reports: Bandora.
[42] Colorado Mine Inspection Reports: Bandora.
[43] Colorado Mine Inspection Reports: Bandora, *Minerals Yearbook*, 1942:341.
[44] Colorado Mine Inspection Reports: Bandora; *Minerals Yearbook*, 1943:335.
[45] Colorado Mine Inspection Reports: Bandora; *Minerals Yearbook*, 1946: 1408.

Sullivan bored the western tunnel (F1) to develop a vein parallel to the main Bandora ore body. The tunnel extended northwest into an extremely steep slope of blocky rock prone to slumping and sliding. The portal completely collapsed and is now a faint subsidence trench 5' wide, 18' long, and 2' deep. When driving the upper tunnel, Sullivan's miners poured waste rock downslope. In so doing, they deposited a thin fan (F2) of material 63' wide and 142' long. All the rock slid downslope, and not enough remained for a flattened top-surface at the tunnel. Facilities were absent, and the tunnel now has no artifacts.

The eastern tunnel (F3) extended north-northwest directly into the Bandora Vein. Sullivan bored the tunnel into fractured, friable bedrock, and supported the portal with timbering. He then mined out an ore body around 15' in, creating a lengthy weak area. The entire cavity later collapsed and became a ragged keyhole-shaped crater 16' wide and 46' long. DRMS closed a small opening at the back in 1996, creating no measurable changes. When developing the vein's upper reaches, miners used ore cars to dump waste rock at the tunnel portal. Over time, they built up a rounded fan (F4) 65' wide, 158' long, and 4' thick. The tunnel apparently never had surface facilities, and artifacts are limited to a few logs and pieces of lumber with wire nails.

Level No.2 Tunnel (F5) was a principal point of production in the Bandora Vein's upper reaches. Like the other tunnels, Level No.2 penetrated loose, blocky bedrock that ultimately collapsed. The portal now takes form as a rounded subsidence scar 6' wide and 15' long, which is difficult to discern.

Level No.2's dump (F6) features a pad of mineralized cobbles 145' wide, 218' long, and 9' thick. Miners graded a small triangular area at the tunnel portal for workspace, and extended a lower bench 80' northeast for an ore bin.

The ore bin (F7) was probably built during the late 1890s by the Bandora Mining & Milling Company, although this is speculative. When intact, the structure was a flat-bottom type 15'x15' in plan with plank walls. The floor consisted of cross-hatched 2"x12" planks on a foundation of log stringers embedded in waste rock. The foundation elevated the floor 3' above an adjacent parking area so a wagon or truck could back up and take on ore. The bin is now difficult to perceive because waste rock slid around the structure, knocking over the walls, burying most of the floor, and engulfing the foundation. Only the east corner and the northeastern face remain exposed.

Despite the fact that Level No.2 was a principal point of production for decades, the small complex has little integrity. Level No.2 offers no evidence of other facilities except for the bin. Artifacts are limited to lumber, logs, and wire nails, mostly incorporated into the bin.

Level No.3 Tunnel (F8) was initially driven during the 1880s and redeveloped by the Blanco Mining Company in 1938. From this time until production ceased in 1948, Level No.3 was the mine's principal production conduit. Accordingly, Blanco poured a foundation for a new mill at Level No.3 in 1939 (never finished as described below), and built an ore bin in 1943. Mine Inspection Reports also note that in 1942, Blanco added a compressor in a compressor house, as well as a shop, change room, and storage shed somewhere on the property. Level No.3 is the most likely location because of its important role. Unfortunately, Level No.3 is in very poor condition and has no integrity. Talus slump, bulldozing, and mineralized tunnel drainage erased evidence of all facilities except for the mill foundation and ore bin.

As an individual feature, Level No.3 tunnel (F8) manifests as a talus-filled subsidence area 18' wide, 30' long, and 10' deep. The tunnel portal collapsed, and currently drains mineralized water. Around 2002, the water was diverted into a trench traversing the tunnel's access road, which the early 1980s operators graded with a bulldozer.

When working Level No.3 Tunnel, miners used ore cars to dump waste rock downslope. In so doing, they built up a fan (F9) of blocky material 150'x210' in area and 18' thick, with a flattened top-surface for facilities. The top-surface was scraped by a bulldozer during the 1970s or 1980s, erasing all evidence of facilities, except for partially buried structural debris. Given Level No.3's decades of use, its dump should offer an assemblage of industrial artifacts and food and beverage containers. However, only several pipes, sanitary food cans, and selenium bottle fragments remain. Acidic water probably dissolved iron items, while bulldozing destroyed the rest.

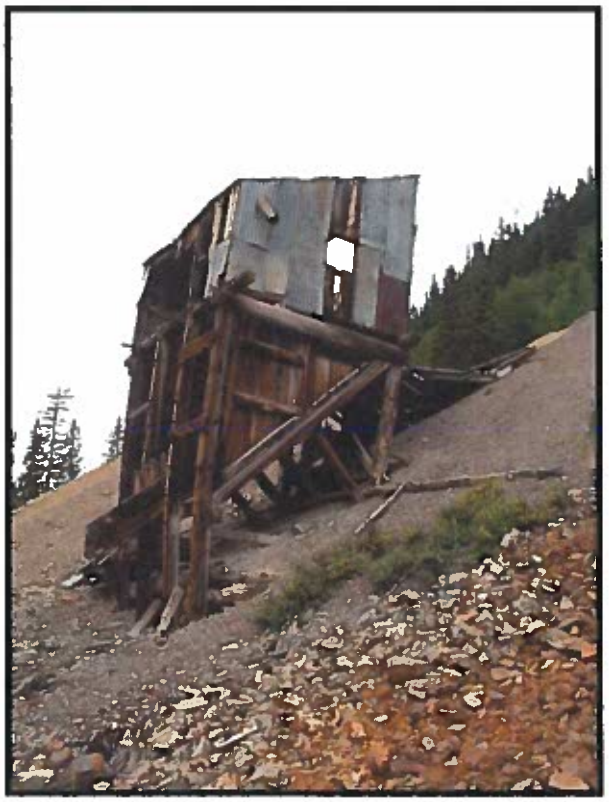

Figure 7.75: View southwest at the Bandora Mine's 1943 ore bin (F10). The structure stands at Level No.3 Tunnel.

In 1943, operator A.J. Yahn & Associates erected a new ore bin (F10) at Level No.3. Still standing, the bin is a professionally designed and well-built sloped floor type with a shed superstructure. The bin itself is 11'x12' in plan and 12' high on a foundation of timber pilings and footers. The back (southeast) is elevated 6' above a loading platform where trucks backed to take on ore. A log cribbing wall both retains the loading platform's cut-bank and supports the bin's footers. The bin consists of 2"x12" planks nailed inside a post-and-girt frame, while diagonal timbers also buttress the sloped floor. For the frame, workers used salvaged 8"x8" timbers as corner-posts and stringers, 6"x8" timbers for diagonal buttresses, and 4"x6" timbers for middle posts and cross-members. Workers assembled the frame by butting the timbers together, fastening them with nails and timber bolts, and reinforcing the floor with iron tie rods. Some of the timbers feature abandoned bolt-holes and mortise-and-tenon joins, reflecting their use in a previous structure elsewhere.

The superstructure is a simple shed 11'x12' in plan, 10' high at the northwestern side (front), and 5' high at the back. The superstructure consists of corrugated sheet iron cladding over 1"x6" plank sheathing, on a 2"x6" post-and-girt frame. The roof consists of like materials on

simple rafters, while the floor is little more than a plank catwalk 4' wide flanked by openings, where a worker sorted ore. The front featured a 27"x74" plank door and portal for a chute, while the sides had 26"x26" windows. The northeastern wall had a stovepipe.

The ore bin is in mixed condition. The bin itself is fairly well preserved, but the superstructure is severely dilapidated. Its northwestern wall fell outward, part of the roof is gone, and much cladding has blown away.

In 1939, the Blanco Mining Company planned a 40-ton flotation mill at Level No.3 Tunnel, and poured a concrete foundation (F11) for the facility. The mill was never built, however, and the foundation remains incomplete today. The foundation features three concrete terraces 33' wide and 56' long. Each terrace consists of 6"-thick retaining walls and a 6"-thick poured slab floor fitted with anchor bolts for the mill's support frame, which was never erected. The top terrace is 26'x33' in plan with an 11' headwall and an unfinished floor, only half of which was poured and still partially encased in plank forms. The other half is open earth featuring rebar awaiting the rest of the concrete. The middle terrace is 15'x33' in plan with a 7' headwall and an unfinished outer edge featuring exposed rebar. The lower terrace is 13'x33' in plan with a 4' headwall and an unfinished edge featuring a plank box 4'x4' in plan and 3' deep. The terrace surfaces are sprinkled with waste rock cobbles and structural debris from above, while more waste rock buries their northeastern sides.

When preparing to build the foundation, workers moved waste rock off the site and scraped away loose material to expose bedrock for a solid footing. They used wheelbarrows to dump the overburden south, depositing a fan (F12) 30' wide, 80' long, and 4' thick.

During the 1880s, Sullivan sited mine's first-generation facilities below Level No.3. He graded a broad, flat platform (F14) for a blacksmith shop, stable, and boardinghouse. In 1891 or 1892, the Bandora Mining & Milling Company used the location for Level No.4 tunnel (F13), which was driven into the mountainside behind the buildings. The company bored the tunnel only a short distance and then abandoned it in favor of the mine's other entries.

Today, Level No.4 tunnel (F13) is almost undetectable. The portal slumped closed and was buried by talus, and is now a very faint subsidence area 13' wide, 24' long, and 4' deep.

The platform (F14) is more distinct, but not clearly evident for what it had been. Graded with cut-and-fill methods, the platform is 24'-34' wide and 85' long with very few artifacts and no evidence of buildings. The cut-bank has slumped somewhat, while backdirt mixed with waste rock from Level No.4 tunnel (F13) extends downslope. USFS Road 585 crosses the platform's outer edge, while the rest is used for recreational trailhead parking. Ordinarily, decades of shop work and residential occupation would generate a substantial artifact assemblage of industrial and domestic refuse. Presently, only a little window and bottle glass lies on the platform, while a scattering of finely fragmented, generic artifacts are mixed with acidic and iron-stained mud and cobbles downslope. The assemblage includes anthracite coal and clinker from blacksmithing, bottle and tableware shards, a few disintegrated cans, and a handful of boot remnants and butchered bones. The slim volume is far under-proportioned with the platform's decades of use by multiple residents. Buried archaeological deposits are absent because soil is thin and rocky, and slopes too steep.

During the 1890s, the Bandora Mining & Milling Company erected a blacksmith shop (F15) on a flat terrace below Level No.4, and adapted the building for use as a stable shortly afterward. The stable is a front-gabled log building 18'x20' in plan, 7½' high at the roof eaves, and 14' high at the gable peak. Workers assembled the walls with well-executed square-notch joints, and chinked gaps with mud retained by split log strips. Mud that fell away was later

patched with lime-based grout. The foundation is little more than log footers on a cut-and-fill platform, and the floor is earthen as one would expect of shops. The roof consists of corrugated sheet iron over 1" plank decking, nailed to log stringers extending lengthwise across the building. A plank loft supported by log collar-ties is 7' above the floor. Stovepipe ports for a stove and forge penetrate the northern corner and center. The southwestern side (front) features an 82"x82" doorway, while the northwestern and southeastern sides had 33"x36" windows. A thick deposit of forge clinker extends southwest, while barren, rocky ground heavily trampled by draft animals is south. The stable is severely dilapidated and in need of stabilization. The roof lost much of its cladding, and rain and snow now collect inside and accelerate rot. The foundation is dissolving, and the building sags to the north.

The artifact assemblage is simple, sparse, and generic. Anthracite coal, forge clinker, and a few barrel hoops are the only industrial items. In addition, bottle and tableware fragments, a hole-in-cap can, several disintegrated miners' felt hats, and boot remnants are scattered around. Thin, rocky soil precludes buried deposits of substance.

Figure 7.76: View east at an 1890s stable (F15), Bandora Mine.

Sited on the valley floor, Level No.5 Tunnel (F16) was the lowest bore amid the Bandora complex. It remains unknown whether the tunnel was driven to develop the Bandora Vein, or one of the property's parallel formations. In any case, the portal collapsed or was closed, and is now a rubble-filled subsidence trench 6' wide and 30' long, draining water. When driving the tunnel, miners used ore cars to dump waste rock at the portal. Over time, they built up a fan (F17) of three short lobes 60'x78' in area and 8' thick. The miners also graded the top-surface flat, which is now becoming overgrown by willows.

Summing up the site's artifacts, the overall assemblage is disappointingly sparse, especially considering that the mine was worked almost continuously 1881-1920, and again 1936-1948. The assemblage is woefully incomplete because the site offers a poor preservation

environment. Large artifacts and structural debris were removed when the surface facilities were demolished, while recreationists have taken smaller items. Soil creep, constantly shifting talus and waste rock, and bulldozing have obscured yet more. But caustic conditions have dissolved most iron and ceramics that remained. The soil is generally acidic, enhanced by tunnel drainage and mineralized waste rock.

