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NPS/CHS Word Processor Format
(Approved 03/88)

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 determinations of eligibility for individual properties or districts. See instructions in Guidelines for Completing National Register Forms (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable". For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries. Use letter quality printers in 12 pitch. Use only 25% or greater cotton content bond paper.

1. Name of Property

historic name: Redstone Coke Oven Historic District
other names/site number: 5PT451

2. Location

street & number: Highway 133 and Chair Mountain Stables Rd. (n/a) not for publication
city, town: Redstone (X) vicinity
state: Colorado code: CO county: Pitkin code:097 zip code: 81623

3. Classification

Ownership of Property	Category of Property
(x) private	( ) building(s)
( ) public-local	(x) district
( ) public-State	( ) site
( ) public-Federal	( ) structure
	( ) object

No. of Resources within Property		
contributing	noncontributing	
___	___	buildings
___	___	sites
90	54	structures
___	1	objects
90	55	Total

Name of related multiple property listing:
Historic Resources of Redstone, Colorado, and Vicinity

No. of contributing resources previously listed in the National Register 0

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, 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.
( ) See continuation sheet.

Barbara Sudler — 12-21-89

Signature of certifying official — Date

State Historic Preservation Officer, 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.

Signature of Commenting or Other Official — Date

State or Federal Agency and Bureau

5. National Park Service Certification

I, hereby, certify that this property is:

(✓) entered in the National Register. ( ) See continuation sheet — Beth Boland — 2/7/90

( ) determined eligible for the National Register. ( ) See continuation sheet

( ) determined not eligible for the National Register.

( ) removed from the National Register.

( ) other, (explain:)

Signature of the Keeper — Date of Action

6. Functions or Use

Historic Functions (enter categories from instructions)	Current Functions (enter categories from instructions)
PROCESSING/manufacturing facility	VACANT/NOT IN USE

7. Description

Architectural Classification (enter categories from instructions)	Materials (enter categories from instructions)
OTHER: beehive coke oven	foundations walls BRICK roof BRICK other EARTH STONE

Describe present and historic physical appearance.

The Redstone Coke Oven Historic District is located opposite the community of Redstone, on the west bank of the Crystal River in the Elk Mountains of west-central Colorado. The district encompasses the immediate area in which the ovens are located and includes 144 structures which are beehive coke ovens, and one object, a monument which describes the operation of the ovens. The Redstone Coke Oven Historic District meets the registration requirements specified in the amendment to the Multiple Property Documentation Form, "Historic Resources of Redstone, Colorado, and Vicinity" submitted with this nomination. Of the 145 resources within the district, 144 coke ovens are associated with the historic context, "John C. Osgood and the Development of Transportation and Coal Mining in the Crystal River Valley, 1882-1903." This historic context includes the period in which the ovens were built although they continued to operate until the closure of the plant in 1909. Of the total number of resources, ninety, or sixty-two percent, are contributing, while fifty-five, or thirty-eight percent, are noncontributing resources. The majority of noncontributing resources, forty-seven, are ovens which have been modified by the addition of concrete block front walls approximately thirty years ago.

The map accompanying this form identifies the location of resources within the district. The registration requirements listed in the related Multiple Property Documentation Form were utilized to determine the contributing or noncontributing status of each resource.

(x) See continuation sheet

Among the criteria utilized for evaluating contributing structures were: date of construction and dates of operation; historic associations; integrity of location, materials, design, and plan. The historical background of the district suggests that it is possible that other remnants of the coking industry, such as structure foundations, raw or processed material scatters, and railroad beds exist within or near the district. These resources were not identified as part of this project.

HISTORIC USE AND DESCRIPTION

By 1899, the Colorado Fuel and Iron Company had constructed a coke manufacturing facility at Redstone. The site was chosen for the plant due to its proximity to the Crystal River, is location in relation to the remote coal mining camp at Coalbasin, its situation along the planned main line of the Crystal River Railroad, and the personal interest of the company president, John C. Osgood, in the picturesque setting. During the 1880s, Osgood and his associates had formulated plans for development of the coal resources of the area. Having survived the economic stringencies of the early 1890s, the company now proceeded with its plans to meet the demand for coke to serve smelters in the region.

