

United States Department of the Interior
National Park Service



National Register of Historic Places
Registration Form

This form is for use in nominating or requesting determination for individual properties and districts. See instruction in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 10A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item is not applicable to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900a). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Bromide Charcoal Kilns

other names/site number Bromide Mill Site; Greystone Kilns/Coke Ovens; 5MF4616

2. Location

street & number Off of County Rd. 10 [N/A] not for publication

city or town Greystone [x] vicinity

state Colorado code CO county Moffat code 081 zip code 81640

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this [X] nomination [] request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property [X] meets [] does not meet the National Register criteria. I recommend that this property be considered significant [] nationally [X] statewide [] locally. ([] See continuation sheet for additional comments.)

Georgina Couty State Historic Preservation Officer May 24, 2000 Date

State Historic Preservation Office, Colorado Historical Society
State or Federal agency and bureau

In my opinion, the property [] meets [] does not meet the National Register criteria. ([] See continuation sheet for additional comments.)

Signature of certifying official/Title _____ Date _____

State or Federal agency and bureau _____

4. National Park Service Certification

I hereby certify that the property is:

- entered in the National Register [] See continuation sheet.
- determined eligible for the National Register [] See continuation sheet.
- determined not eligible for the National Register.
- removed from the National Register
- other, explain [] See continuation sheet.

Edson H. Beall Signature of the Keeper 6/30/00 Date of Action

5. Classification

Ownership of Property

(Check as many boxes as apply)

- private
- public-local
- public-State
- public-Federal

Category of Property

(Check only one box)

- building(s)
- district
- site
- structure
- object

Number of Resources within Property

(Do not count previously listed resources.)

Contributing	Noncontributing	
0	0	buildings
0	0	sites
4	0	structures
0	0	objects
4	0	Total

Name of related multiple property listing.

(Enter "N/A" if property is not part of a multiple property listing.)

N/A

Number of contributing resources previously listed in the National Register.

0

6. Function or Use

Historic Function

(Enter categories from instructions)

INDUSTRY/processing site

Current Functions

(Enter categories from instructions)

VACANT/NOT IN USE

7. Description

Architectural Classification

(Enter categories from instructions)

No Style

Materials

(Enter categories from instructions)

foundation stone
walls stone
roof n/a
other n/a

Narrative Description

(Describe the historic and current condition of the property on one or more continuation sheets.)

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Bromide Charcoal Kilns
Moffat County/Colorado

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DESCRIPTION

The Bromide Charcoal Kilns are located off of County Road 10, in a remote area southeast of Greystone, in Moffat County in the northwest corner of Colorado. Close-by, a very rich but small body of copper ore was discovered and mined most intensively in the late 1890s through World War I. Freighting the ore to the nearest railroad in Rock Springs, Wyoming, a distance of approximately 90 miles, was expensive. Consequently, the Bromide Mining and Milling Company erected a smelter facility with a 15 ton copper blast furnace.

The four charcoal kilns being nominated were built in 1898 to supply charcoal for the blast furnace. Associated with Moffat County's Douglas Mountain Mining District, the Bromide operation shipped a considerable amount of copper ore, particularly during World War I when copper prices were high. Interestingly, signage located along County Road 10, as well as USGS Topographic Maps have long incorrectly identified the kilns as coke ovens.

While the Bromide Mining and Milling Company's smelter site encompassed approximately five acres, the proposed boundary for this nomination includes only the land occupied by the four kilns and the immediately surrounding area. Other buildings and structures associated with the company that appear in a circa 1903 photograph are no longer standing, although some foundations do remain in evidence. The site was deeded to Preserving the Last Frontier, Inc. a local Colorado Non-Profit Corporation in October of 1998. Although the entire five acre site likely has the potential to yield further information about the industrial activities which occurred there, no survey work has been undertaken. Therefore, a larger boundary cannot be justified at this time.