The existing artifact assemblage is thus mostly limited to structural debris. A background scatter lies around Levels No.2 and No.3, and the boardinghouse platform. In addition, lumber and logs are incorporated into the 1890s ore bin ruin, 1943 ore bin, and stable. Industrial refuse is conspicuously sparse. At one time, shops, a compressor house, and other facilities stood at Levels No.2 and No.3, but almost no characteristic industrial refuse remains. The 1890s stable offers the greatest concentration of industrial refuse, which is little more than blacksmithing clinker and a few pieces of hardware. Despite lodging a crew of fifteen at times, the boardinghouse platform features very little domestic refuse. Only a small sampling of finely fragmented bottle glass, tableware, and cans extends downslope amid acidic and shifting ground. A few general household items are mixed in as well. Refuse dumps typical of other sites could not be located.

The site has little potential for buried archaeological deposits. At the tunnels, shifting ground, thin soil, and extreme slopes provide a poor deposition environment. Below the boardinghouse platform, there is a deposit of finely fragmented domestic artifacts mixed in with acidic mud and cobbles, as noted above. The deposit may be as deep as 20 cm. But again, highly caustic conditions have disintegrated iron and ceramic, impoverishing the variety of what might be left. In general, privy pits could not be located.

Bandora Mine Interpretation

A number of conclusions can be drawn about the Bandora, but they are broad because the feature and artifact assemblages are poorly preserved and incomplete. Overall, the mine was a substantial operation and the focus of systematic development over the course of decades. The tunnels and their voluminous dumps reflect extensive underground workings on four levels intended to block out the vein system into sections. The levels made the logistics of working the veins from the bottom up easier, and made later leasing more orderly and controlled. For example, in 1905, Sullivan worked one of the levels and leased others to Bailey & Company. Archival sources confirm that the mine yielded much ore during its life, but the archaeological features no longer convey this. Clear evidence of surface facilities and substantial ore bins is absent. The operators invested considerable time and labor but not much capital, the Bandora thus remaining much simpler than other like-sized mines in the county.

Although surface facility features are missing from the record, the site hints at its evolution over time. Sullivan began development in 1881 by driving the upper tunnels and building a cabin and blacksmith shop on the Rico-Silverton Wagon Road. He moved downslope 50' in elevation from the upper tunnels and drove Level No.2, followed by another 50' and Level No.3. Sometime during the 1880s, Sullivan sited Level No.5 on the valley floor, 100' below Level No.3. But for unknown reasons, Sullivan never started Level No.4 in between. It was the Bandora Mining Company that began that tunnel, and never made much progress, probably indicating that the ore in this area of the vein was too low in grade.

Sullivan's facilities were very basic, limited to a blacksmith shop, stable, and boardinghouse on the wagon road. He also likely constructed small ore bins at Level No.2 and

Level No.3. Each of the mine's subsequent additions was increasingly sophisticated, the operators building on prior improvements. The Bandora Mining & Milling Company assembled several small ore bins at the tunnels and erected the lower blacksmith shop, later used as a stable. But major additions did not come until 1942, when Blanco Mining Company improved the mine for increased production. Blanco brought in a compressor so miners could bore blast-holes with rockdrills rather than by hand. Blanco also erected a new shop and storage bin. Location was probably Level No.3 because this was the Bandora's main production outlet by this time. In 1943, Blanco's manager took over the mine and added several new ore bins so larger trucks could ship the ore. The improved surface plant certainly enhanced output and was in service into 1948.

Clearly dateable evidence is thin. Temporal artifacts generally span 1890s-1940s, and nothing reflects Sullivan's 1880s period. What presently remains is concentrated around the boardinghouse platform and stable, with very little at the tunnels. Amethyst glass and hole-in-cap cans with inner-rolled and soldered side-seams are the only fairly early artifacts, and they range from the 1890s-1910s. Otherwise, selenium machine-made bottle bases and sanitary cans are broadly 1930s-1950s.

Bandora Mine Condition and Integrity

The site is in mixed condition. In a broad sense, the site initially appears to be a series of large waste rock dumps surrounded by thick aspen groves, on an extremely steep slope. Most of the tunnels are slumped closed but can be identified, the waste rock dumps are bold and undisturbed, and a few surface facilities are still evident at the site's base. In greater detail, however, the feature assemblage representing the mine's facilities is grossly incomplete and missing many key elements. As of 1943, the mine had multiple ore bins, a shop, a compressor house, change room, storage building, and rail lines at Levels No.2 and No.3. At least one boardinghouse, a shop, and stable also stood on the boardinghouse platform. Waste rock slides, talus creep, acidic conditions, and bulldozing have erased most evidence of all facilities. The only facilities now evident are one ore bin at Level No.2, the 1943 ore bin at Level No.3 (one of what had been two), and a stable on the valley floor. No other facilities are represented. Further, the boardinghouse platform is difficult to identify for what it is because USFS Road 585 crosses the surface, and the flat area is trailhead parking.

That said, the 1943 ore bin at Level No.3 still stands in fair condition, although its superstructure covering is losing siding. The 1890s stable also still stands, but is dilapidated and in need of stabilization. The ore bin and stable are the site's only contributing elements.

The site's integrity is severely limited. On a broad scale, the positioning of the five tunnels conveys the overall strategy of developing the Bandora Vein through multiple levels. The strategy is a traditional mine development design in a general sense. But organization and layout (design) of the mine's surface facilities is no longer evident. Most are either gone from the record or very difficult to cipher out. Despite this, the site imparts a feeling and association of mining, primarily because of its large scale and inspiring alpine setting. The 1890s stable, 1939 mill foundation, and 1943 ore bin have integrity as individual features. These structures convey their individual designs, materials, and workmanship.

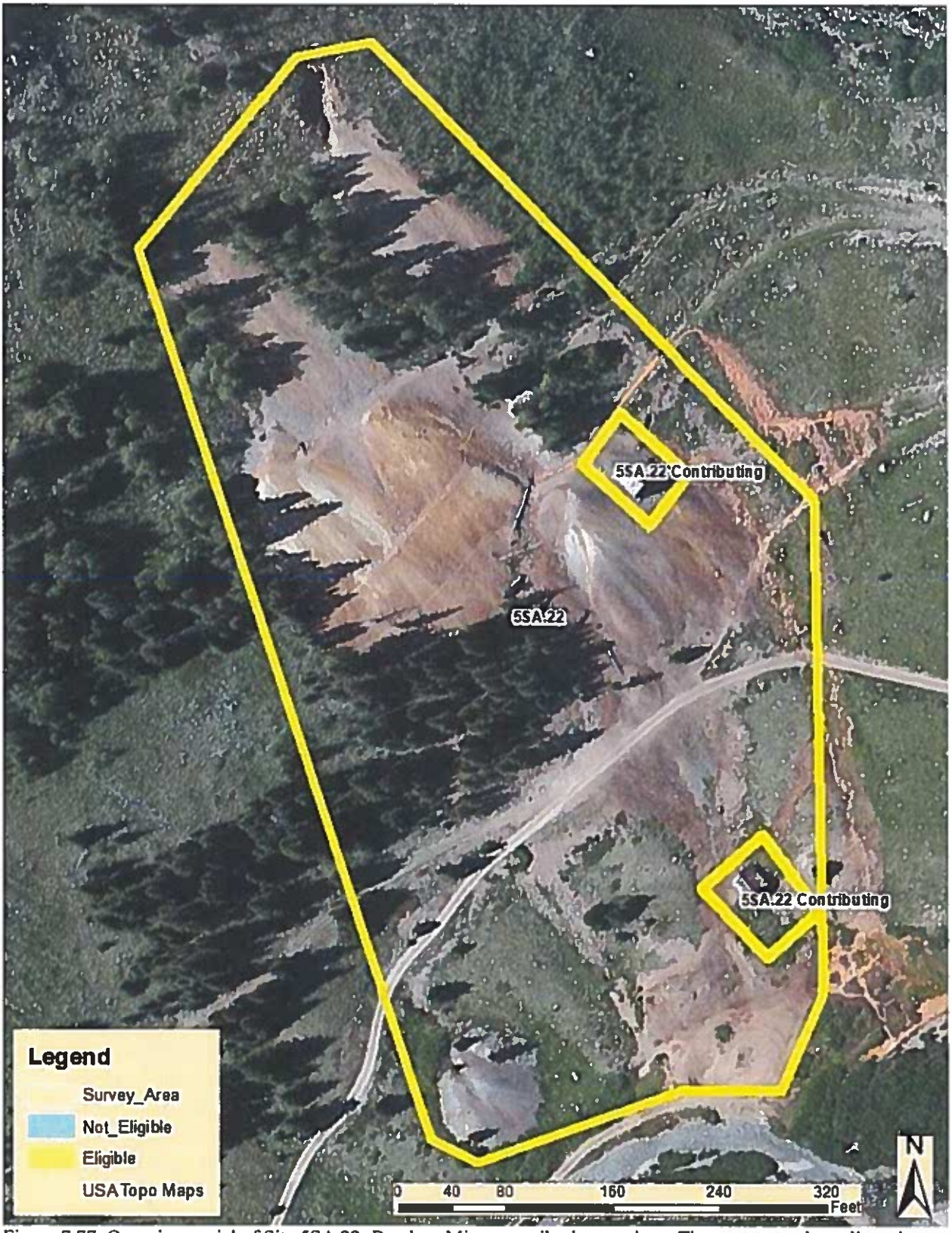

Figure 7.77: Overview aerial of Site 5SA.22, Bandora Mine, contributing portions. The top rectangle outlines the 1943 ore bin (F10), and the bottom rectangle outlines the stable (F15), which are contributing and should be avoided. The rest of the site is non-contributing.

Bandora Mine Eligibility Recommendations

When USFS recorded the Bandora in 2013, staff recommended the site eligible for the NRHP under Criterion A as an important operation, but provided a sparse significance statement. The current determination is officially Need Data. Re-evaluation in 2017 suggests that the 1943 ore bin and 1890s stable are contributing and eligible under *Criteria A and C*. The five tunnels and their dumps are non-contributing and do not qualify because integrity is insufficient. A detailed statement regarding all NRHP Criteria is provided below.

In general, the Bandora was significant under *Criterion A* as one of San Juan County's longer-lived mines, yielding ore intermittently from 1881-1948. William Sullivan developed the mine and produced ore 1881-1890. He sold to the Bandora Mining & Milling Company, which produced heavily 1891-1898. Sullivan took the property back shortly afterward and produced into 1920. John Sullivan rehabilitated the mine in 1936, and the Blanco Mining Company generated a high tonnage of ore into 1942. A.J. Yahn & Associates continued operations through 1945, and Esmeralda Lease did likewise until closing the mine in 1948. Each operator built on progress made by its processor, expanding the underground workings and installing yet more surface facilities.

Although the mine was idle during most of the 1920s, it was otherwise active over the course of more than six decades. In its broad lifespan, the mine was involved with several important trends. In a broad sense, the Bandora was a regular employer, contributed to the local economy, and was a source of ore for the Shenandoah-Dives Mill near Silverton during the 1930s and 1940s. The Shenandoah-Dives depended on mines like the Bandora for viability, and in turn directly encouraged mining in San Juan County by offering local ore processing. As important, the Bandora was also a substantial producer during the Great Depression, when employment and economic contributions were all the more needed in San Juan County. On a very localized level, the Bandora was the main reason why a transportation artery existed in the South Fork of Mineral Creek valley during the late 1880s and afterward. The Rico-Silverton Wagon Road was initially graded up the valley circa 1880, only to be abandoned during the mid-1880s. But, the Bandora Mine's operators maintained the section leading down the valley to Silverton, so they could ship ore and haul in supplies. Whereas the rest of the wagon road deteriorated beyond use, the South Fork of Mineral Creek segment remained in good condition and became the only means for reaching the valley's head. The road is still maintained as USFS Road 585.

Under Criterion A, the Bandora's stable (F15) and 1943 ore bin (F10) convey association with the above trends. Built during the 1890s, the stable retains integrity relative to most of the mine's life. The stable was an important facility because it housed a blacksmith shop, and later, draft animals. Blacksmithing was essential for maintaining tools, manufacturing light hardware, and shoeing the animals. In turn, the animals were the primary means of shipping ore and freighting in supplies. The 1943 ore bin also retains integrity from its service life, 1943-1948, and was important as the main storage structure for the mine's output. The bin received ore from the underground workings, sorted it by grade, and transferred the material into trucks for shipment to the Shenandoah-Dives Mill.

The site's mine workings (F1-F9; F11-F14; F16-F17) lack sufficient integrity to qualify under Criterion A. Due to erosion, talus slides, caustic conditions, and bulldozing, the workings are missing too many character-defining features and artifacts to clearly express their history and ways of significance.

In terms of *Criterion C*, the stable and ore bin are good examples of their resource types. The stable offers elements characteristic of stables built during the 1890s at remote mines, including log construction, open interior, earthen floor, few windows, and a broad doorway. Similarly, the bin exhibits period elements including a wide entry for ore cars, an integral sorting station on the top level, sloped-floor holding bin below, and an ore chute that directed payrock into a truck parked on a dead-end road.

The Bandora's mine workings do not qualify for *Criterion C* because, again, integrity is insufficient. The workings are no longer a good example of their resource type, a tunnel mine, because character-defining features and artifacts are missing. Besides the stable and ore bin mentioned above, the mine's surface facilities also included a boardinghouse, change room, compressor house, and additional ore bins and shops. None of these facilities are represented in any way. Better examples exist elsewhere in the county.