At Redstone, a model coke manufacturing plant was created on level lands west of the Crystal River. The river was an essential ingredient in the plan, for its waters were utilized to "wash" the coke before processing and to cool the completed coke in the beehive ovens. The washery was an elevated building where coal was unloaded from cars coming from the Coalbasin mine, crushed, and "washed," a process whereby pulsating water separated the coal from impurities. Afterwards, the coal was run over a screen to drain off water and then traveled through a pulverizing process to create uniformity in size. The finely crushed material was then conveyed to a slack bin, ready to be taken to the oven. The bins were elevated to allow lorry cars (hopper-shaped steel cars) to pass under them and be loaded with five or six tons of crushed coal. The lorry car ran along a track from the washery to a track which was constructed atop the coke ovens. At the top of each oven was an opening, or "funnel," through which the coal was poured.

By 1899, one hundred ovens had been constructed at Redstone, and the company soon began building another group of the same number. Eventually, the plant encompassed 249 ovens, of which, 144 remain.1

1H. Lee Scamehorn, Pioneer Steelmaker in the West: The Colorado Fuel and Iron Company, 1872-1903 (Boulder, Colo.: Pruett Publishing Co., 1976), p. 83.

The beehive oven was the design most commonly utilized in Colorado. Taking its name from the cylindrical shape of an old-fashioned bee hive, the oven was constructed of fire brick by masons expressly imported from Denver to work on the coke facility. The ovens were built in long banks of two rows, back to back, and slightly offset from each other. The base of the oven was constructed of firebrick, was approximately twelve feet in diameter, and the flat-bottomed floor inclined slightly toward the front. The spherical dome was constructed of a special form of firebrick, and the funnel at the top, which allowed for introducing the coke and escape of smoke, was thirteen inches in diameter. The dome was constructed by carefully wedging in bricks toward the funnel, which acted as the keystone of the arch. The front of the oven had an arched opening three feet by three feet, where the material was removed from the oven. The door frame was constructed of iron. This opening was loosely bricked up and daubed with mud during the coking process and then removed. From base to dome, the oven measured approximately six feet.

In the spaces in between the ovens, a pier was constructed which supported the "I" beams carrying the standard gauge rails for the lorry cars. Clay and loam were firmly packed in any remaining space between the structures in order to insulate them, keeping the heat at a more even temperature, and aiding the coking process. Stone retaining walls supported the ovens in front. Along the front of each row of ovens were wharfs about sixteen feet wide and approximately three feet lower than the bottom of the oven doors. The wharfs were utilized to pull the coke out of the ovens and load into dump carts. Below the wharfs were railroad tracks which ran parallel to the oven rows. From the wharfs, the dump carts unloaded their coke into railroad cars for shipment elsewhere.2

The process of coking the coal was one of distillation, whereby volatile matter, moisture, sulphur and phosphorus were expelled, leaving fixed carbon and ash. The production of coke was initiated when the coal left the washery and was unloaded from the lorry car into the oven through the funnel. As the coal fell into the oven, it piled up in a conical shape. The pile of coal was leveled with a long iron hook inserted through the door and the door bricked up and daubed to exclude air. The heat remaining in the bricks from its previous operation began the distillation of volatile matter in the oven, which emitted a dense smoke. The coking process began at the top of the pile and continued downward, and slightly inward, toward the base, emitting a bright flame after about twelve hours. When the ovens were active, the

2Frederick C. Steinhauer, "Coking of Coal," Camp and Plant, 5 (23 January 1904): 29-33; Joseph D. Weeks, Report on the Manufacture of Coke, (Washington, D.C., Superintendent of Census, 1883): 86-89; and Holly Barton, Cokedale: 1907-1947, (Trinidad, Colo.: Las Animas County Centennial-Bicentennal Committee: 1976): 98-99.