The nominated charcoal kilns remain at their original location and are in good condition. The kilns back onto a low rise of land, which facilitated access to their rear openings. Wire fencing exists around the immediate area, and there is a metal turnstile gate set in a pole gateway. The kilns retain a very high degree of integrity in terms of design, materials, and workmanship. William L. Reich, author of the forthcoming publication *Coke Ovens and Charcoal Kilns Along the Rails* suggests that:

The kilns are worthy of designation and should be protected if possible. Probably the best protection we could afford would be to remove the locating signs along the route and make the fence around the kilns secure. They are as good as they are because they are a long way from anywhere and hard to find.

The "beehive" or dome-shaped kilns were constructed with native sandstone. They are approximately 20 feet in diameter and rise to a height of approximately 20 feet. Most of the stones remain in place, with no gaps appearing in the walls. One of the kilns does have one stone missing at the top center of its dome. The kilns are set in a row, with their lower front openings facing toward the southeast. Encircling the kilns, toward the base, there are small vent openings.

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Bromide Charcoal Kilns
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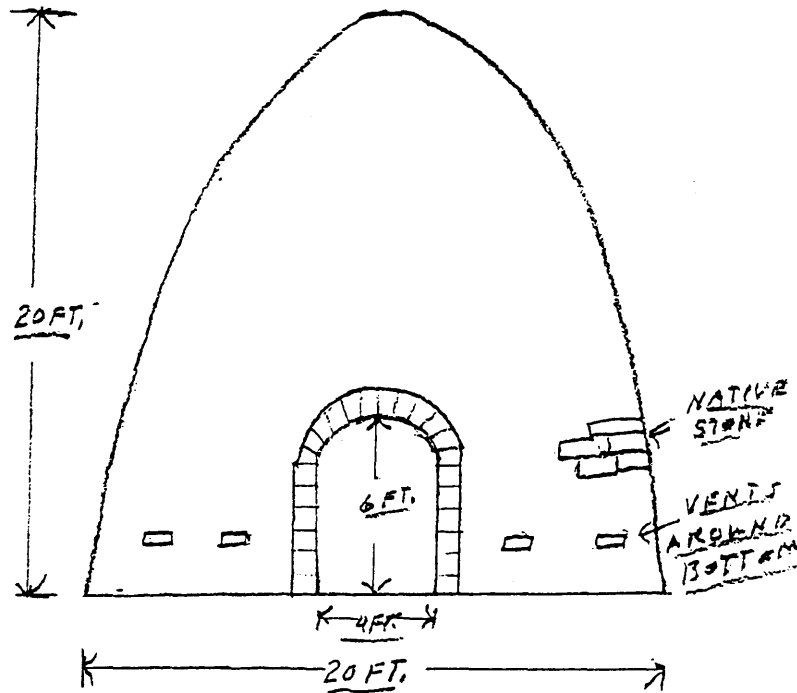
Of special interest are the wooden posts, which are still in place between the kilns and the rise of land at the rear. The posts supported the no longer extant loading ramps, which were used to access the rear loading doors. The rounded arch loading door openings remain in good condition. The rear loading doors are still completely framed. The lower door openings on the front are also in good shape, with their lintels intact. At least two also have their steel frames still in place.

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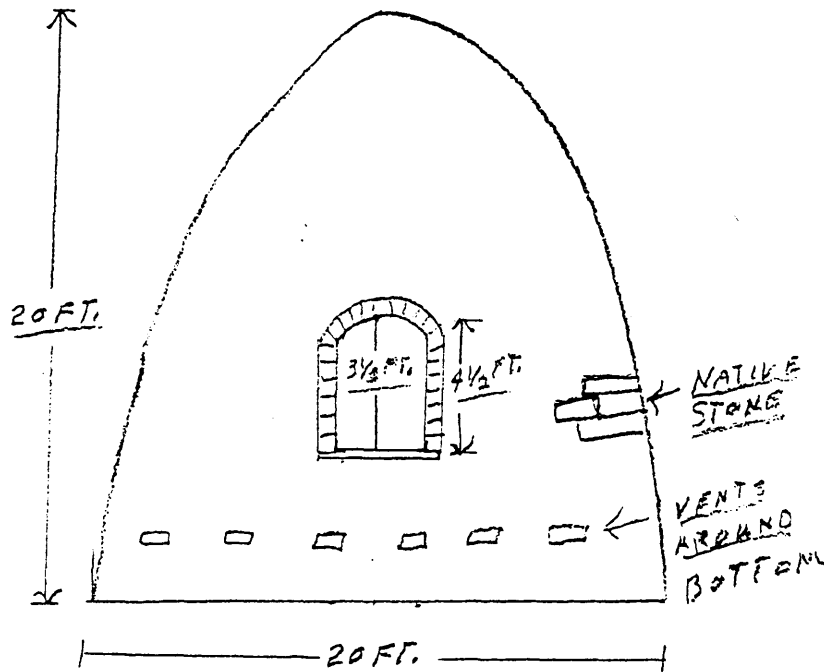
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Bromide Charcoal Kilns
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ROUGH SKETCH SHOWING FRONT OPENINGS