Under *Criterion B*, extensive archival research was unable to prove that people who had a direct and prolonged presence on-site were significant. The Bandora was the lifelong project of William Sullivan, who staked the Bandora claim in 1881, built the first facilities, and conducted development and ore production 1881-1890, and 1904-1920. But research was unable to demonstrate that he was important apart from his role with the property. H.H. Daniels was another figure with a direct present on-site, as manager for the Bandora Mining & Milling Company. 1891-1898. Research was unable to establish his importance. And even if Williams and Daniels were significant, today's site lacks sufficient integrity.

Under *Criterion D*, the Bandora will not yield important information upon further study. Definitive privy pits, refuse dumps, and other archaeological deposits are absent. The site also offers no complex artifact assemblages or features worth further investigation.

Bandora Mine Management Recommendations

The Bandora has been included in this project because its waste rock dumps and Level No.3 Tunnel are potential sources of metals and acidic drainage. The Government is currently studying the most effective methods for addressing the problems. Tunnel drainage could be collected and treated in a small facility or diverted into settling ponds on the valley floor. For the dumps, the most likely options include run-on runoff control ditches, or wholesale removal to a repository, or stabilization in place with contouring and vegetation. The valley floor at the site's toe also features a flat, iron stained area that may be stabilized with vegetation or excavated and moved to a repository. Equipment and supplies will be delivered via USFS Road 585 and staged somewhere on-site. Run-on runoff ditches would have the least impact and preserve the site's current appearance, while more invasive methods will change the site's historic character.

In general, the actions are planned only for the mine workings (F1-F9; F11-F14; F16-F17), which lack integrity and are non-contributing. The actions will avoid the stable (F15) and 1943 ore bin (F10), which are the site's only contributing elements.

Regarding cultural resource management, recommendations emphasize avoiding the stable and ore bin. In preserving these features, proposed actions will constitute no adverse effect to the site. In addition, recommendations also strongly suggest voluntarily preserving the site's appearance by stabilizing waste rock in place and diverting tunnel drainage into ponds or a small treatment structure on the valley floor. Stabilization might involve run-on runoff ditches, while the drainage treatment facility should be constructed with period materials and workmanship.

Linear 5SA.110.3, 5SA.110.4, and 5SA.110.5 ***USFS# 2130802137***
Rico-Silverton Wagon Road

The Rico Mining District was established around twenty miles southwest of Silverton in 1879 and began booming the next year. The district was isolated on the Dolores River at first, but entrepreneurs graded several rough wagon roads east to tie into San Juan County's network. The Rico-Silverton Wagon Road, completed in 1880 or 1881, was one of these connectors. The road began in Silverton, followed the South Fork of Mineral Creek, crossed south out of the Mineral Creek drainage, and continued west directly over Cascade Creek drainage. The road turned south down Hermosa Creek to Hotel Draw, climbed west up the draw, and then resumed a westerly course to Rico.

A noteworthy fact is that the Rico-Silverton Wagon Road followed the same basic route traveled by the Hayden Expedition in 1874. A.D. Wilson led the expedition to quantify the central San Juan Mountains and chart its topography and travel corridors after the federal government wrested the region from the Ute Indians. In his 2017 study of Indian trails in the San Juan Mountains, Jon Horn determined that the Hayden Expedition was not blazing new trails through untrammeled territory, but rather used existing Ute Indian corridors. Hence, some of the Rico-Silverton road was based on a preceding Ute trail network, including the section up the South Fork of Mineral Creek.

In 1974, K. Zeller registered the entire road as stem linear 5SA.110 and charted the road's general route on a topographic map. The term registered is used here as opposed to recorded because Zeller made only a few very general notes about the road, claimed that its date was early 1900s, and provided no significance evaluation. His work is valuable, however, because almost the entire road from Silverton through Hotel Draw can be viewed on OAHP's Compass database. OAHP's determination became Need Data. In 2012, USFS recorded and evaluated the road's Hotel Draw segment, assigning Linear Resource number 5SA.110.1. The segment was determined to be non-supporting, while the road's overall determination was still Need Data. At some point afterward, Linear Resource number 5SA.110.2 was supposedly assigned to another segment, but no record is currently available.

A stretch of road 2,775' long passes through the Bandora Mine survey area, and is thus necessarily included in the Government's environmental study of the mine. The survey area is at the head of the South Fork of Mineral Creek valley, mostly on the northwestern side. From the survey area, 10,640' elevation, the valley descends gently northeast and then east for 5.3 miles, where it joins the main fork of Mineral Creek. Silverton is an additional 2.7 miles east-northeast. The Rico-Silverton Wagon Road follows the valley's northwestern and then northern side, where it is officially recognized as both County Road 7 and USFS Road 585. A heavily used recreational access, the road has been bulldozed, widened, and maintained by San Juan County over the course of decades.

Within the Bandora Mine survey area, the road was recorded as a series of three connected but individual linear resource segments. The reasons for segmentation are clearer discussion and better cultural resource management. Ordinarily, linear resource segments are discussed independently, but all three segments are described together here because they form a continuous whole, and that context leads to greater understanding. From northeast to southwest, Segment 5SA.110.3 enters the survey area and meanders to the Bandora Mine (5SA.22). Segment 5SA.110.4 extends through the Bandora Mine site, while Segment 5SA.110.5 continues from the mine south out of the survey area.

In overview, Segments 5SA.110.3 and 5SA.110.5 retain integrity and are recommended supporting/eligible under NRHP Criteria A and C. Segment 5SA.110.4, in contrast, lost integrity to bulldozing at the Bandora Mine during the 1970s and 1980s. The segment is recommended non-supporting.

Rico-Silverton Wagon Road History

The Rico-Silverton Wagon Road shares its origins with many other transportation arteries in the San Juan Mountains. In particular, the road's planners adapted an earlier prospectors' trail, which in turn actually followed a route traveled by the Ute Indians in previous decades, if not centuries. Jon Horn specifically mentions that a corridor used by the Ute Indians extended up the South Fork of Mineral Creek valley, veered westerly, passed Hope Lake, and crossed over the range into the San Miguel River drainage.[46]

A basic survey of archival sources found little information regarding the Rico-Silverton Wagon Road, beyond its general route and broad timeframe. However, a general history has been approximated from regional events and trends. Exhaustive research in San Juan County Historical Society archives would likely yield additional, detailed facts. Exhaustive research was not conducted for this project because available information and field data are more than sufficient to evaluate the Bandora segment's significance.

The road's history begins with Silverton, which became the leading transportation hub in the central San Juan Mountains by 1879. Silverton was strategically located on the upper Animas River, whose valley and main tributaries were natural transportation corridors. Between 1874 and 1879, Silverton became the seat of a particularly active mining industry, which funded a radiating network of wagon roads with routes extending east to Lake City and Del Norte, north to Ouray, northwest to Ophir and Telluride, and south to Durango. The Durango road is particularly germane, as its course followed the Animas River south to Rockwood, and on to Durango, which the Denver & Rio Grande Railroad platted in 1880.

The year prior, prospectors found a concentration of silver veins in the upper Dolores River valley and organized the Rico Mining District. A rush unfolded at that time, and community organizers established the town of Rico as a commercial and transportation center. Rico's isolation, however, presented an immediate impediment to the growth of a mining industry. A series of peaks separated Rico from Silverton, while the Dolores River valley presented its own difficulties for an easy route to Durango. And yet, freight packers hauled supplies in to Rico, and ore out, as best they could using trains of mules and burros.

In 1880 or 1881, regional entrepreneurs saw profit in the flow of materials and people, and funded two roads to Rico. The Rico-Rockwood Wagon Road (5LP.187) began at Rockwood on the Animas River between Durango and Silverton. The road passed west through Hermosa Park, crossed a high ridge, descended Scotch Creek, and turned north up the Dolores River to Rico. The road had three advantages. One was that it began at Rockwood, which was a busy freight transfer station and eastern gateway to Rico. Second, Rockwood would be even busier as a stop on the Denver & Rio Grande Extension railroad from Durango to Silverton. The railroad was in the planning stages as of 1880, and under construction next year. Third, the route was the easiest and shortest from the already established road network.

Lagging behind in every way was the Rico-Silverton Wagon Road. Its route began at Silverton, curved southwest up the South Fork of Mineral Creek, crossed a high pass and

[46] Horn, 2017:11.

dropped into Cascade Creek valley, continued west over another pass into Hermosa Creek valley, and climbed up Hotel Draw. In this area, the road joined the Rico-Rockwood system. True, the Rico-Silverton road began in a main transportation hub, but it traversed imposing topography that slowed travel rates. The road therefore saw much less traffic than the Rico-Rockwood line.

In any case, completion of the Denver & Rio Grande Extension railroad in 1882 sealed the Rico-Silverton road's fate. Travelers and freight found it much more convenient to transfer directly from trains to wagons at Rockwood, and make a shorter journey. Despite this, the Rico-Silverton road saw use for a few years afterward and then apparently fell into disrepair.

The stretch up the South Fork of Mineral Creek valley carried a little traffic during the 1880s, but not enough to pay for maintenance costs. William Sullivan used the road to reach his Bandora Mine (5SA.22) at the valley's head, as did several prospecting outfits. All materials moved by pack-train because the road was impassable to wagons by the mid-1880s.

In 1890, Sullivan conducted the first maintenance that the stretch had seen in years. He realized that wagon access was critical to increasing the Bandora's output, and repaired deteriorated sections such as minor stream crossings.[47] It remains unknown whether Sullivan coordinated with the road's original builders or simply did the work on his own as needed. He sold the Bandora to the Bandora Mining & Milling Company in 1891, and operated the mine himself 1904-1920. Bandora Mining & Milling and Sullivan probably kept the road open for wagons, although there are no records confirming this.

The road deteriorated after the Bandora suspended in 1920, but was improved for small trucks when Wilbur Maxwell & Associates leased the mine in 1936. From this time until 1948, the Bandora Mine's operators maintained the road so trucks could deliver heavy materials and haul off ore on a regular basis. Sometime after the mine permanently closed in 1948, San Juan County took over the road and designated it County Road 7.

Rico-Silverton Wagon Road Description

In overview, the stretch of road passing through the survey area is 2,775' long and extends southwesterly along the South Fork's northwestern side. The stretch is around 50' higher in elevation than the creek and contours along a moderate slope featuring open meadow studded with boulders. The road was originally graded with cut-and-fill methods, but portions seem to have been scraped with a bulldozer during the 1970s or 1980s for a project at the Bandora Mine. Despite this, the road still has a primitive appearance and follows its original early 1880s route. Within the Bandora Mine site itself, the road was heavily bulldozed and might not adhere to the historic route. Each segment is described below.

[47] "Mining News" *EMJ* 10/3/91 p393; *Silverton Standard* 7/25/1891.

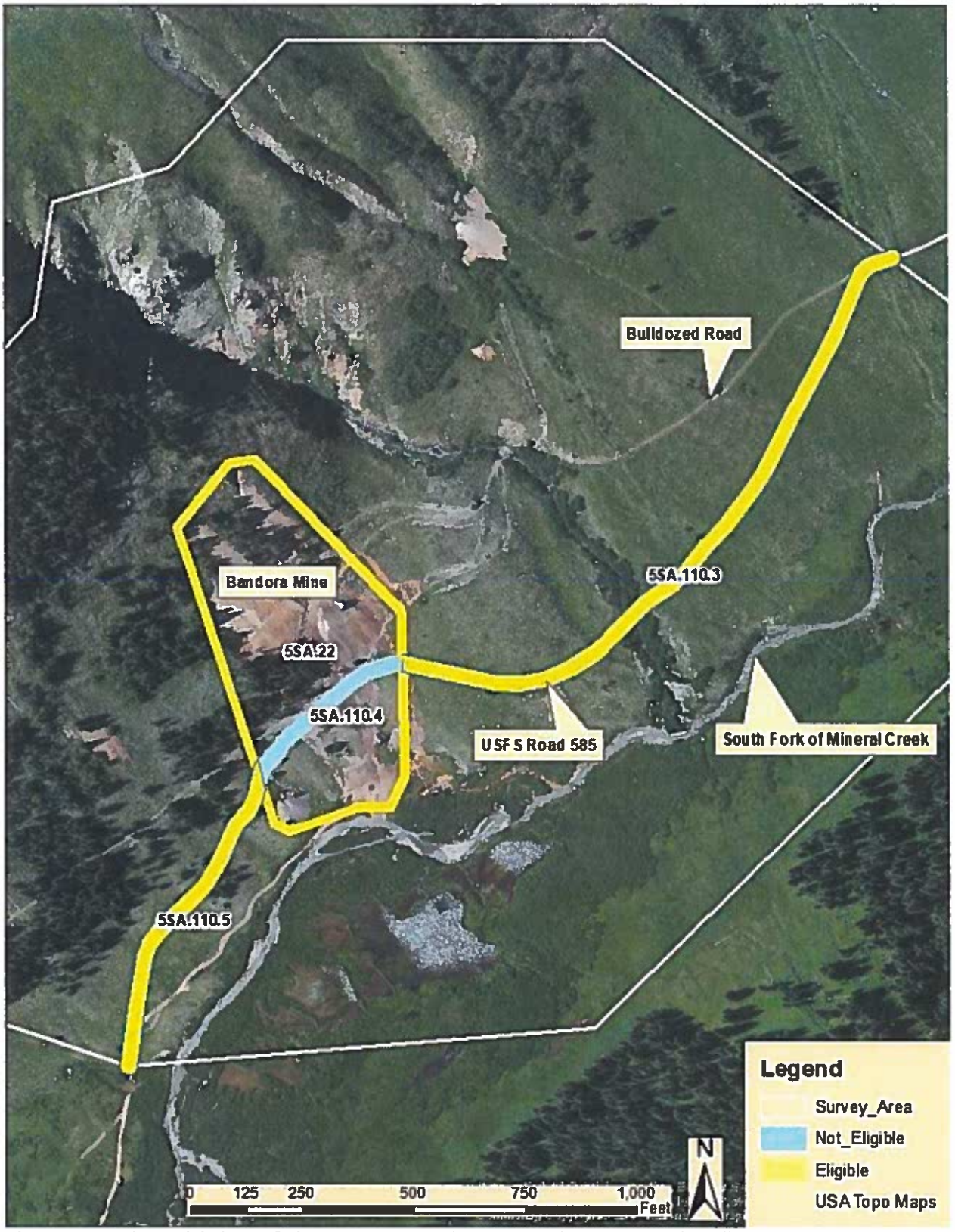

Figure 7.78: Index aerial photo of Linear 5SA.110.3, 5SA.110.4, and 5SA.110.5, Rico-Silverton Wagon Road.