flames released through the funnel lit the sky with a reddish glow. Gradually, the flame died off and the coke was ready to be quenched. After forty-eight hours, the coking was completed and the coke was cooled with water and pulled out through the front.3

PRESENT APPEARANCE OF THE DISTRICT

Today, the only standing remains of the coking operations at Redstone are the ovens which were once the focal point of the industry. State Highway 133 runs east of, and approximately parallel to, the remaining coke ovens. (See photograph no. 1) Immediately to the south of the ovens is a paved, private road which leads to the workings of Mid Continent Resources, Inc., the company which now operates the Coal Basin mines.4 The area directly in front of the first row of ovens, those facing east, has a slight drop-off and is now covered with natural vegetation. In front of this is a graveled pull-off for cars which contains a stone monument and plaque explaining the ovens.

Through approximately the center of the rows of remaining ovens runs a dirt road which leads to the Chair Mountain Stables. To the north of the coke oven rows is a chain link fence, undeveloped land, and Coal Creek. Behind the rows of ovens to the south of the dirt road is an area used as a corral, vehicle storage space, and sand dump for the Colorado Department of Highways. Between the eastern and western rows of ovens to the north of the dirt road is a flat area, approximately forty feet in width, which is used for storage of materials and old machinery. The rows of ovens form banks along the valley floor and natural vegetation has reintroduced itself to the area.

There are four rows of coke ovens, two sets of back to back groups, situated on a north/south line in the district. The Chair Mountain Stable dirt road divides the rows into northern and southern sections. The 144 coke ovens which remain may be divided into three categories: those which are unmodified but deteriorated to varying extents; those which have been altered in recent years; and those which may be described as ruins. Of the 144 ovens, 89 are still somewhat intact, eight are ruins, and forty-seven have been altered.

3Steinhauer, 29; Weeks, 82; Barton; 98-99.

4Coalbasin, the mining town, was abandoned by CF&I in 1909. The present operator, Mid Continent Resources, began working at Coal Basin in 1956.

The unaltered ovens (see photograph no. 2) range from those which have complete domes and nearly complete doors (although none has its iron door frame) to those which have partially lost their domes and/or have deteriorated front openings. The unaltered ovens display their original conical design and are constructed of blond firebrick, which has a glossy, reddish glaze on the side facing the interior of the oven. The most intact ovens have arched front openings and the complete opening, or funnel, in the top of the dome. Most of the deterioration to the unaltered ovens has taken place around the doors, where bricks in the arch have fallen away. Covering the tops, sides, and in between some of the ovens is the hardened loam used to insulate the structures. At the present time, vegetation is growing in front of, on top of, and in between the ovens. In some places, vegetation obscures portions of the ovens and their openings. Vegetation is denser toward the northern end of the district and among the most westerly row of ovens. Between some of the unaltered ovens are remnants of the original stone retaining walls which fronted the rows of ovens. Scattered rubble is found in front and between the rows of ovens.

The ruins are those ovens which have either collapsed on their own or have been partially removed. The Chair Mountain Stables road which runs through the middle of the oven rows removed some ovens and left portions of five others. Although the remnants of these ovens are interesting for their display of the firebrick used to construct such structures, only one represents enough original design to be considered contributing. Three other ovens at ends of rows are also too deteriorated to be considered contributing.

The altered ovens (see photograph no. 3) were remodeled during 1959-1961, by the present owner, Mid Continent Resources, Inc. During that period, the company produced coke in Redstone and shipped the material to foundries in California. In order to reactivate the ovens, the operator added concrete block facewalls to the front of the original structures, new door frames, and new floors. The coal was loaded through the top of the ovens by means of a conveyor belt (no longer extant), rather than lorry cars. These modified ovens have iron hearths and door frames with segmental arched openings. The area around the front opening has been covered with concrete. Eleven pipe air holes are above each door on the altered ovens. Two iron pipes project to the left side of each door. The concrete block walls are atop stone foundations and have flat rooflines. Original brick ovens lie behind each of these concrete openings and it is possible that, if these walls were removed without damaging original material, the ovens behind the walls could be evaluated as contributing.5

5John Reeves, President, Mid Continent Resources, Inc., Glenwood Springs, Colo., telephone interview, 3 October 1989.