ROUGH SKETCH SHOWING REAR OPENINGS

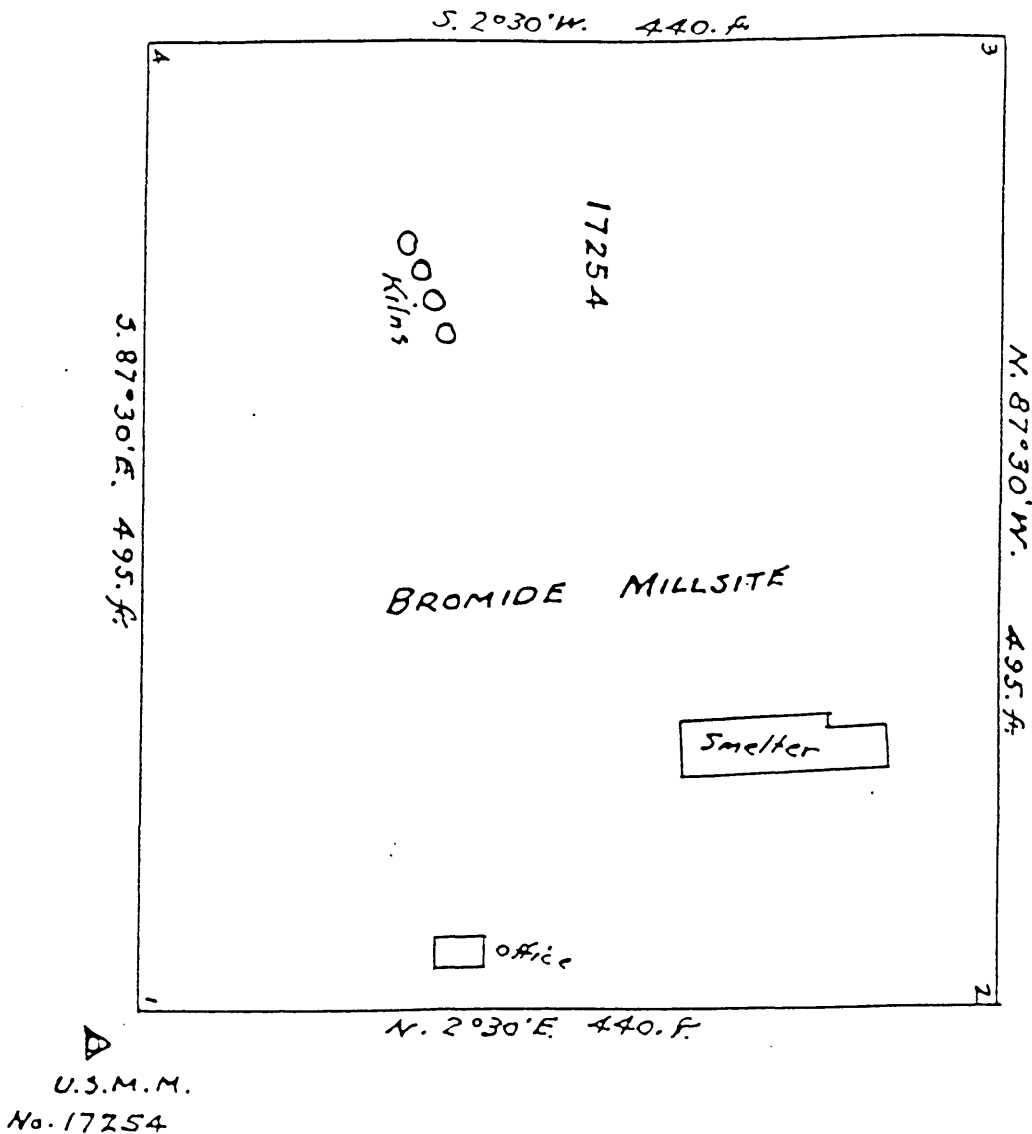
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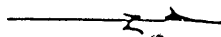
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ROUGH SKETCH OF ORIGINAL MILL SITE PLAN