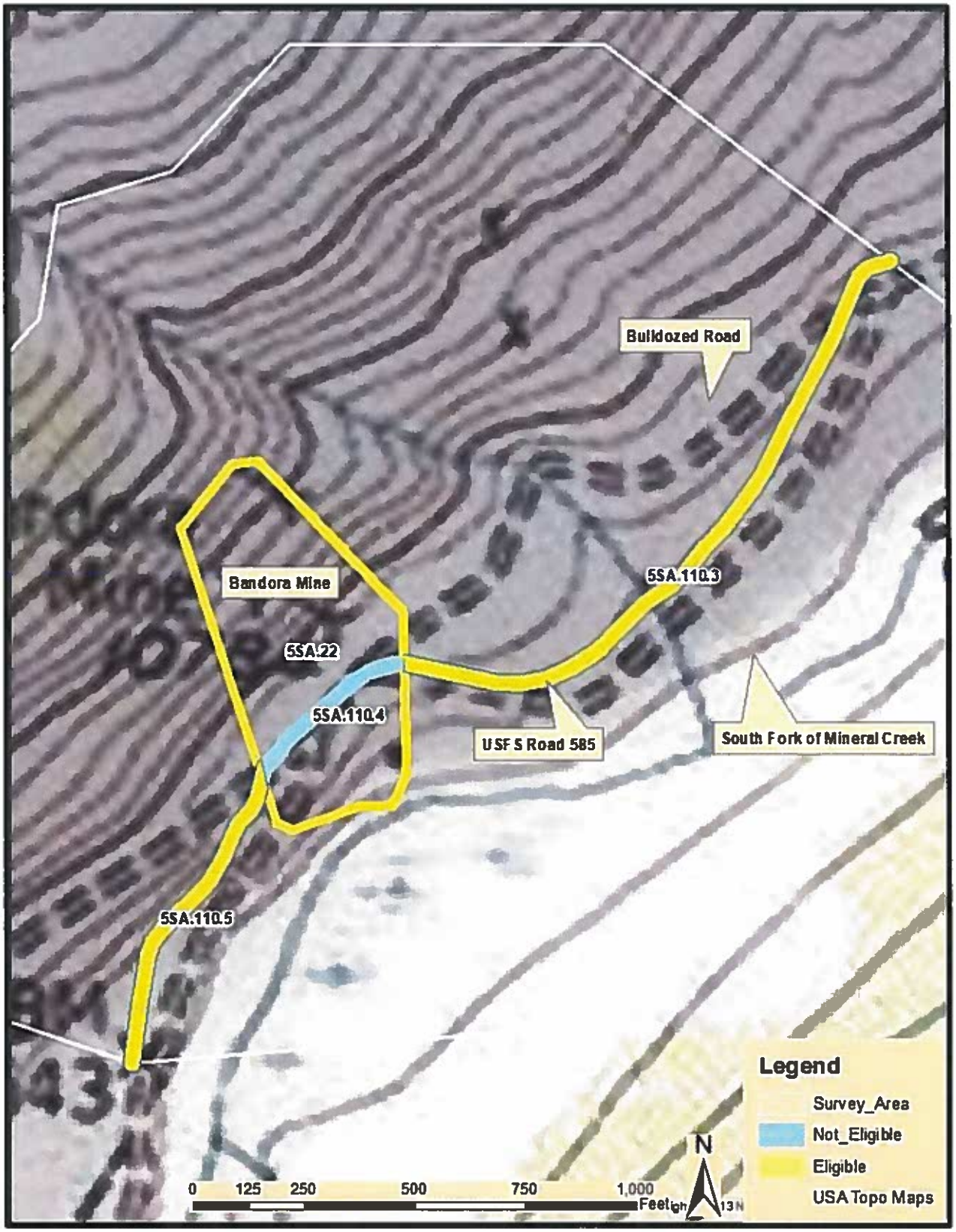

Figure 7.79: Index aerial map of Linear 5SA.110.3, 5SA.110.4, and 5SA.110.5, Rico-Silverton Wagon Road. The map is the same location and scale as the aerial above.

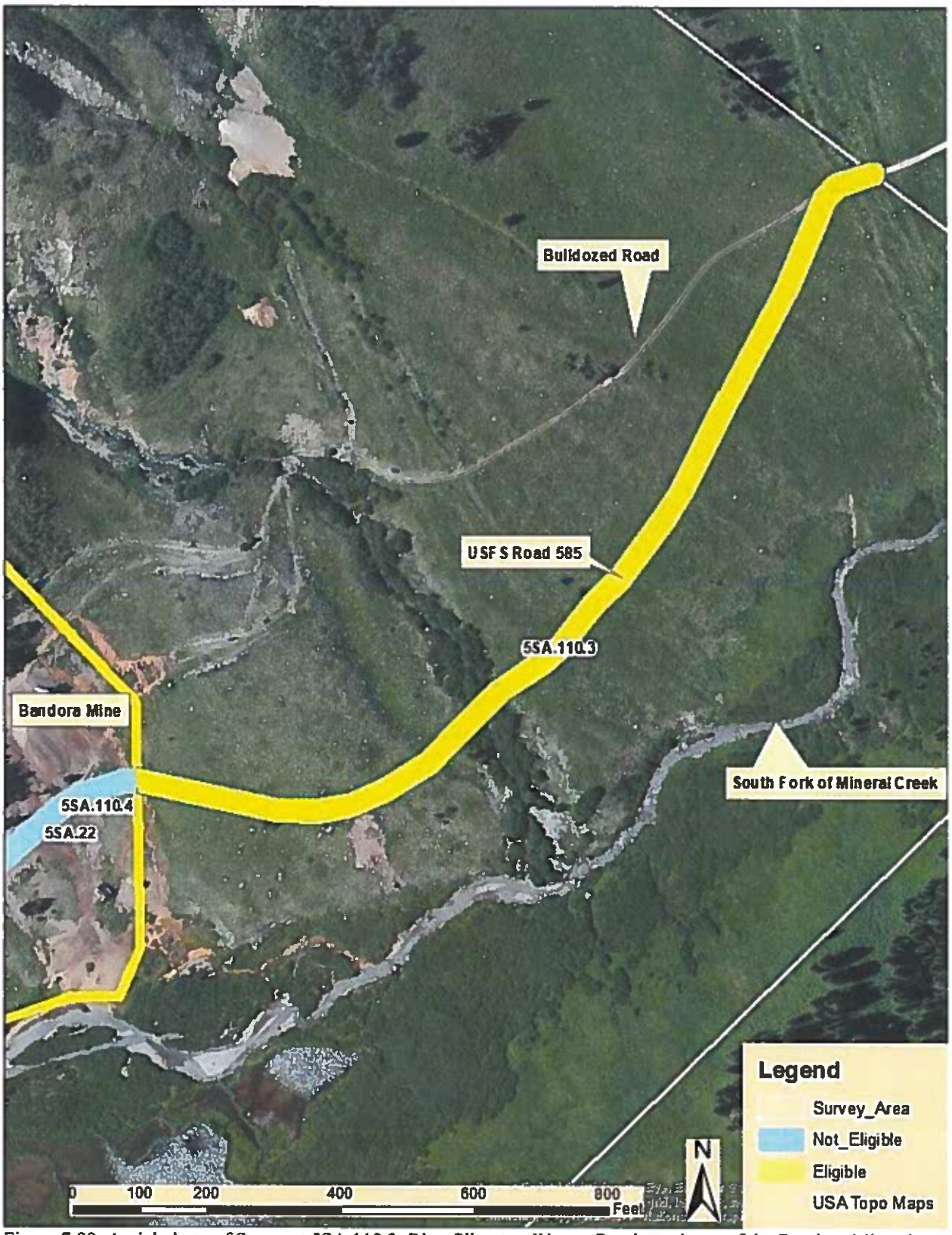

Figure 7.80: Aerial photo of Segment 5SA.110.3, Rico-Silverton Wagon Road, northeast of the Bandora Mine site (5SA.22). Work at the Bandora Mine will not change the segment, which is supporting/eligible.

Figure 7.81: View northeast along Segment 5SA.110.3 of Rico-Silverton Wagon Road. At center is an unimproved ford over Waterfall Creek.

Segment 5SA.110.3

Segment 5SA.110.3 begins at an intersection just outside of the survey area's northern boundary. The segment curves southwest for 1,640' and ends at the Bandora Mine, where it transitions into Segment 5SA.110.4. The intersection at the starting point is with a road bulldozed west-southwest to the Bandora Mine during the 1970s or 1980s. Segment 5SA.110.3 was originally graded with cut-and-fill methods typical of wagon roads. The tread was probably originally around 8' wide, but modern vehicle traffic has widened it into a 9' two-track tread with a firmly packed surface of sand, gravel, and embedded cobbles. The bed is 10'-14' in width, with cut-banks 1'-4' high. Along portions of the downslope edge are fringes of earthen hummocks and boulders dislodged by bulldozing, and overgrown with grass. Around 1,060' southwest of the start point, the road fords Waterfall Creek in a narrow, unimproved crossing hemmed in by thick willows and boulders. From the Waterfall Creek ford, the road curves west for 580' and reaches the Bandora Mine site's eastern boundary.

During its entire length, Segment 5SA.110.3 is in good condition, retains a historic appearance, and follows the road's original route. The bed appears to be as-built, while the tread could be slightly wider.

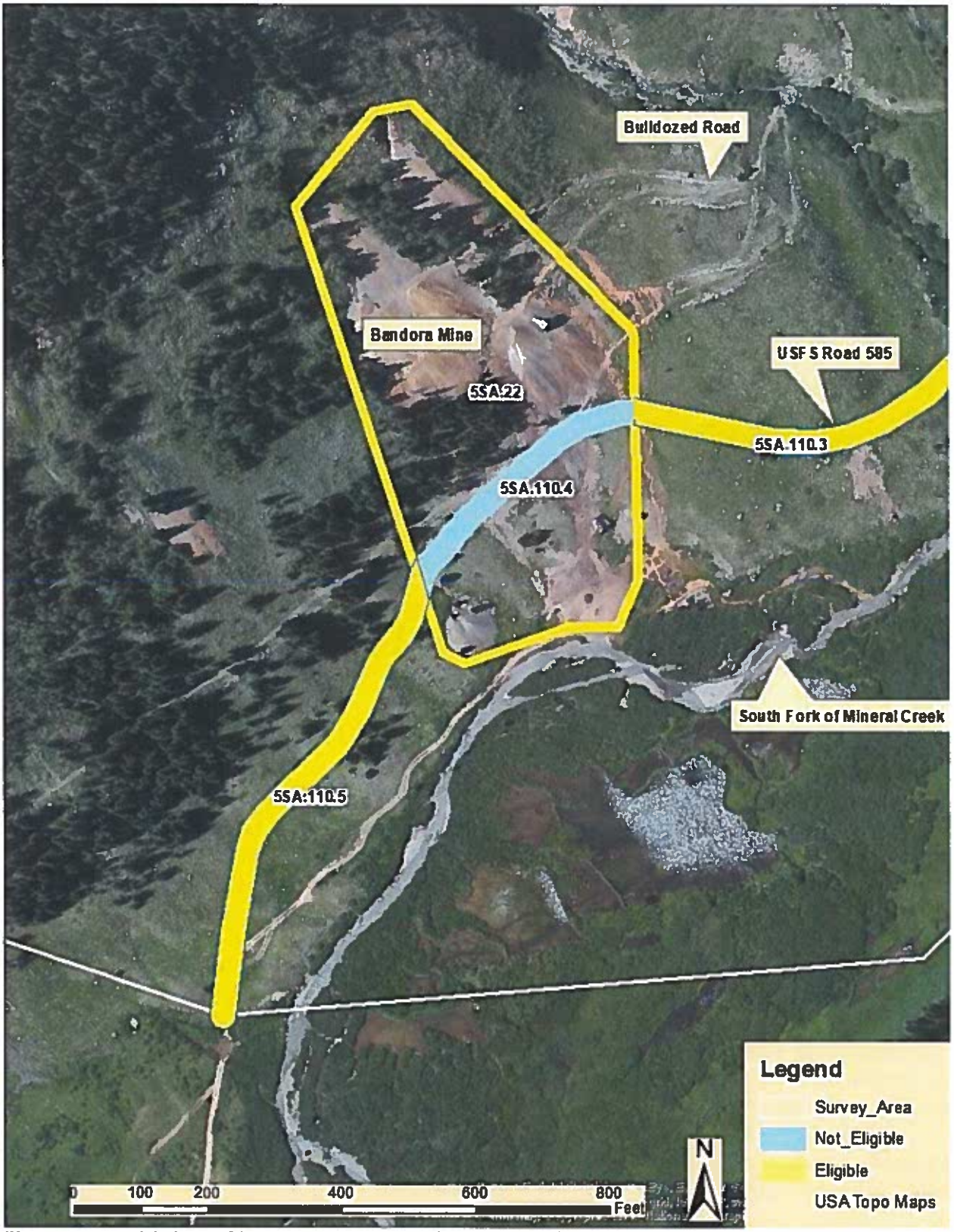

Figure 7.82: Aerial photo of Segments 5SA.110.4 and 5SA.110.5, Rico-Silverton Wagon Road. Work at the Bandora Mine will probably impact Segment 5SA.110.4, which is non-supporting. Segment 5SA.110.5 is supporting/eligible, and will be avoided.