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties: ( ) nationally (x) statewide ( ) locally

Applicable National Register Criteria (x) A ( ) B (x) C ( ) D
Criteria Considerations (Exceptions) ( ) A ( ) B ( ) C ( ) D ( ) E ( ) F ( ) G

Areas of Significance (enter categories from instructions)	Period of Significance	Significant Dates
ENGINEERING	1899	N/A
INDUSTRY	1899-1909	N/A

Cultural Affiliation N/A

Significant Person N/A

Architect/Builder
Colorado Fuel and Iron Company

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

The Redstone Coke Oven District is significant under criterion A, for its industrial significance and its representation of the growth and development of the coal mining and processing industry in the West, specifically in the Crystal River Valley of Colorado. The coke ovens were constructed by the Colorado Fuel and Iron Company during a period of expansion in the processing of coking coal which corresponded to increased demand from the smelting industry in the region. The growth of these two industries helped expand the economic base of the state and exercised a strong influence over Colorado's economy. The expansion of coal mining and coke production led to the growth of transportation and settlement in isolated areas such as the Crystal River Valley. In addition, the industry attracted the interest of wealthy businessmen such as John C. Osgood and brought jobs to hundreds of workers, including many immigrants, and thereby brought new populations and ethnic heritages to Colorado.

The Redstone Coke Oven District is also significant under criterion C, for engineering significance and its representation of a type of industrial structure, no longer in use, which has rapidly disappeared throughout the West. The Redstone coke ovens have engineering significance for their method of construction, reflected in their circular bases, spherical domes with funnels, arched front openings, and back to back, offset placement. The beehive coke oven constructed at Redstone was the kind most commonly preferred for use in Colorado, as well as much of the country, and represented the state of the art at that time. The design, materials, and craftsmanship of the ovens at Redstone display important facts about the engineering of the structures, from the specially manufactured brick, to the hand-cut stone retaining walls. The composition of the ovens represents the combination of standard construction techniques and local

(x) See continuation sheet

materials and topography. Because other structures related to the coking industry at Redstone have disappeared, the coke ovens are the last, best, symbolic elements of the industry which gave birth to the town, and are therefore highly significant.

This nomination is an addition to the multiple property submission, "Historic Resources of Redstone, Colorado, and Vicinity." The Redstone Coke Oven District is associated with the historic context, "John C. Osgood and the Development of Transportation and Mining in the Crystal River Valley, 1882-1903. All of the coke ovens in the district were constructed during the period 1899-1903, and although John C. Osgood left CF&I in 1903, the ovens continued to operate, somewhat sporadically, until abandonment of the operation in 1909.

The coke ovens have industrial significance because they were important in the history of Redstone's coal industry. The Colorado Fuel and Iron Company began building the first hundred of the Redstone coke ovens in the fall of 1899, and by the close of 1903 had erected a full complement of 249 of the structures. The ovens were constructed to manufacture coke from the coal extracted at the company's mine at Coal Basin. Until the mine at Coal Basin was completed, a drift at Placita, four miles south of Redstone, supplied coal to fire to the coke ovens at Redstone and fuel the Crystal River Railroad. The Coalbasin Mine, which was connected to Redstone by means of a twelve mile long narrow gauge railroad, made its first shipment of coal to Redstone in December 1900. Approximately sixty percent of the coal extracted at Coalbasin was used in making coke at Redstone. Coke production at Redstone was soon affected by a sharp decline in the demand for coke by smelters, labor unrest in the coal mining industry, John C. Osgood's departure from the Colorado Fuel and Iron Company, and the decision of that company to centralize its coking operations. Coking operations at Redstone were suspended in 1909, and total production from the Redstone Coke ovens was 331,559 tons.1