About. Sec. 8, T. 7 N. R. 100 W.



8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- A** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B** Property is associated with the lives of persons significant in our past.
- C** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D** Property has yielded, or is likely to yield, information important in prehistory or history.

Areas of Significance

(Enter categories from instructions)

Industry

Engineering

Periods of Significance

1898—circa 1917

Significant Dates

1898

Significant Person(s)

(Complete if Criterion B is marked above).

N/A

Cultural Affiliation

N/A

Architect/Builder

Unknown

Criteria Considerations

(Mark "x" in all the boxes that apply.)

Property is:

- A** owned by a religious institution or used for religious purposes.
- B** removed from its original location.
- C** a birthplace or grave.
- D** a cemetery.
- E** a reconstructed building, object, or structure.
- F** a commemorative property.
- G** less than 50 years of age or achieved significance within the past 50 years.

Narrative Statement of Significance

(Explain the significance of the property on one or more continuation sheets.)

9. Major Bibliographical References

Bibliography

(Cite the books, articles and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey
- # _____
- recorded by Historic American Engineering Record
- # _____

Primary location of additional data:

- State Historic Preservation Office
- Other State Agency
- Federal Agency
- Local Government
- University
- Other

Name of repository:
Colorado Historical Society
Museum of Northwest Colorado

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Bromide Charcoal Kilns
Moffat County/Colorado

SIGNIFICANCE

The Bromide Charcoal Kilns are significant under Criterion A at the local level in the area of Industry as the only remaining intact structures associated with the Bromide Mining and Milling Company's turn-of-the-century copper ore processing facility, located in the Douglas Mountain Mining District, in a remote area of northwestern Colorado. Built in 1898, the Bromide Charcoal Kilns are also significant under Criterion C at the state level in the area of Engineering. The kilns survive as well-preserved examples of the type of structure utilized in the production of the charcoal that was important to the smelting process during the late 19th and early 20th centuries. The 1898-1917 Period of Significance marks the construction date of the kilns and recognizes the role they played during the most intensive period of industrial activity occurring at the facility.

Criterion A - Industry

Local copper deposits were supposedly first noted by Griff Edwards, a Welshman, in 1882. According to Krull's 1902 report, the Bromide group of adjoining claims included: the Bromide No. 1, the Bromide No. 2, the Side Issue, and the Hidden Treasure. Reported to be the richest, the Bromide Lode No. 1 was discovered in April of 1886, at an altitude of 7,850 feet near the summit of Douglas Mountain.

The Bromide Mining and Milling Company added to their holdings by securing a mill site at Douglas Springs, and two full mining claims on a rich deposit of iron ore near Zenobia Peak, about 12 miles northwest of the Bromide mine. They made extensive developments and erected a complete and modern smelting plant with all necessary buildings, bunkhouse, assay office, etc. on this mill site at Douglas Springs. (Krull)

During the 1890s, as mining had increased in the area, the nearest railroad connection remained approximately 90 miles away in Rock Springs, Wyoming. By the end of the 1890s, the difficulties and high costs of transporting the ores over long distances had made the construction of a local smelter facility, approximately 6 miles from the mines, an economically viable undertaking. Shell's 1901 report noted the 24-hour capacity of the Bromide Mining and Milling Company's blast furnace at 15 tons of copper ore. During his visit to the Bromide site, the owners informed him that they were awaiting a shipment of coke to be used in conjunction with the charcoal produced in the four on-site charcoal kilns. According to Shell:

The wood supply, consisting of pinion (sic) pine, is unlimited. The supply of saw timber is sufficient for all present and futures needs of the mines, smelter, and town.