Segment 5SA.110.4

At the Bandora Mine, the road changes character, loses integrity, and becomes Segment 5SA.110.4. The segment curves from west to southwest and extends approximately 430' through the Bandora Mine site. For the initial 175', the segment takes form as a bulldozed gravel road with a tread 10' wide over a bed of earth, waste rock, and talus, immediately below a large waste rock dump associated with the mine's Level No.3 tunnel. The segment then transitions onto a terrace of more earth and waste rock approximately 24'-34' wide and 85' long. The terrace was originally a platform graded during the early 1880s for the mine's boardinghouse, blacksmith shop, and stable. Minor bulldozing and heavy use as a popular recreational stop and parking area for the Hope Lake Trail erased historic elements. The terrace has been recorded as F14 in the Bandora Mine site. The segment continues 175' southwest from the terrace to the Bandora Mine site's southwestern boundary and transitions into Segment 5SA.110.5.

Over the course of its length, Segment 5SA.110.4 is in poor condition as a historic road. During the early 1980s and probably before, the road was bulldozed in association with underground exploration at the Bandora Mine. The segment lost its historic appearance, tread, and bed, and might deviate from the road's original route. It seems doubtful that the terrace had enough space for three buildings and the road, suggesting that the original route went around. But no evidence of a bypass currently exists.

Figure 7.83: View east at Segment 5SA.110.4 of Rico-Silverton Wagon Road. The segment crosses a terrace originally graded for the Bandora Mine's boardinghouse, blacksmith shop, and stable. The road and terrace were scraped by a bulldozer during the early 1980s.

Segment 5SA.110.5

Segment 5SA.110.5 descends southwesterly 790' from the mine to the survey area's southern boundary on the valley floor. The segment was originally graded with cut-and-fill methods and features a bed 10'-18' wide with sharply angled cut-banks 3'-11' high. The tread is currently a two-track surface of sand and gravel 9'-10' wide, appearing as a typical gravel road. Original tread width might have been 8'. The segment ends on the flat valley floor, just south of the Bandora Mine survey area, where the road changes character.

Segment 5SA.110.5 is in good condition, retains a historic appearance, and follows the road's original route. The bed appears to be as-built, while the tread could be slightly wider.

Figure 7.84: View southwest along Segment 5SA.110.5, Rico-Silverton Wagon Road, leaving the Bandora Mine site.

Rico-Silverton Wagon Road Condition and Integrity

As a historic resource, the Rico-Silverton Wagon Road stretch within the Bandora Mine survey area is in mixed condition. Segment 5SA.110.3 retains its historic appearance, tread, and bed, and adheres to the road's original route. Occasional maintenance has kept the tread fairly smooth and free of boulders and severe potholes. The Waterfall Creek crossing is rough and unimproved, which is characteristic of wagon roads. Minor bulldozing between Waterfall Creek and the Bandora Mine is the only disturbance, rocks and some earth having been pushed along the downslope edge.

Segment 5SA.110.4 within the Bandora Mine site is in poor condition. Bulldozing during the early 1980s has widened the original tread and bed, changing the road's surfaces and general appearance. The segment also probably deviates from the road's historic route. The segment extends directly onto a platform originally graded for the mine's boardinghouse, blacksmith shop, and stable. The original road likely passed around the platform, but a bypass can no longer be traced.

Segment 5SA.110.5 is in good condition, and assumes the overall road's historic character. The tread, bed, and surfaces are well preserved, and the segment follows the road's historic route.

The Rico-Silverton Wagon Road has mixed integrity. Segments 5SA.110.3 and 5SA.110.5 follow the road's original route, and therefore convey design. The segments also embody materials and workmanship characteristic of wagon roads, including cut-and-fill construction, and gravel and cobble treads packed by traffic. The unimproved Waterfall Creek ford is another element of period construction.

However, Segment 5SA.110.4 within the Bandora Mine site is an exception, having been bulldozed during the early 1980s. The segment currently crosses over the mine's boardinghouse platform, where buildings would have presented an obstruction. The original route might have bypassed the platform, but an alternate path is no longer apparent. The segment within the mine site therefore has questionable integrity of design. The segment also lacks integrity of materials and workmanship, having been widened and regraded by bulldozing.

Despite this, the entire road stretch through the survey area has a historic appearance and strongly conveys feeling and association of early transportation. The feeling is supported by an inspiring alpine setting.

Rico-Silverton Wagon Road Eligibility Recommendations

The Rico-Silverton Wagon Road has been officially determined as Need Data. To determine eligibility of the entire route, more information is needed about condition and integrity. That said, Linear Segments 5SA.110.3 and 5SA.110.5 are recommended supporting/eligible under Criteria A and C. Segment 5SA.110.4 is recommended non-supporting because of integrity problems.

In general, Segments 5SA.110.3 and 5SA.110.5 qualify for *Criterion A* because the road was an important transportation artery. The segments also retain enough integrity to convey their association. The road was graded in 1880 or 1881 to connect Silverton, a regional transportation and commercial center, with Rico, a new center of mining. The road reduced Rico's isolation, lowered freight costs, and helped its mining industry thrive. The road also opened a new market for Silverton's businesses and ore treatment mills. But it must be emphasized that the Rico-Rockwood Wagon Road, to the south, carried most traffic to and from Rico. The Rico-Silverton road was also locally important as the principal route connecting the Bandora Mine and surrounding prospects with Silverton. The portion along the South Fork of Mineral Creek fell into disuse by around 1885, and when it was repaired for wagons in 1890, it then carried a high volume of ore. In this way, the road allowed the Bandora to become a significant producer.

Segments 5SA.110.3 and 5SA.110.5 qualify for *Criterion C* as intact, preserved portions of a historically significant wagon road. The segments follow the road's original route (design), exhibit period appearance, surfaces, and cut-and-fill construction (materials and workmanship),

and strongly convey a feeling of transportation associated with the region's mining industry. Overall, the segments are good examples of their resource type.

Segment 5SA.110.4, through the Bandora Mine site, lacks sufficient integrity to qualify under *Criteria A and C*. Bulldozing during the early 1980s and probably before, changed the road's bed and tread, and erased the road's historic character. The road has been widened and now features bulldozed waste rock and talus along its outside edge. In addition, the portion crossing the mine's building platform is probably not the historic route, and instead might be a product of recent bulldozing. In sum, the segment does not clearly convey its significance as a historic wagon route.

Based on current information, none of the segments qualify for *Criterion B*. Archival research was unable to confirm whether important people spent appreciable lengths of time on the segments.

The segments do not qualify for *Criterion D*. The segments offer no complex features, artifact assemblages, or buried deposits capable of yielding further information upon further study. Similarly, the segments are not directly tied to other transportation routes forming a greater system that might yield meaningful information upon investigation.

Rico-Silverton Wagon Road Management Recommendations

The Rico-Silverton Wagon Road is included in this project because it is the only transportation artery accessing the Bandora Mine, which the Government is studying for water-quality work. The mine likely faces actions such as waste rock removal, drainage water diversion, and earthwork requiring trucks and heavy equipment. The vehicles will use Segment 5SA.110.3 to reach the site, with no major improvements. Segment 5SA.110.5 might see light traffic, also with no improvements. However, within the Bandora Mine site itself, earthwork and waste rock removal could heavily alter if not destroy Segment 5SA.110.4.

Segments 5SA.110.3 and 5SA.110.5 are supporting/eligible. Their use with no changes will maintain the segments' integrity and eligibility, and will pose no adverse effect. Segment 5SA.110.4 is non-supporting, and even heavy alterations will have no effect.

That said, cultural resource recommendations strongly suggest restoring 5SA.110.4 to its current appearance when the project is finished. If the portion within the Bandora Mine site is disrupted, then the replacement road should be constructed to match the character of what currently exists. Doing so will maintain the valley's current historic feeling.

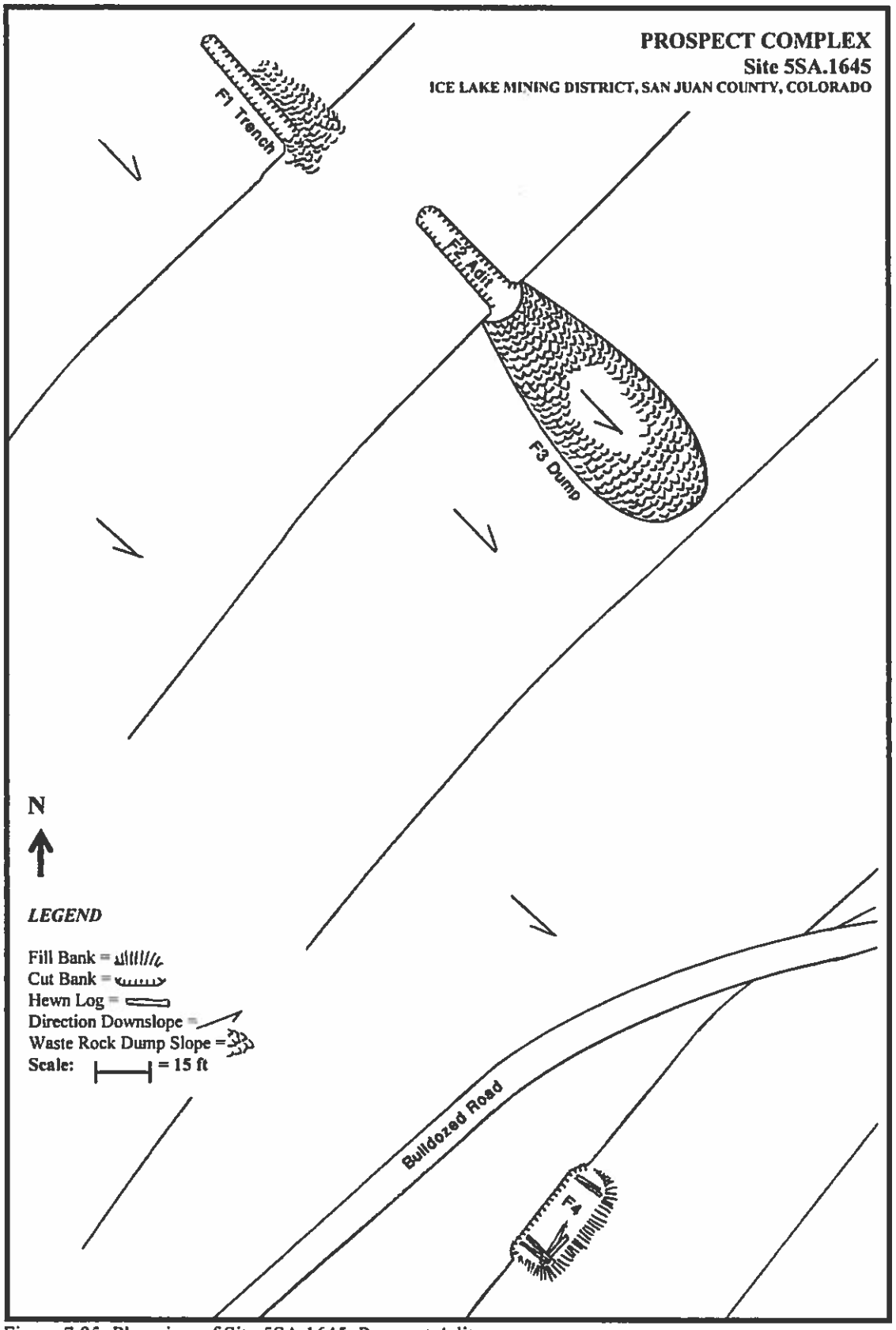

Figure 7.85: Plan view of Site 5SA.1645, Prospect Adit.

Site 5SA.1645 USFS# 2130802138
Prospect Complex

A prospecting party identified a mineralized vein exposed in a cliff high on the South Fork of Mineral Creek valley's western wall. They traced the vein downslope, confirmed it by digging a trench, and then sampled it at depth via a prospect adit. The party also erected a log cabin as a temporary residence, all on a claim whose name has been lost. The workings have since slumped in and the cabin fell apart, and the resource is now an archaeological site. Slopes are southeast-facing, 11,000' elevation, extremely steep, and prone to soil creep and rockfall. Soil is a mix of loam in shifting cobbles, supporting thick spruce forest around the cabin platform and young aspens at the prospect workings. A bulldozed road originating at the Bandora Mine (5SA.22) to the north passes through the site. The road is now the Hope Lake Trail.

