WYOMING STATE GEOLOGICAL SURVEY

ZINC-LEAD-COPPER-SILVER-GOLD-MASSIVE SULFIDE MINERALIZATION AT THE BROADWAY MINE, SIERRA MADRE, WYOMING

by

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MINERAL REPORT MR92-4

Laramie, Wyoming
1992

This field report has not been reviewed for conformity with the editorial standards of the Wyoming State Geological Survey.

Geological Survey of Wyoming
Mineral Report MR92-4

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Location and accessibility

On June 3rd, 1992, I briefly examined the Broadway property on the East Fork Creek in the SW/4 section 32, T13N, R83W of the Dudley Creek 7 1/2 minute quadrangle. The property is accessible by the Blackhall Mountain Forest road running 19 miles south of Encampment. The last 2 1/2 miles are on rough jeep trail which was scheduled to be reclaimed by the Forest Service later in the summer.

Previous reclamation of the property has destroyed all field relationships on the property. The old shafts, trenches, and outcrops have all been buried, and ore samples are scattered all over the mineralized area.

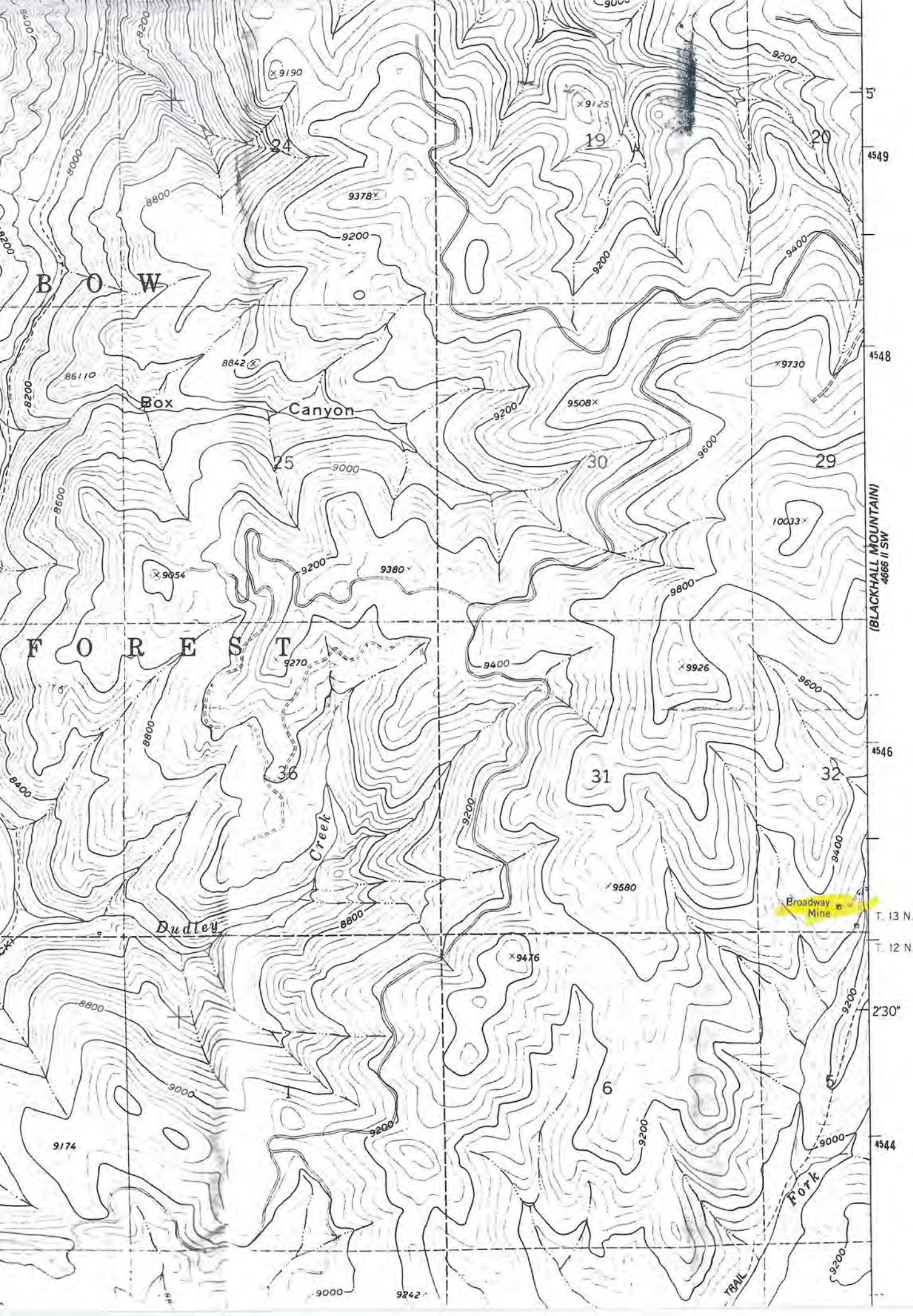
Exploration History

Early activity The available records indicate the Broadway property has had a long period of exploration activity. The property was initially staked by Bill Sodder in 1904 who sunk a 20 foot deep shaft in search of gold. In 1927, B.L. Bensen acquired the property and sunk three additional shafts of about the same depth.

Bureau of mines The U.S. Bureau of Mines examined the property in 1942 collecting samples from the mine workings. According to Osterwald (1947), the Bureau of Mines collected five character samples and one channel sample. These included: (1) a channel sample along the west side of shaft No. 1, about 4 feet from the bottom (Table 1); (2) a sample from the mine dump of the No. 2 shaft; (3) a sample from the No. 3 shaft; (4) rock chips from an outcrop near the No. 3 shaft; (5) a selected sample from the No. 1 shaft; (6) another selected sample from the No. 1 shaft. A platinum group metal was identified by spectrograph in very small amounts in the samples.

Table 1. U.S. Bureau of Mines assay results.

sample #	Zn(%)	Pb(%)	Cu(%)	S(%)
(1)	12.5	1.9	0.02	7.65
(2)	4.2	1.9	--	--
(3)	0.0	1.0	--	--
(4)	0.0	0.5	--	--
(5)	10.2	0.9	--	--
(6)	5.2	1.5	--	--


B O W
F O R E S T
Box Canyon
Dudley Creek
Broadway Mine
(BLACKHALL MOUNTAIN)
4666 II SW
T. 13 N.
T. 12 N.
2'30"
TRAIL
Fork
24
19
20
25
30
29