The water is delivered to the smelting works through 4,500 feet of pipe line, at the rate of 100 gallons per minute. This water supply can be increased, but is ample to meet all present needs at the works.

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Bromide Charcoal Kilns
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The property speaks for itself. Its output of copper should be ample to pay liberal dividends of \$20,000 per month to its shareholders, provided the management is placed in competent hands.

There are 15,000 tons of ore available for removal from the mine, without any further developments. This ore is known to contain more than 15% copper per ton, as per vouchers hereto attached.

At the time, much of northwestern Colorado remained within the boundaries of Routt County. It was not until 1911 that Moffat County was carved out of the western edge of Routt County. Predictions in 1902 of more direct railroad access did not materialize when David H. Moffat's Denver and Salt Lake Railroad terminated upon reaching Craig, approximately 67 miles to the east of the Bromide facility in 1913, thus perpetuating intensive operations at the smelter through World War I.

As of now, post World War I activities at the facility are not well documented. Apparently in response to an inquiry about reopening the facility, the Hoxlas letter dated November 6, 1948 did note that the "four original charcoal kilns still remain and are in excellent condition." While making no specific mention of the number and condition of any other structures, Hoxlas indicated that at some point the property had been allowed to fall into disuse because "the smelter crew had let the furnace freeze so that it had to be torn down to recover the matte, a new reverberatory smelter was constructed at the mine but failed to qualify. The war came on and everything was sold or stolen for junk."

Criterion C - Engineering

Copper can be processed in the same way as iron or lead, using charcoal and coke to create a reducing atmosphere for the reduction of oxide ores. In general, Colorado smelting operations used the combination of charcoal and coke in early blast furnaces in order to generate the heat necessary to separate the various metals within the primary ores. By the 1890s, the increasing availability of suitable coke lessened the need for charcoal. However, the remote location of some operations resulted in continuing demand for locally produced charcoal into the 20th century.

Colorado examples of charcoal kilns dating from the late 19th century are increasingly rare historic resources, particularly ones retaining the high degree of integrity evidenced in the Bromide Charcoal Kilns. In most cases, development pressures, natural deterioration, and/or vandalism have taken their toll. According to William L. Reich, who has extensively researched the history of coke ovens and charcoal kilns in Colorado, the Bromide Kilns were the last set of charcoal kilns constructed in Colorado. Reich also indicates that:

The Bromide Charcoal Kilns are in the best shape of any in Colorado. Three are in very good condition, with no holes through the walls. The fourth has one stone missing at the top center of the dome. All have some stones missing from the first outside course as the

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aging process continues. There are no other kilns in the state that are in as good condition. For example, the seven stone and brick, somewhat deteriorated kilns, in Basalt (5EA661) would be next best. There is also a single small sandstone kiln (5MN4390) near the Hanging Flume in Montrose County that is similar in design, but it has a larger hole in the top of its dome and no doorframes. Even one of the two brick kilns at Capitol City in Hinsdale County (5HN594), which were listed in the National Register in 1999, is only 25% intact. The entire back side of the other has fallen in.

At the Bromide site, wooden posts that supported the loading ramps still are in place between the kilns and the rise at the back. No other kiln site in the state has any sign of the loading ramps to the top loading doors. No other kilns have their rear top loading door openings still completely framed. The lower door openings are also in good shape with lintels intact, and at least two have their steel frames still in place. Again, this occurs nowhere else in the state.

Other examples of Colorado charcoal kiln sites in the Office of Archaeology and Historic Preservation's database indicate that, in 1992, only a few rows of brick marked the location of the circa 1880s Upper Halfmoon Creek Charcoal Kilns (5LK840). A 1976 Inventory Data Form, for the circa 1883-1893 Dake Townsite and Charcoal Kilns (5PA82), in the Kenosha Park area of Park County, indicates that there were only remnants of what had been 28 kilns. Several charcoal kilns do remain in place adjacent the tracks of the Denver & Rio Grande Railroad in Howard (5FN110). Howard's kilns were built in the early 1880's by William R. Harp, a well-known operator of smelters in Canon City and Leadville.