The property type represented by the Redstone coke ovens is the beehive coke oven. Within the district, approximately ninety-nine percent of the structures are associated with the historic context named above. Only one element, a monument to the coke ovens, is a later addition. All of the historic structures maintain integrity of location and the majority possess the physical characteristics required to be evaluated as contributing elements within the district. Although all of the ovens have been altered by natural deterioration, in the majority of cases the

1Denver Times, 1 October 1899, p. 4; and Denver Times, 11 December 1900, p. 5; "Predecessor Companies of the Colorado Coal and Iron Co., et al," , p. 190-191; and Camp and Plant, 3 (10 January 1903): 26.

original design, materials, and craftsmanship are apparent and have much to tell about the ovens' construction and function. The major alteration to the district came during the period 1959-1961, when forty-seven ovens were modified for modern use. During this period, concrete block retaining walls, new door frames, and new floors were added to this group of ovens. Although the walls obscure the original ovens, the original brick ovens are still extant and have the potential to become contributing resources if the later walls are removed.2

2John Reeves, Glenwood Springs, Colo., telephone interview, 3 October 1989.

9. Major Bibliographical References

Barton, Holly. Cokedale: 1907-1947. Trinidad, Colo.: Las Animas County Centennial Bicentennial Committee, 1976.

Camp and Plant. Vols. I-V. 1901-1904.

(x) See continuation sheet

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:
(x) State Historic Preservation Office
( ) Other State agency
( ) Federal agency
( ) Local government
( ) University
( ) Other
Specify Repository:

10. Geographical Data

Acreage of property: Approximately four acres

UTM References

	Zone	Easting	Northing		Zone	Easting	Northing
A	13	306460	4339140	B			
C				D			

( ) See continuation sheet

Verbal Boundary Description
The boundary of the Redstone Coke Oven Historic District is shown as the dash and dot line on the accompanying map, entitled "Redstone Coke Oven Historic District, September 1989."

( ) See continuation sheet

Boundary Justification
The boundary includes the extant coke ovens and the area immediately to the east of the ovens which contains a related monument and parking area. The eastern boundary of the district is established by Colorado Highway 133.

( ) See continuation sheet

11. Form Prepared By

Name/Title: R. Laurie Simmons
Organization: Colorado Department of Natural Resources Date: October 1989
Street & Number: 423 Centennial Building, 1313 Sherman Street Telephone: 866-3568
City or Town: Denver State: CO Zip Code: 80203

McCoy, Dell. The Crystal River Pictorial. Denver: Sundance Publications, 1972.

_____. Denver, Colo. Telephone interview, September 1989.

Mechau, Paula. Redstone, Colo. Telephone interview, September, 1989.

"Predecessor Companies of the Colorado Coal and Iron Co., et al. " (Typewritten.)

Reeves, John. President, Mid Continent Resources, Inc., Glenwood Springs, Colo. Telephone interview, 3 October 1989.

Scamehorn, H. Lee. Pioneer Steelmaker in the West: The Colorado Fuel and Iron Company, 1872-1903. Boulder, Colo.: Pruett Publishing Co., 1976.

_____. Boulder, Colo. Telephone interviews, September and October, 1989.

Weeks, Joseph D. Report on the Manufacture of Coke. Washington, D. C.: Superintendent of Census, 1883.

Young, F. "Topographical Map of Property of J. C. Osgood and Adjacent Town of Redstone." August, 1903.