Prospect Complex History

No archival information specific to the site could be found. The property was never patented, historic maps do not depict the operation, and the Bureau of Land Management General Land Office possesses no records. Names are necessary for research. It can be observed, however, that discovery of the Bandora Vein in 1881 drew a few prospectors up the South Fork of Mineral Creek. They explored the area for more veins throughout the decade.

Prospect Complex Site Description

The site presently features the trench and adit on the valley's steep western wall, and a cabin platform around 275' downslope and south. Prospectors dug the trench (F1) to confirm the vein's existence and track its directional strike. The trench was a substantial excavation but has totally filled with talus and soil, and is now a faint linear impression 8' wide, 40' long, and 2' deep. The prospectors shoveled waste rock along the northeastern side, where the material spread out. Aspens and grass hide both the trench and dump.

After tracking the vein's strike, the prospectors moved a short distance downslope and drove the adit (F2) to sample the vein's mineral content. The portal penetrated weak ground that eventually collapsed, creating a linear erosional scar 10' wide, 30' long, and 3' deep. The adit is difficult to identify.

When working the adit, the prospectors ejected waste rock (F3) at the portal. Over time, they deposited a fan of blocky material 35' wide, 82' long, and 3' thick. The fan never attained the size necessary for a flattened top-surface. Very mature spruce trees, more than one-hundred years old, have grown up through the crown.

The prospecting party erected a cabin on what was probably the southern end of their claim. They incised a well-formed cut-and-fill platform (F4) and erected a log building on the surface. The cabin collapsed long ago and is now melting into the platform's overgrown surface. Shrouded in thick spruce forest, the platform is 12'x28' in area with a flat surface and distinct cut and fill banks. Rotten logs approximate the cabin's footprint, which was 10'x18' in plan. Trees now crowd the platform, and its surface is blanketed with thick duff. A sparse scatter of mostly food cans and a few bottle fragments extends downslope. Buried archaeological deposits are unlikely because occupation was too brief to produce refuse in volume. Steep slopes also provide a poor deposition environment.

The site offers a basic artifact assemblage, all of which is on and downslope from the cabin platform. Structural materials are limited to decayed lumber and logs featuring a few wire nails on the platform. A few bottle fragments and a number of food cans extend downslope. Industrial refuse and, notably, blacksmithing debris, is absent.

The site has no buried archaeological deposits because activity was too brief to generate materials in volume. In addition, steep slopes provide a poor deposition environment.

Prospect Complex Interpretation

The site's history can only be derived from material evidence because archival research found no information. Regarding timeframe, dateable artifacts indicate that the adit was driven during the 1890s. Wire nails post-date 1890, while hole-in-cap food cans with inner-rolled and soldered side-seams predate circa 1910. A few hole-in-cap cans with lapped side-seams predate 1900.

In general, the complex is the product of a short-lived attempt to evaluate and sample a mineralized vein at depth. The vein trended northwest-southeast across a talus slope, and the prospectors exhumed it with a single prospect trench followed by sampling via an adit. The volume of waste rock indicates that the adit may have had as much as around 200' of workings, but never encountered ore in profitable tonnages. If the adit had produced, then the site would feature evidence of an ore storage or sorting facility, even if limited to a small platform. The short adit, lack of production, lack of a blacksmith shop, and use of local materials for the cabin indicate that the operation had very little capital, and was abandoned after little work. The fact that the prospectors found the vein with a single trench, and little additional work, suggests that they were experienced and understood local geology.

Prospect Complex Condition and Integrity

The site is in poor condition due to natural deterioration. In an environment prone to soil creep, the trench and adit slumped and became completely filled with earth and cobbles. Both excavations also became overgrown and are now very difficult to interpret. The cabin platform is still well-formed and features traces of the building on its surface, but is equally difficult to perceive. Deadfall lies around the edges, spruce saplings spring from its floor, and duff and moss blanket the area, largely concealing the platform.

The site has mixed integrity. Direct alignment of the trench and adit reflect an organized sampling strategy, which is a design of sorts. But the prospect workings and cabin platform are too deteriorated and subtle to convey feeling, materials, workmanship, or association. The setting is characteristic of mountain mining.

Prospect Complex Eligibility Recommendations

The site is recommended not eligible for several reasons. In terms of *Criterion A*, the site was a relatively unimportant prospect operation with brief life. Under *Criterion B*, archival research was unable to connect the site with important individuals. In terms of *Criterion C*, the site is not a good example of its resource type, a prospect complex. The prospect workings appear as little more than talus-filled depressions, while the cabin platform is overwhelmed with deadfall and vegetation, and difficult to identify. Better examples of prospect complexes exist

elsewhere in San Juan County. Regarding *Criterion D*, the site will not yield important information upon further study because surface features and artifacts were thoroughly documented, and buried archaeological deposits are absent.

Prospect Complex Management Recommendations

The prospect complex is included in this project because it lies within a survey area defined for water-quality actions at the Bandora Mine. Given the mountainside's extremely steep nature and the site's isolation in the area's southern margin, the site will almost certainly be avoided by cleanup activity. That said, the site could be damaged by logging and earthmoving. If so, the action would have no effect because the site is recommended not eligible. Further consideration is not warranted.

Site 5SA.1646
Lady Ellen Mine

The Lady Ellen was a marginally productive tunnel mine near the head of the South Fork of Mineral Creek. During the 1890s and early 1900s, a mining outfit worked a small vein on the valley's northwestern wall, 11,050' elevation. The mine featured several tunnels on an extremely steep slope immediately northeast of Waterfall Creek. The Bandora Mine (5SA.22) is on the creek's opposite, southwestern side. The slope features bedrock outcrops amid tundra, and is periodically swept by avalanches roaring down off Fuller Peak above. Today's resource is a poorly preserved archaeological site encompassing several tunnels, a few prospect workings, and remnants of a tunnel house. The tunnels long ago collapsed, while the tunnel house imploded and is now filled with talus. The site is on a patented claim.

Lady Ellen Mine History

Discovery of the Bandora Vein system in 1881 drew prospectors up the South Fork of Mineral Creek, and they searched for additional ore-bearing formations throughout the decade. The Bandora Vein descended southeast down the South Fork valley's northwestern wall, immediately south of Waterfall Creek. One party, possibly including James Davidson and Joe Irvine, found a parallel vein around 850' to the northeast, on the creek's opposite side. Exact date is unknown, but was sometime during the latter half of the 1880s. The party staked the Little Fortune claim over the vein, traced it northwest and upslope, and staked the continuation as the Lady Ellen.

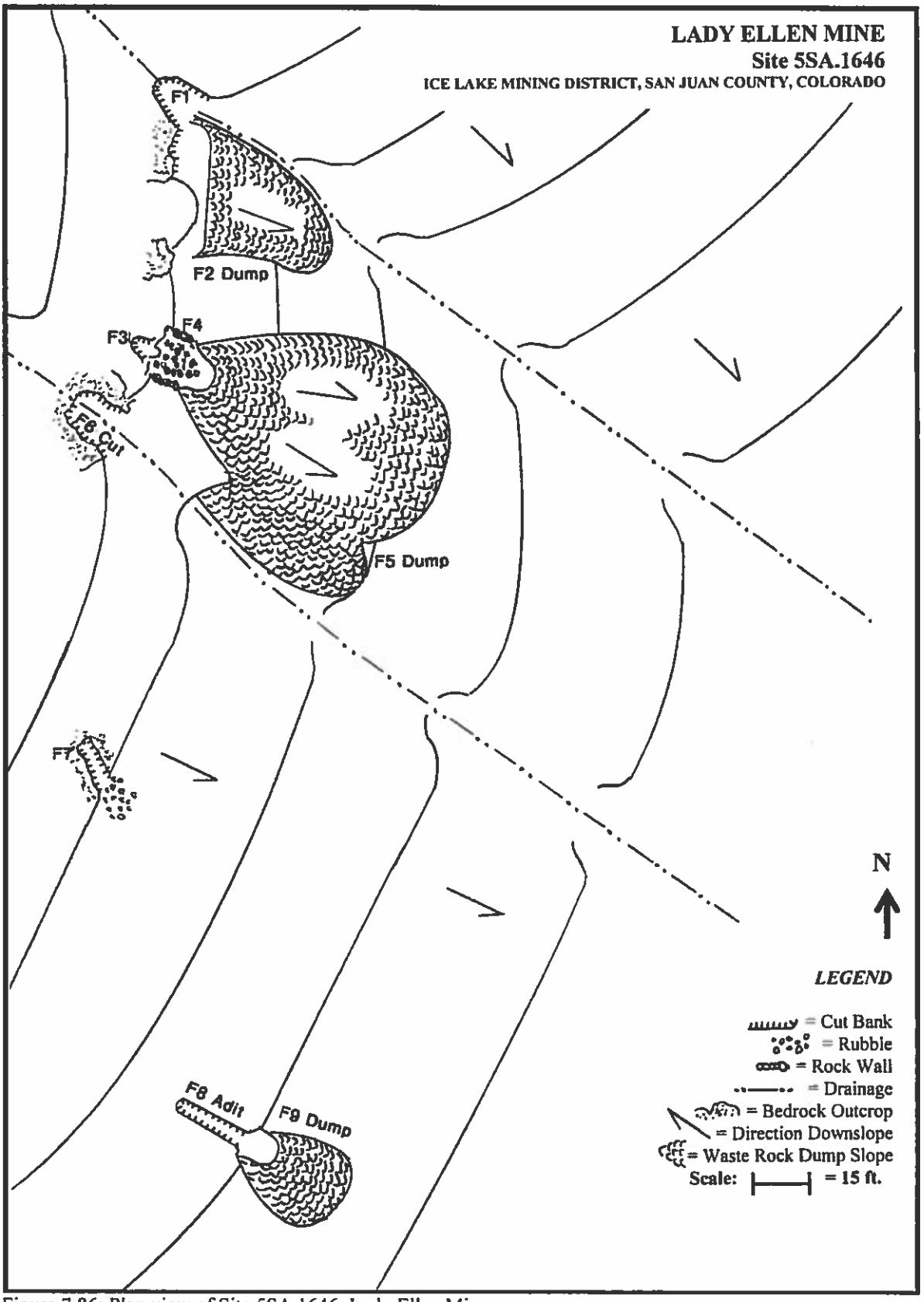

Figure 7.86: Plan view of Site 5SA.1646, Lady Ellen Mine.

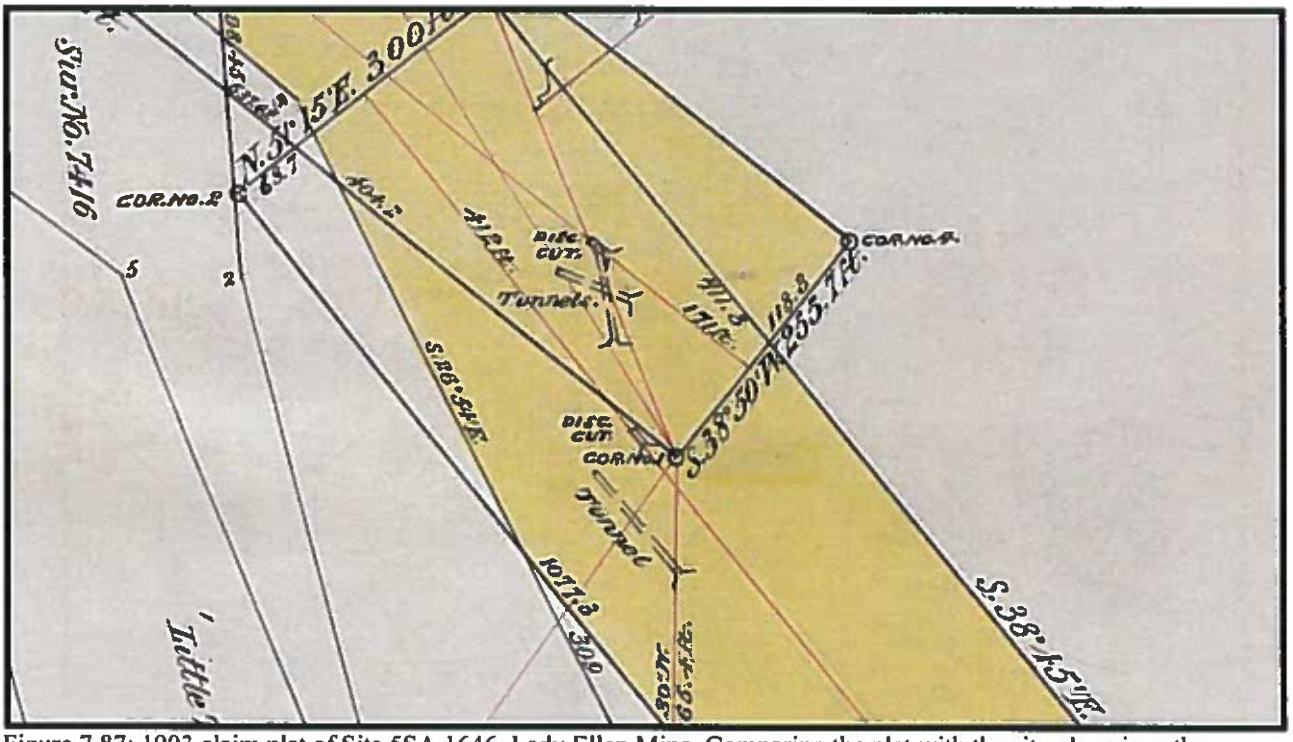

Figure 7.87: 1903 claim plat of Site 5SA.1646, Lady Ellen Mine. Comparing the plat with the site plan view, the crossed tunnels at center are F1 and F3. The Disc. Cut below is F7. The tunnel below the cut is F8.