36
31
32
6
5
9190
9125
9378
9730
9508
10033
9054
9380
9926
9270
9580
9476
9174
9242
8842
8611.0
4549
4548
4546
4544

Geological Survey of Wyoming, early investigations F.W. Osterwald with the Geological Survey of Wyoming examined the Broadway mine in 1947, and produced a geologic map of property (Plate 1). Osterwald noted the the property had been examined by geologists with New Jersey Zinc.

Osterwald (1947) reported the ore zone was 1,000 feet long and about 50 feet wide, and continued under a heavily wooded area. The ore mineralogy included massive sphalerite and minor galena with local disseminated chalcopyrite, chalcocite, and covellite. Small amounts of secondary malachite and chrysocolla were observed. The ore content was described to range from 3 to 35% throughout the property. Near shaft No. 1 was a grey and white gneissic rock hosting 1 to 5% disseminated chalcocite, chalcopyrite, and bornite.

The ore was described as being localized along the contact of a granite and a complex of gneiss, amphibolite, gabbro, and diorite. Considerable amount of granite pegmatite was associated with the ore zone. The dip of the ore body varies from 50°SE to 50°NW. The gneisses and amphibolites have been fractured and recrystallized near the contact with granite. Ore has replaced the amphibolites where they have been sheared. Replacement was controlled by a set of northwest trending cross-fractures. The ore deposit is zoned as copper is concentrated near the Sodder shaft and zinc near the No. 1 shaft (Osterwald, 1947).

Analyses of grab sample material was reported by Root of the Geological Survey of Wyoming (Table 2).

Table 2. Geochemical analyses of Broadway mine samples, no rock descriptions given.

description	Cu(%)	Pb(%)	Zn(%)	Ag(opt)	Au(ppm)
Above shaft 1	0.82	1.0	0.04	9.1	0.5
Blake #1	0.003	1.2	6.9	0.11	0.1
Lower #1	0.44	1.0	0.031	1.5	0.3
Lower #2	0.065	0.52	2.3	0.35	0.4

Bunker Hill Mining Company Bunker Hill Mining Company explored the property during the 1966 and 1967 field seasons. During this period, geologic exploration consisted of mapping, sampling, trenching, and drilling. Nine shallow drill holes totaling 850 feet were completed, two of which intersected significant mineralization. The best drill intercept was near the No. 2 shaft, and encountered 20.5 feet of 8% Zn. Based on a small amount of data it was estimated that some of the ore in sight in a small area of 150 feet by 8 feet by 100 feet deep consisted of 12,000 tons of 10% Zn.