Index to Photographs

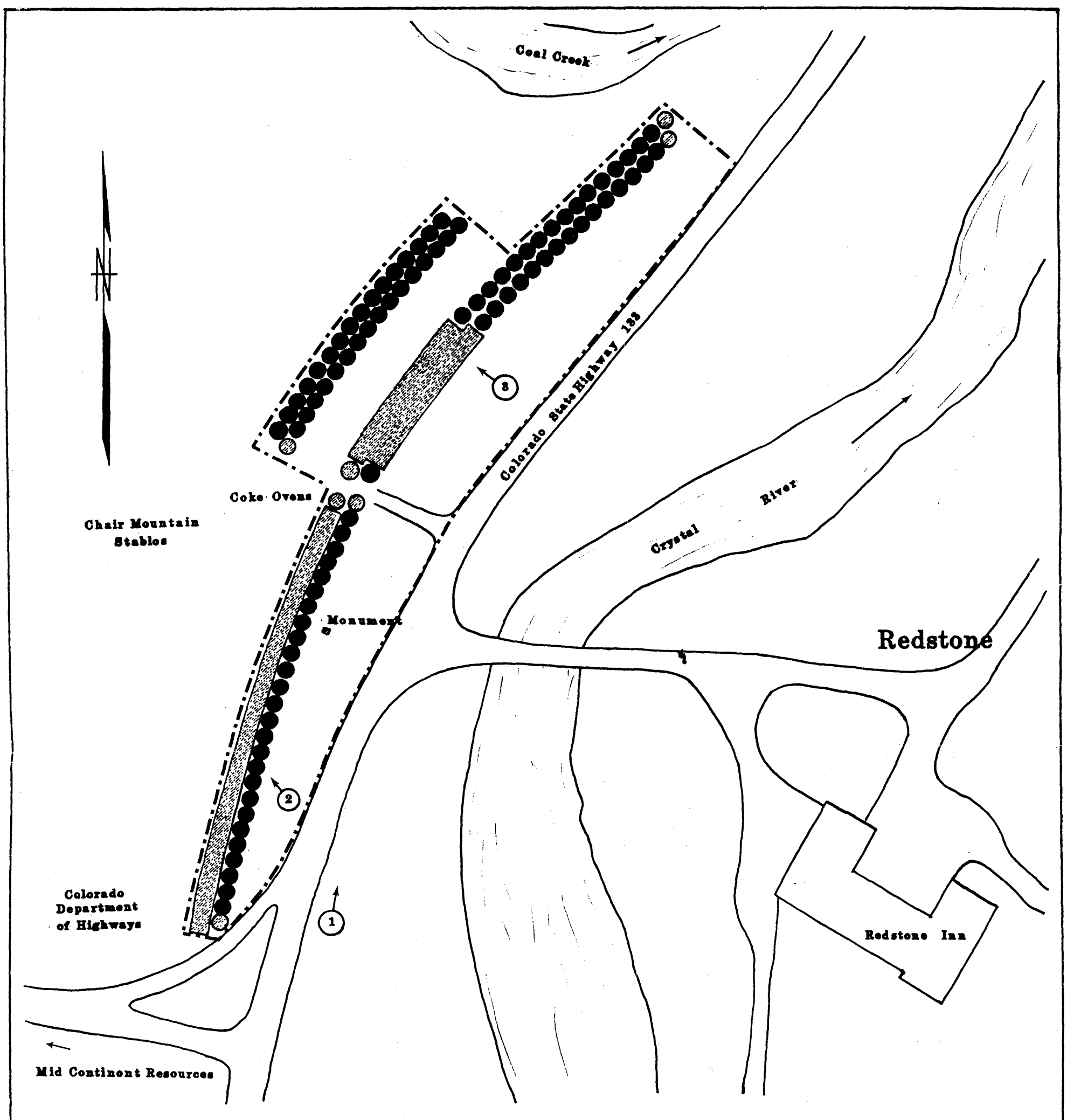
For all photographs of the Redstone Coke Oven District:

Name of the district: Redstone Coke Oven District
City and State: Vicinity of Redstone, Colorado
Location of Original Negative: Colorado Historical Society Office of Archaeology and Historic Preservation

1. Redstone Coke Ovens Facing Highway 133
   October 1988
   Camera facing north
   Photographer: Roger Whitacre

2. Unaltered Redstone Coke Ovens
   October 1988
   Camera facing northwest
   Photographer: Roger Whitacre

3. Altered Redstone Coke Ovens
   September 1989
   Camera facing northwest
   Photographer: R. Laurie Simmons



REDSTONE COKE OVEN HISTORIC DISTRICT

Redstone, Pitkin County, Colorado

September 1989

Based on Pitkin County maps 2729-201 and 2729-202.