Charcoal kilns were typically constructed with bricks or native stones, laid so as to form a dome at the top. They reached a height of 20 to 30 feet and measured 20 to 27 feet in diameter. The process of producing the charcoal began with the cutting of native trees. After filling the kiln with loosely stacked wood, hot coals were placed around the base, and the loading doors were closed and sealed with mortar. Vent openings around the base were usually filled with a brick, which was removed as needed to regulate the oxygen flow so that the wood would smolder and not burst into flames. After smoldering for approximately one week, another four or five days was required for cooling.

Constructed in 1898, the four Bromide Charcoal Kilns remain at their original location adjacent a slight rise in the surrounding terrain. Such a location was often selected in order to facilitate loading. The dimensions of the kilns fall within the expected range, and they clearly reflect the "beehive" shape typical of such structures.

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Bromide Charcoal Kilns
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BIBLIOGRAPHY

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- Egleston, Thomas, Professor, New York City School Of Mines. *The Manufacture of Charcoal In Kilns*, A.I.M.E. (American Institute of Mining Engineers) Journal May, 1879.
- Fell, James E., Jr. *Ores to Metals*. Lincoln, Nebraska: University of Nebraska Press, 1979.
- Hoxlas, W. I., Mining and Civil Engineer, U.S. Mineral Surveyor. Letter to Roy Austin and Associates, Oak Creek, Colorado, dated November 6, 1948.
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- Noel, Thomas J., Paul F. Mahoney, and Richard E. Stevens. *Historical Atlas of Colorado*. Norman, Oklahoma. University of Oklahoma Press, 1994.
- Reich, William L. *Coke Ovens and Charcoal Kilns Along the Rails*. Manuscript. Scheduled for publication in 2003 by Colorado Railroad Museum, Golden, Colorado.
- Shell, George D., Mining Engineer. "Report of the Bromide Copper Group" dated July 1, 1901.
- Vanderwilt, John W., Consulting Geologist. *Mineral Resources of Colorado*. Denver, Colorado: State of Colorado Mineral Resources Board, 1947.

Bromide Charcoal Kilns
Name of Property

Moffat County/Colorado
County/State

10. Geographical Data

Acreage of Property less than one

UTM References

(Place additional UTM references on a continuation sheet.)

1. 12 698350 4494280
Zone Easting Northing

3. Zone Easting Northing

2. Zone Easting Northing

4. Zone Easting Northing

[] See continuation sheet

Verbal Boundary Description

(Describe the boundaries of the property on a continuation sheet.)

Boundary Justification

(Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title S.V. Beckett, President (Edited by S. Doggett)

organization Preserving the Last Frontier date February 22, 2000

street & number 919 Ranney St. telephone 970-824-6631

city or town Craig state Colorado zip code 81625

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A **USGS map** (7.5 or 15 minute series) indicating the property's location.

A **Sketch map** for historic districts and properties having large acreage or numerous resources.

Photographs

Representative **black and white photographs** of the property.

Additional Items

(Check with the SHPO or FPO for any additional items)

Property Owner

(Complete this item at the request of SHPO or FPO.)

name Preserving the Last Frontier, Inc.

street & number 919 Ranney St. telephone 970-824-6631

city or town Craig state Colorado zip code 81625

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq.*)