Davidson and Irvine were joint owners by the late 1880s and proved the existence of ore through shallow workings. In 1890, Irvine began producing a little high-grade material that offered a blend of silver and industrial metals. But the ore was highly complex and difficult to treat, and hence provided only meager returns. He may have mined seasonally in 1891 and 1892, but made little progress. Davidson took over the property in 1893 and conducted additional development to better reveal the vein. During the short working season, he interested W.E. Lalley, who was confident that the vein would yield with more work. Lalley signed a lease, drove the tunnels a little deeper, and generated ore. He returned in 1894 with a crew of six miners, and they struck a rich ore pocket that lasted only a short time.[48]

Lalley lost his confidence in the mine and did not return the next year. Instead, Higginbotham & Fortz were the next lessees, and they hired a crew of eight. Picking up where Lalley had left off, the partnership extracted ore in 1897 and shipped it to the San Juan Sampler in Silverton for processing. George M. Seeger and Percy Williams took the next lease and made advanced preparations to maximize the working season of 1898. During the winter, when snow blocked the road out, Seeger and Williams packed in supplies for a crew of six. When this was done, they developed the vein and began extracting high-grade ore. They stockpiled the material until the road finally opened in late spring, and shipped both the backlog and new product. A hard winter's work had paid very well, and gutted the mine of its best ore.[49]

No one else was willing to lease the Lady Ellen for the next several years. Meanwhile, Joseph Bordeleau had purchased the property and thought that the vein still offered good material at depth. Bordeleau was one of Silverton's leading hardware merchants and made a

[48] *Silverton Standard* 8/5/1893; *Silverton Standard* 4/28/1894; *Silverton Standard* 5/12/1894.

[49] *Silverton Standard* 5/8/1897; *Silverton Standard* 9/4/1897; *Silverton Standard* 11/13/1897; *Silverton Standard* 4/9/1898; *Silverton Standard* 5/14/1898.

side-business of buying small mines put up for sale at low prices. The Lady Ellen was among these, and he had several miners lengthen the underground workings in search of more ore. He had the claims surveyed for patent in 1903 and continued the development campaign as finances allowed. But his other mines distracted him, and with no rich ore coming to light, Bordeleau stalled on further work.[50]

In 1907, William Sullivan concluded that he could make the Lady Ellen pay if only for a short time. Sullivan owned and operated the highly successful Bandora Mine to the south, and understood the local geology. His miners in fact found enough ore to support production for part of the year, and during the season of 1908 as well.[51]

The Lady Ellen then went idle for more than ten years. Bordeleau died in 1919, and his heirs leased the mine out one last time. In 1921, Angelo Mineoli became the final operator, extracting high-grade ore in a short-lived operation.[52]

Lady Ellen Mine Site Description

Today, the Lady Ellen site features three adits driven to develop the vein, and two cuts blasted out during the original search. The northern and middle adits are 70' apart and separated by 10' elevation difference. The middle adit was the principal point of production and had the mine's only surface facilities, limited to a small tunnel house recessed in a slope for avalanche protection. The southern adit is 50' lower than the middle adit.

Prospectors drove the northern adit (F1) westerly into the nadir of a minor drainage. The location was subject to avalanches and spring runoff, which collapsed the portal. Almost invisible today, the adit is a heavily overgrown subsidence trench 10' wide, 20' long, and 5' deep. When driving the adit, prospectors dumped waste rock south along the base of a low bedrock ledge. They deposited a bench (F2) of mineralized material 36'x48' in area and 5' thick, and graded the top-surface flat for workspace. Later, rockfall and soil creep completely buried the top-surface, encouraging tundra and a willow thicket to take hold. The bench is indistinct, except for lengths of cable eroding out of the shoulder.

The middle adit (F3) extended northwest into the headwall of small niche blasted from bedrock. Soil creep collapsed the portal and buried the niche with talus, leaving only a very faint scar 4' wide and 6' high in the slope above.

When the middle tunnel was designated the principal point of production, miners built a tunnel house (F4) at the portal. The structure enclosed the tunnel portal, a simple blacksmith shop, and possibly bunk-space for several miners. When intact, the structure was 15'x20' in plan and recessed into the slope, against a bedrock ledge, for protection from avalanches. The northeastern and southwestern walls consisted of dry-laid angular rocks, while the northwestern wall was bedrock. The nature of the southeastern wall (front) and roof remains unknown. The structure completely imploded and the interior became filled with earth and rubble to a depth of 5'. The ruin is almost uninterpretable, and a handful of artifacts lie around the southeastern side.

When developing the middle workings, miners dumped waste rock out of the tunnel house. Over time, they spread out a fan (F5) of mineralized material 52' across, 78' long, and 5' thick. The surrounding slope was too steep for waste rock to build up a flat top-surface.

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[50] *Mineral Claim Survey Plat 16803*; *Silverton Standard* 7/5/1902; *Silverton Standard* 5/9/1903.

[51] *Silverton Standard* 6/22/1907.

[52] *Silverton Standard* 6/25/1921.

The southern-most adit (F8) was around 50' lower in elevation than the middle adit. Prospectors drove the adit through soil and into bedrock, all of which collapsed. The adit is now a willow-choked trench 5' wide and 25' long. Prospectors dumped waste rock at the lower adit's portal, depositing a rounded mound (F9) 26'x33' in area and 4' thick. Willows have overtaken the top-surface.

Two prospect cuts remain from the initial 1880s search for the vein. Prospectors blasted one of the cuts (F6) into the bottom of a gully oriented northwest. The cut became 12' wide and 30' long with ragged rock walls 12' high and a V-shaped floor. The gully carries a stream in early summer, which pours over the headwall as a waterfall. The prospectors piled waste rock along the stream channel's northern side, now overwhelmed with willow thickets.

The other cut (F7) is a ragged incision in bedrock. The cut is similar to a trench 4' wide and 12' long with a headwall 6' high. Rubble and tundra blanket the floor.

The site has a very impoverished artifact assemblage. Structural debris is limited to a few logs, pieces of lumber, and wire nails sprinkled on the northern adit's dump, and around the middle adit's tunnel house ruin. Industrial refuse is no more than a handful of cable segments eroding out of the northern adit's dump, and anthracite forge coal downslope from the tunnel house ruin. Window glass and the coal confirm that the tunnel house had several windows and a blacksmith shop within. Domestic refuse is absent.

The site has no buried archaeological deposits for several reasons. First, most activity was limited to work underground, which tended not to generate materials in volume. Second, extremely steep slopes and thin soil provide a poor deposition environment.

Lady Ellen Mine Interpretation

Only a few general observations can be reached about the Lady Ellen because its artifact assemblage is severely limited, and its features are poorly preserved. Without clearly dateable artifacts, timeframe from material evidence is very broad. In combination, wire nails and aqua window glass reflect activity sometime 1892-1920.

As a mine, the Lady Ellen was poorly financed and marginally productive at best. None of the operators invested in surface facilities. A single cramped tunnel house served all needs, including blacksmithing, ore sorting, and possibly housing for several miners. The building was small and constructed with local materials (rocks) at minimal cost. The only other facilities were ore cars used to shuttle waste rock out of the tunnels. Despite extremely steep slopes around the tunnels, no one even took time to grade flat workspace. Ore production was limited to high-grade material, which miners sacked for shipment as they produced it. The volume was not enough to warrant ore bins or a tramway to lower the product down to the valley floor.

The operators apparently engaged in little planning or orderly development, and merely extracted ore as they progressed underground. The Bandora Mine exemplifies planning typical of experienced miners. At the Bandora, the tunnels are oriented northwest along the vein and spaced 50' apart in elevation for development in regular blocks of ground. At the Lady Ellen, by contrast, the northern and middle tunnels are close together, angled toward each other, and only 10' in elevation difference. One of the tunnels was poorly planned and an unnecessary expense. The southern tunnel is 50' lower, and probably driven later in the mine's life.

Lady Ellen Mine Condition and Integrity

The site is in very poor condition. The adits have collapsed, and the northern and middle ones became so buried with earth that they are very difficult to pinpoint. The tunnel house imploded and is now totally filled with rubble and earth. Its dry-laid rock wall remnants are almost indistinct, and the remnant appears more as a depression than a structural ruin. The prospect cuts and lower adit are still readily interpreted, and most waste rock dumps are preserved. Willow thickets have overwhelmed flat surfaces, concealing what might lie on them.

The site has severely impaired integrity. Design is not apparent and feeling is weak because the features are poorly preserved, difficult to identify, and seemingly haphazardly arranged. Nothing remains to embody materials and workmanship. A location near the Bandora Mine provides some association with mining, and the alpine setting is typical.

Lady Ellen Mine Eligibility Recommendations

The Lady Ellen is recommended not eligible for several reasons. Regarding *Criterion A*, the mine was an unimportant operation. Although the mine was worked 1890-1898, and for a few various years afterward, it never produced much. Almost all activity occurred during only a few summer months each year because snow otherwise blockaded the road out. Output was so limited that none of the owners or operators thought that the cost of improvements would be repaid. And so few improvements were completed.

In terms of *Criterion B*, archival research was unable to demonstrate that the operators were significant people. Joseph Bordeleau was the only important person involved with the property, having been owner 1902-1919. Bordeleau ran one of Silverton's most prosperous hardware stores and had a side-business of buying small mines that still offered ore. In so doing, he contributed to the local mining industry's success. But it is highly unlikely that Bordeleau personally spent time at the Lady Ellen, with its primitive living conditions. Rather, Bordeleau was more of an absentee owner, which was typical. Bordeleau's connection with the Lady Ellen is too removed for today's site to qualify for *Criterion B*.

The Lady Ellen does not qualify for *Criterion C* because integrity is insufficient. The tunnels collapsed, and the northern and middle ones are very faint and difficult to discern. The tunnel house imploded and now appears as a rubble-filled pit. A clear footprint and discernable structural elements are no longer evident. Willow thickets have also overtaken the northern tunnel, center prospect cut, and southern tunnel. In sum, better examples exist elsewhere.

The site does qualify for *Criterion D* because it will not yield important information upon further investigation. The site has no complex features, rich artifact assemblage, or buried archaeological deposits. What currently remains has been thoroughly documented.

Lady Ellen Mine Management Recommendations

The Lady Ellen has been included in this project because it lies within the Bandora survey area, which has been defined for water-quality work at the nearby Bandora Mine. Although no actions are currently proposed for the Lady Ellen, its northern and middle waste rock dumps could be targeted for cleanup. The dumps might be contoured and vegetated, or removed altogether. If the site is impacted by future actions, the result would be no effect because the site is recommended not eligible. Further consideration is not warranted.

IF 5SA.1647
Prospect Adit

A prospect outfit drove an adit into the northwestern wall of the South Fork of Mineral Creek valley. Their objective was to sample a mineralized vein trending northwest-southeast underneath talus. The surrounding ground is extremely steep, around 11,100' elevation, and in transition from thick spruce forest to the north, to a dense aspen grove to the south. Soil is a mix of medium-brown silty loam and cobbles. Hope Lake Trail, which is a bulldozed road, is a short distance downslope. The land is USFS.

Prospect Adit History

Archival research found no information regarding the adit. Timeframe spans the 1880s, which was the area's principal period of prospecting.

Prospect Adit Description

When intact, the adit was like many others with a portal timbered for support, and a waste rock dump downslope. The portal completely collapsed and became an eroded scar 10' wide, 25' long, and 5' deep. Soil creep and deadfall have rendered the adit very difficult to identify. The waste rock dump is a rounded mound 20'x27' in area and 2' thick, overgrown with grass and moss. Total size is 20'x60' in area.

Prospect Adit Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the adit was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect adit lacking integrity. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The adit is incidental to environmental studies of the nearby Bandora Mine. The adit is within a larger survey area proposed for work, but isolated in the area's southern end. The adit will probably be totally avoided by cleanup activity, but could be affected by logging or earthmoving. Disturbance will have no effect because the adit is recommended not eligible.

Figure 7.88: View southwest at IF 5SA.1647, Prospect Adit, concealed by vegetation.

IF 5SA.1648
Cataract Prospect Cut

The IF is a cut similar to an adit portal blasted into the base of a cliff on Waterfall Creek's southwestern side. The creek is a minor drainage plummeting northeast through a narrow chasm on the western side of the South Fork of Mineral Creek valley. Elevation is around 11,000', and the chasm walls are blocky bedrock and talus. The prospect cut is on the Cataract claim, which is part of a larger patented property group worked as the Bandora Mine (5SA.22).

Cataract Prospect Cut History

William Sullivan probably staked the claim and blasted out the cut in 1881 or 1882 in association with discovering a mineralized vein on the adjoining Bandora claim. Sullivan then included the claim in the Bandora group, which he developed through a number of tunnels.

Cataract Prospect Cut Description

The cut is a prospect that was blasted in search of the Bandora Vein, which extended north-northwest from the Bandora Mine and crossed Waterfall Creek. Extending into a cliff, the cut is 4' wide, 6' high, and around 6' long underground. Surface expression is minimal and waste rock is absent, having been washed away by the creek.