DeNault DeNault (1967) conducted a thesis project of the Broadway property, mapping the area around the property and collecting stream sediment samples. At the same time, he completed a small soil geochem survey indicating the property to be anomalous in lead and zinc.

Petrographic work at this time identified the host rock pyroxenite to typically consist of diopside with minor enstatite replaced entirely or partially by spessartine. One sample examined by DeNault contained 35% olivine.

Amselco Amselco examined the Broadway property in 1976. In the following year of 1977, they drilled the deposit and also completed zinc, lead, and copper soil geochem surveys over a relatively large area. The surveys identified a 3,000 foot long copper soil geochem anomaly, a 2,200 foot long, 100 to 1,000 foot wide zinc soil anomaly, and a 1,500 foot long lead soil geochem anomaly.

Mineralization was recognized as massive zinc, lead, and copper sulfide associated with a lens of tightly folded pyroxene-garnet rock. The pyroxenite was traced for nearly 1,400 feet on the surface.

1992 Field Work On June 3rd, 1992, the Broadway property was briefly examined by the Geological Survey of Wyoming, and a suite of samples were collected from the property for geochemical analyses. Ore sample specimens collected during this investigation consisted of banded massive sphalerite with lesser galena in a matrix of tremolite and spessartine, and granodiorite with disseminated chalcopyrite and chalcocite. The host rock of the massive sulfide is a pyroxene-spessartine hornfels and appears to be typical of skarn.

Five samples collected for assay included: (1) BW1-92, a limonite-stained felsite; (2) BW2-92, granodiorite with disseminated chalcopyrite and chalcocite; (3) BW3-92, sphalerite-galena-bearing pyroxenite hornfels; (4) BW5-92, spessartine-calcite-quartz-pyroxene-actinolite hornfels with massive sphalerite and minor galena; and (5) BW6-92, spessartine-calcite-diopside-actinolite hornfels with massive sphalerite and a trace of galena. The samples were highly anomalous in zinc, lead, gold, and silver (Table 3).

Table 3. Rock analyses of samples collected in 1992.

sample #	Zn(%)	Pb(%)	Cu(%)	Au(ppb)	Ag(opt)	Pt(ppb)	Pd(ppb)
BW1-92	0.31	0.30	0.77	3,278	2.0	--	--
BW2-92	0.02	0.75	1.82	1,604	12.18	--	--
BW3-92	4.34	5.66	0.18	156	1.37	--	--
BW5-92	7.66	0.69	0.05	104	0.2	<5	2
BW6-92	8.17	0.62	--	215	0.29	--	--

References Cited

DeNault, K.J., 1967, Geology and distribution of copper, lead, and zinc in streams and soil - Broadway mine area, Carbon County, Wyoming: University of Wyoming M.S. thesis, 45 p.

Osterwald, F.W., 1947, Report of geologic investigation of the Broadway lead-zinc claim, Carbon County, Wyoming: Geological Survey of Wyoming Mineral Report 47-2 (unpublished), 4 p.

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A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Geochemical
Lab Report

DATE PRINTED: 30-JUN-92

REPORT: V92-32097.0 (COMPLETE)

PROJECT: D692-V PAGE 1A

SAMPLE NUMBER	ELEMENT UNITS	AU PPB	PT PPB	PD PPB	Ag PPM	Cu PPM	Pb PPM	Zn PPM	LA PPM	CE PPM	Nd PPM	Sm PPM
R2 BC2-92									7	10	<10	1.0
R2 BC5-92									218	524	190	35.6
R2 BC6-92									7	8	<10	0.9
R2 BW1-92*		3278			>50.0	7740	2950	3120				
R2 BW2-92		1604			>50.0	>20000	7539	196				
R2 BW3-92		156			47.1	1829	>10000	>20000				
R2 BW5-92		104	<5	2	6.7	482	6880	>20000				
R2 BW6-92		215			9.9		6177	>20000				

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BONDAR-CLEGG

A DIVISION OF INCHCAPE INSPECTION & TESTING SERVICES

Certificate of Analysis

REPORT: V92-32097.6 (COMPLETE)

DATE PRINTED: 10-JUL-92

PROJECT: D692-V

SAMPLE NUMBER	ELEMENT UNITS	Ag OPT	Cu PCT	Zn PCT	Pb PCT
R2 BW1-92		2.00			
R2 BW2-92		12.18	1.82		
R2 BW3-92				4.34	5.66
R2 BW5-92				7.66	
R2 BW6-92				8.17	