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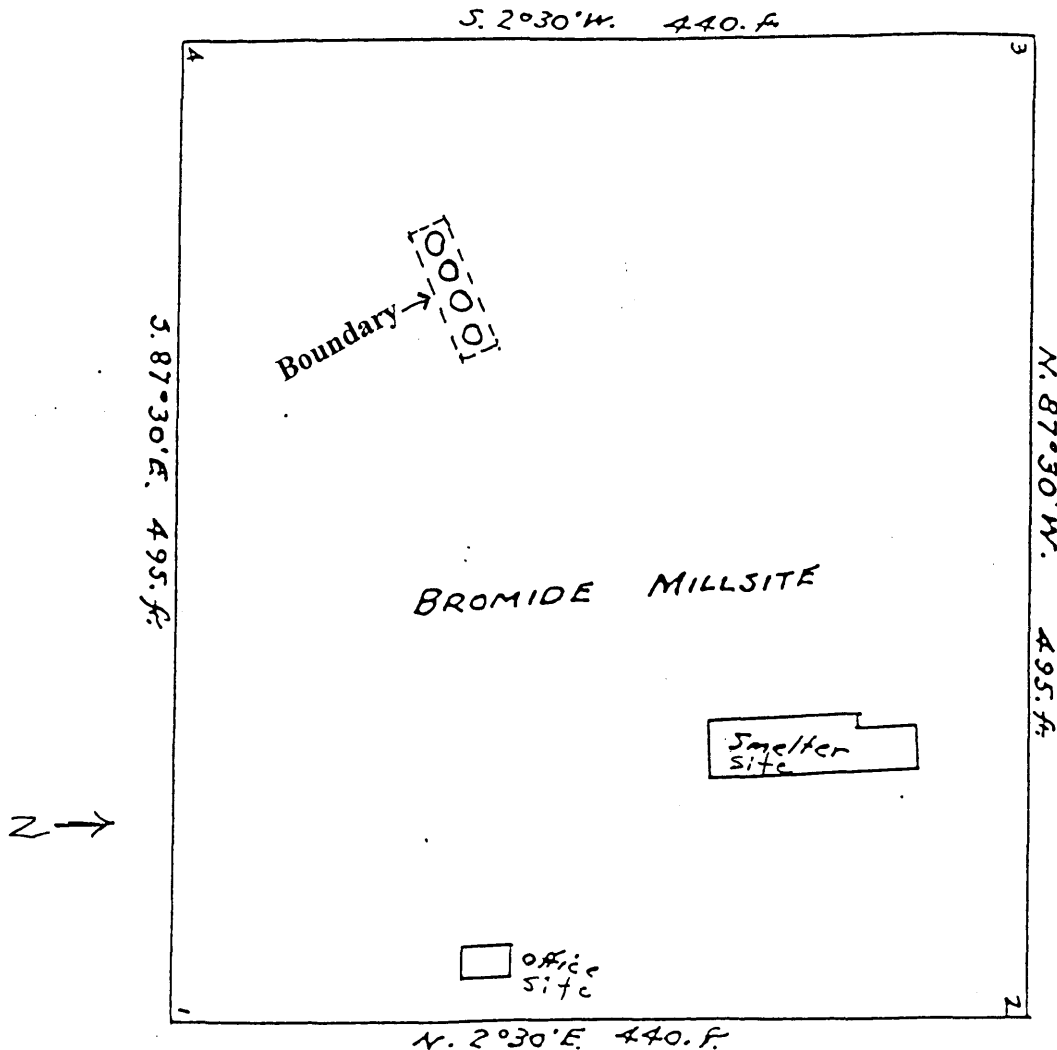
GEOGRAPHICAL DATA

Verbal Boundary Description

The boundary forms a rectangle measuring approximately 40 by 130 feet and includes the footprints of the kilns plus an area extending approximately ten feet beyond, as indicated on the sketch map below.

Boundary Justification

The boundary includes only the land that was directly associated with the kilns.



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Bromide Charcoal Kilns
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PHOTOGRAPH LOG

The following information applies to photographs 1-6:

Name of Property:	Bromide Charcoal Kilns
Location of Property:	Greystone vicinity, Moffat County, Colorado
Name of Photographer:	Preserving the Last Frontier
Date of Photograph:	1999
Location of Negatives:	Colorado Historical Society Office of Archaeology & Historic Preservation 1300 Broadway Denver, Colorado 80203

Photo #1	Front of kilns, view northwest
Photo #2	Front of kilns, view southwest
Photo #3	Rear of kilns, view northeast
Photo #4	Rear of kilns, opening detail and remaining loading ramp support posts, view north
Photo #5	Interior, view of dome
Photo #6	Front opening detail, view southwest

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Bromide Charcoal Kilns
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USGS MAP
Greystone, CO