Figure 7.89: View southwest at IF 5SA.1648, Cataract Prospect Cut, at lower-center.

Cataract Prospect Cut Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the cut was an unimportant prospect and not associated with significant events or people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple prospect cut with no other associated features. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The cut is incidental to environmental studies of the nearby Bandora Mine, but is included in this project because it lies within a larger survey area proposed for work. The cut will, however, almost certainly be avoided because of its extreme topography and location on a creek. Regardless, disturbance will have no effect because the cut is recommended not eligible.

IF 5SA.1649
Cataract Prospect Complex

The IF features two prospect cuts on either side of a talus chute, which had to be examined in overview rather than on-site due to safety hazards. The cuts are on the Cataract claim, which was part of the larger Bandora group staked by William Sullivan 1881-1882. Sullivan had discovered the Bandora Vein in 1881, as it ascended north-northwest up the western side of the South Fork of Mineral Creek valley. It might have been Sullivan himself who created the cuts flanking the talus chute, which is on the northern wall of Waterfall Creek. Elevation is

around 11,000', and the drainage wall is a mix of bedrock, talus, and tundra on thin soil. Sullivan brought the vein system into production as the Bandora Mine (5SA.22) to the south.

Cataract Prospect Complex History

William Sullivan found ore on the western wall of the South Fork of Mineral Creek valley in 1881. He then searched for the source using traditional methods of digging pits and trenches, and unearthed what he named the Bandora Vein. Sullivan then staked the Bandora, Cataract, and other claims for ownership. After developing the vein and extracting ore through a number of tunnels, Sullivan sold the property to the Bandora Mining & Milling Company in 1890. They added the Noble claim extending south and had the group surveyed for patent in 1892. Sullivan took the property back around 1902 and produced for another eighteen years.

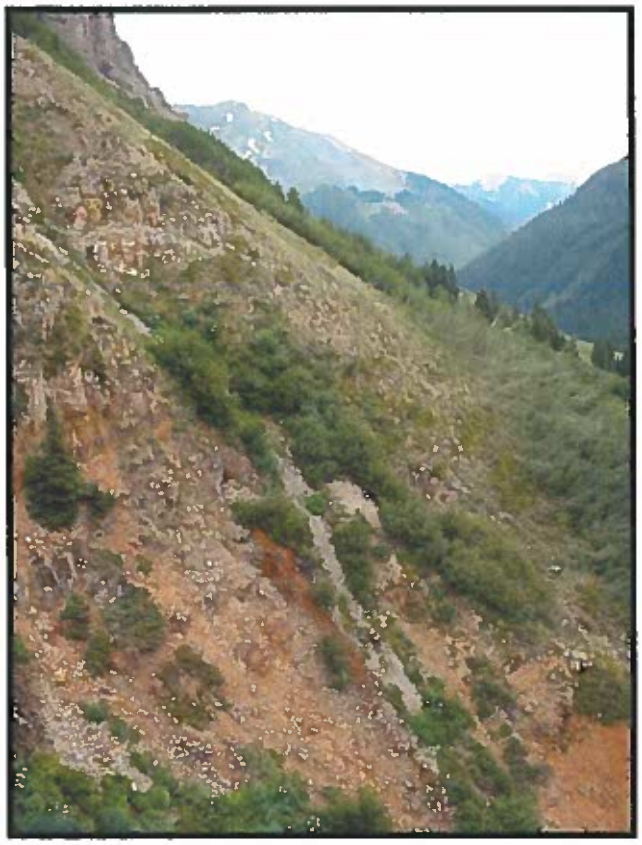

Figure 7.90: View southeast at IF 5SA.1649, Cataract Prospect Complex. The IF is at center.

Cataract Prospect Complex Description

The prospect cuts are aligned roughly east-west, and separated by approximately 20'. The western cut is 5'x7' in area in the face of a bedrock cliff around 18' high. The cut is now filled with rubble, held back by willows along the rim. The eastern cut is hidden by a high willow thicket, and features a fan of waste rock 10' wide and 18' long extending downslope. Total IF size is 18'x36' in area.

Cataract Prospect Complex Eligibility and Management Recommendations

The resource is recommended not eligible for several reasons. Under *Criteria A and B*, the cuts were an unimportant prospect and not associated with significant people. Regarding *Criterion C*, the IF is among the most common mining resource types in Colorado, a simple pair of poorly preserved prospect cuts lacking integrity. In terms of *Criterion D*, the IF will not yield meaningful information upon further study because of its simplicity.

The cuts are incidental to environmental studies of the nearby Bandora Mine, but are included in this project because they lie within a larger survey area proposed for work. The cuts will, however, be avoided because of their extreme topography and location on a creek. Regardless, disturbance will have no effect because the cuts are recommended not eligible.

CHAPTER 8: HISTORIC LANDSCAPES AND POTENTIAL DISTRICTS

As suggested elsewhere in this report, the resources involved in the environmental study were not only assessed for their historical significance in terms of the National Register of Historic Places (NRHP), but also for their potential to contribute to historic landscapes and historic districts. Definitions are provided below.

In a very broad sense, a historic landscape is an assemblage of resources reflecting land use patterns, culture, industry, and important events and trends. A historic landscape should combine an intact natural setting, resources with integrity, and distinct characteristics of time-period land use. In terms of the project areas discussed here, these qualities should clearly convey prospecting and mining 1874-1921, 1933-1939; and 1946-1954. Character-defining features can include but are not limited to prospects, mines, mills, structures, buildings, archaeological remnants thereof, claim monuments, primitive roads, packtrails, and disbursed artifacts.

A historic district is an officially designated area encompassing a cohesive or related body of contributing resources. Districts may include public and private lands. In a historic district, the resources should be unified by place, period of significance, theme, and historical trends. Further, that body must be historically significant and older than fifty years. The area within the historic district cannot have been disrupted by significant modern intrusions, and the district should convey feeling and association of the past. To contribute to a historic district, individual resources must possess integrity on an archaeological level or better. Further, most but not all the resources within the district must be contributing elements.

None of the project areas discussed in this report have good landscape or district potential. The reasons are explained for each area below.

Koehler Junction Survey Area

Koehler Junction has no landscape or district potential. Ross Curtis recorded the Koehler Longfellow Boardinghouse (5SA.495) in 1998, and the Koehler Tunnel (5SA.826) and Longfellow Mine (5SA.827) in 2000. Curtis summarized his findings in the 2000 report *A Cultural Resources Study of the Red Mountain Mining District, Ouray and San Juan Counties, Colorado.* In the report and on site forms, Curtis stated that the sites could be contributing elements in a historic district based on a mining landscape.

In general, the Red Mountain area certainly has landscape and district potential, as Curtis amply demonstrates. But Koehler Junction basin has major deficiencies that exclude it from consideration. One problem is that reclamation and waste rock removal in recent decades has disrupted the basin visually, and in terms of its historic fabric. Waste rock dumps at the Koehler Tunnel, Junction Mine, and Longfellow Mine are now gone, leaving bulldozed scars in their place. The road network has added to the disruption. Currently, five gravel roads converge on the small basin, taking up space, presenting visual distraction, and interrupting the historic fabric. Road construction also probably destroyed historic features. In the third problem, the reclamation and road grading have compromised the integrity of most resources. The Koehler Longfellow boardinghouse and the Koehler Tunnel were bulldozed in 2002. The Junction Mine was reclaimed before that. The only site with integrity is the Longfellow, and even this has large non-contributing areas due to reclamation. In sum, Koehler Junction basin has poor historic fabric,

few resources with integrity, and too much recent earthmoving to qualify as a historic landscape or district.

Freda Mine and Mill Survey Area

The Freda Mine and Mill have no historic landscape or district potential for two simple reasons. First, the site dates to the 1980s and is less than fifty years old. Second, the Freda is isolated high on the northern wall of Middle Fork of Mineral Creek valley. No other resources are in the immediate vicinity.

Brooklyn Mine Survey Area

The Brooklyn Mine survey area includes Browns Gulch and some terrain on the gulch's northern side. Overall, the area has little historic landscape for several broad reasons. The survey area's northwestern quarter would not qualify because it was heavily logged during the 1970s. The resulting deadfall, bulldozed swaths, and roads are incompatible modern intrusions.

The study area's southern portion, and the rest of Brown's Gulch, feature undisturbed forest. The area's eastern portion is an alpine environment. Although both areas provide a good natural setting, the principal deficiencies lie with the historic resources themselves. Most are small and unimportant prospects taking form as pits, trenches, and isolated adits, with few if any associated features. These resources are subtle, small in scale, widely scattered, and becoming invisible due to thick duff, ground-cover, and revegetation.

A few larger prospects such as substantial adits and groups of pits are mixed in with the smaller resources, but these also lack sufficient integrity, importance, and visual presence. The substantial adits tend to manifest as subsidence zones with visible waste rock dumps, but little else. The adits are widely scattered, as well.

The overall resource assemblage also includes a few productive mines, with the Brooklyn as the dominant operation. Except for the Brooklyn, the mines are generally small, heavily overgrown, and difficult to perceive, and have insufficient integrity. Well-preserved features representing support facilities, workers' housing, etc. are few.

The Brooklyn is the only major site with complexity and strong visual presence. And even the Brooklyn is not well-preserved. Most of the site's features are products of mining, claim development, and bulldozing 1968-1983.

But, it must be emphasized that the above statement is limited to the survey area alone. Other portions of the Mineral Creek valley appear to have landscape and district potential, which can be evaluated with surety through reconnaissance survey.

Bandora Mine Survey Area

The Bandora Mine survey area lies at the head of the South Fork of Mineral Creek valley. Even though the valley head offers an outstanding natural setting, the area has little historic landscape or district potential because the resource base is too sparse.

Most resources are clustered around the Bandora Mine, on the valley's northwestern side. Several prospects and a cabin ruin lie farther up the valley on the southeastern side, while the rest of the valley head has few if any obvious resources. The only prominent sites are the Bandora

Mine, the much smaller Lady Ellen Mine to the north, and a prospect complex to the south. A handful of other prospects are scattered around, mostly within the survey area.

In general, most of the area's resources are too unimportant, few in number, poorly preserved, and concealed to form a historic landscape or district. But, it must be emphasized that the above statement is based on brief field observations. The South Fork valley is heavily forested, which precludes quick visual examination. Landscape and district potential can only be evaluated with surety through reconnaissance survey.

CHAPTER 9: PROJECT CONCLUSION

Concluding this report, the evaluation project involves four survey areas totaling 386.8 acres. The survey areas are the Area of Potential Effect for environmental studies and eventual water-quality actions at Koehler Junction, the Brooklyn Mine (5SA.751), the Freda Mine and Mill (5SA.1616), and the Bandora Mine (5SA.22). The survey areas were inventoried, and 7 linear resources, 15 archaeological sites, and 28 Isolated Finds were recorded.

Of these, 7 resources are recommended eligible for the NRHP and one as Need Data. One of these is a segment of the Million Dollar Highway (5SA.113.10), also known as Highway 550, passing through the Koehler Junction survey area. The segment is recommended supporting/eligible under *Criteria A and C*. The southeastern shoulder will be sampled with small test pits, which will be unobtrusive and restored when finished. The pits will pose no adverse effect.

The Koehler Longfellow Boardinghouse site (5SA.495) is recommended Need Data under *Criterion D*. Privy pits around the boardinghouse platform may yield meaningful information upon further study. If the platform is used as a repository for waste rock, then the pits will be tested for content and excavated if results are positive. Recovering the information will satisfy Need Data, and further use of the platform will present no adverse effect.

The Longfellow Mine (5SA.827) is eligible under *Criteria A, C, and D*. The site must be perceived according to contributing and non-contributing portions. The mine itself features an intact surface plant including a shaft house, headframe, ore bin, compressor, and other engineered elements. The surface plant is contributing. The area around the surface plant has been severely disturbed by past reclamation and is non-contributing. Water-quality actions will avoid the surface plant and preserve it, while restricting activities to the non-contributing disturbed areas. In so doing, water-quality actions will pose no adverse effect.

The Brooklyn Mine (5SA.751) is recommended eligible for *Criteria A and C*. In greater detail, the site's residential complex is contributing because it offers standing buildings with integrity. The rest of the site is non-contributing because it lost integrity to bulldozing during the early 1970s. Water-quality actions will avoid the residential complex, and therefore present no adverse effect.

The Brooklyn Mine Telephone Line (5SA.1617) is recommended eligible for *Criterion C* because it is a good example of its resource type. The line's eastern three poles are still standing on the Brooklyn Mine's waste rock dump. Water-quality actions will avoid the poles, and pose no adverse effect.

The Bandora Mine (5SA.22) is recommended eligible for *Criteria A and C*. The site's stable and ore bin are contributing because they are good examples of their types. The rest of the site is non-contributing because it lost integrity to heavy deterioration and bulldozing. Water-quality actions will avoid the stable and bin, and therefore present no adverse effect.

Two segments of the Rico-Silverton Wagon Road (5SA.110.3 and 5SA.110.5) pass through the Bandora Mine's survey area. They are supporting elements of the greater road route, and eligible for *Criteria A and C*. The segments will be used for vehicle traffic, but not improved or otherwise changed. Simple use of the segments presents no adverse effect.

The remainder of the project's resources (42) are recommended not eligible because they fail to meet requirements. Unimportance and lack of integrity are the primary reasons. As a Section 106 undertaking, the Government CERCLA work will have no adverse effect on historic properties.

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