Wyodak Coal and Manufacturing Company
(Paris-Bloomington Phosphate/Vanadium Area)

One of the final chapters in phosphate mining in the vicinity of Paris and Bloomington, Idaho was the exploration and development carried on in 1942-1943 by the Wyodak Coal and Manufacturing Company, a subsidiary of the Homestake Mining Company of Lead, South Dakota (Figures 78 and 79). While phosphate rock was being explored and developed, the main material of interest was the vanadium content of the rock. Vanadium is alloyed with iron to make a very tough, hard steel used in munitions, weapons, and armor. Prior to World War II, the U. S. had to depend on shipments of vanadium from unreliable foreign sources and a small domestic supply from mines in southeast Utah and southwest Colorado. With the advent of World War II, it appeared that these domestic mines could not supply enough vanadium ore to fulfil the immediate needs of the country. A search for new domestic sources of vanadium was initiated throughout the nation (Ravitz, et al, 1947).

Vanadium was recognized by USGS chemists as early as 1911 in a phosphate rock sample from the vicinity of Driggs, Idaho, in the Teton Basin District (Mansfield, 1927). Because of the early phosphate mining in the 1920's in the Bear Lake and Paris Canyon mines, the presence of vanadium in the phosphate rock of this area was well established and influenced the decisions to focus attention on the Paris-Bloomington deposits (Butner, 1949). Possibilities of the commercial recovery of vanadium as a byproduct in the manufacture of fertilizer from Idaho phosphate ore had been discussed as early as 1923 (Hess, 1923). During the 1930's, the Anaconda Copper Mining Company, at their facilities at the Conda Mine, conducted research on the recovery of vanadium from Conda ore, and in January, 1941, began commercial recovery of vanadium as a byproduct material (Rubey, 1943).

Because of Anaconda's success in recovering vanadium, field investigations began in earnest in 1942 for more and better vanadium-bearing phosphate ore (Rubey, 1943). To prevent speculative claim location for vanadium, Secretary of the Interior Harold Ickes withdrew extensive areas of public lands in the western phosphate deposits in order to allow a large scale program of testing and proper public control of the resource (USGS, 1943). The USGS initiated exploration in the Paris-Bloomington area in 1942 and dug three trenches during the summer (Wyodak, 1944).

The task of developing the vanadium in the phosphate ore was given to the Reconstruction Finance Corporation (RFC), a Federal agency. The RFC was created on January 22, 1932 to extend aid during the Depression to agriculture, commerce, and industry in the form of loans, expertise and other forms of assistance. The RFC consisted of many sub-agencies, one of which was the Metals Reserve Company (MRC). The MRC was organized on June 28, 1940 to provide, stockpile and dispose of metals and minerals defined as strategic and critical and to pay subsidies to producers of such materials. The MRC was active in the mining industry throughout the years of World War II. It was dissolved and merged back into the RFC on July 1, 1945 and the RFC itself was abolished on June 30, 1957 (NARA, 1987).

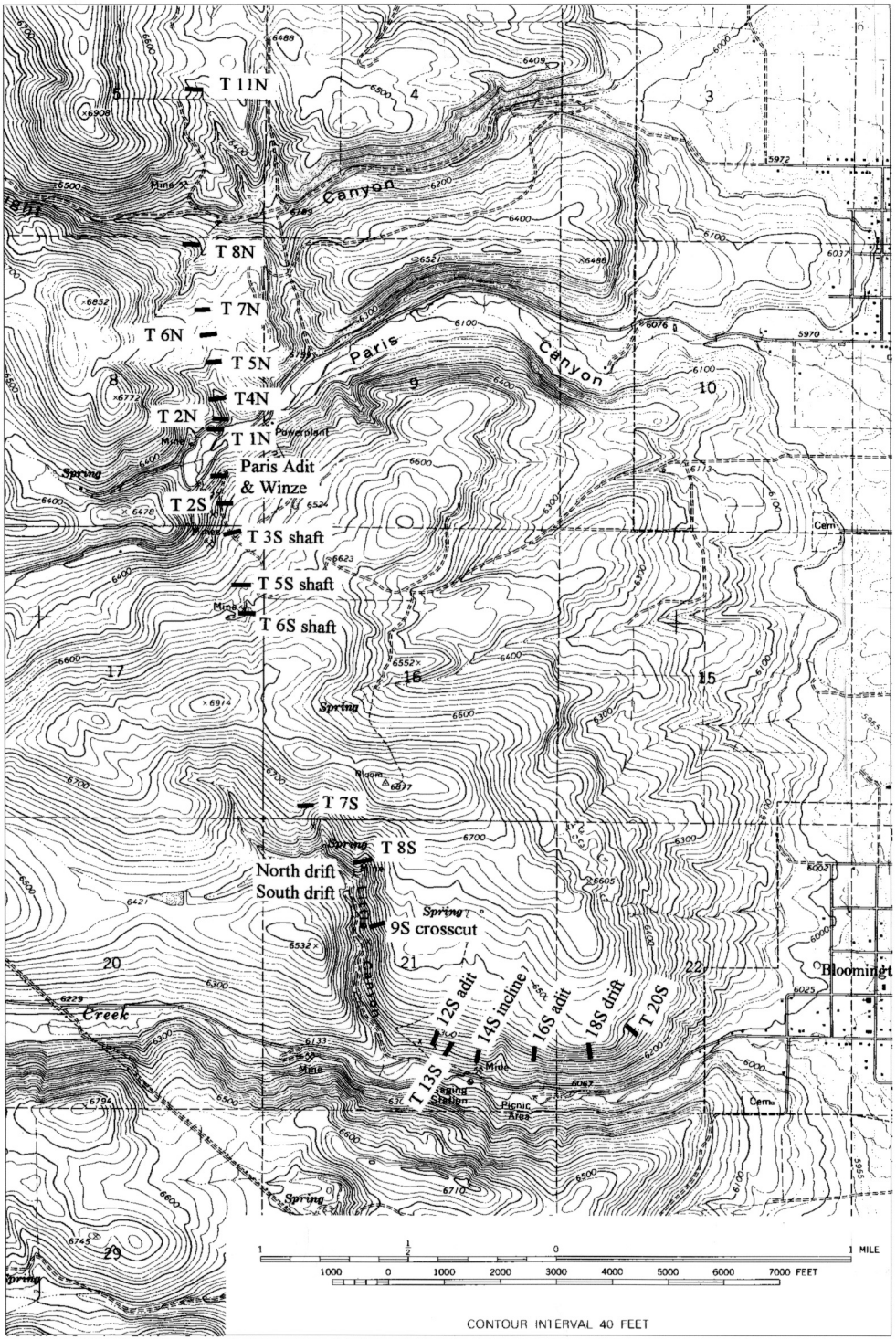

Figure 78. Map showing the location of Wyodak trenches and underground development, Bear Lake County, Idaho.

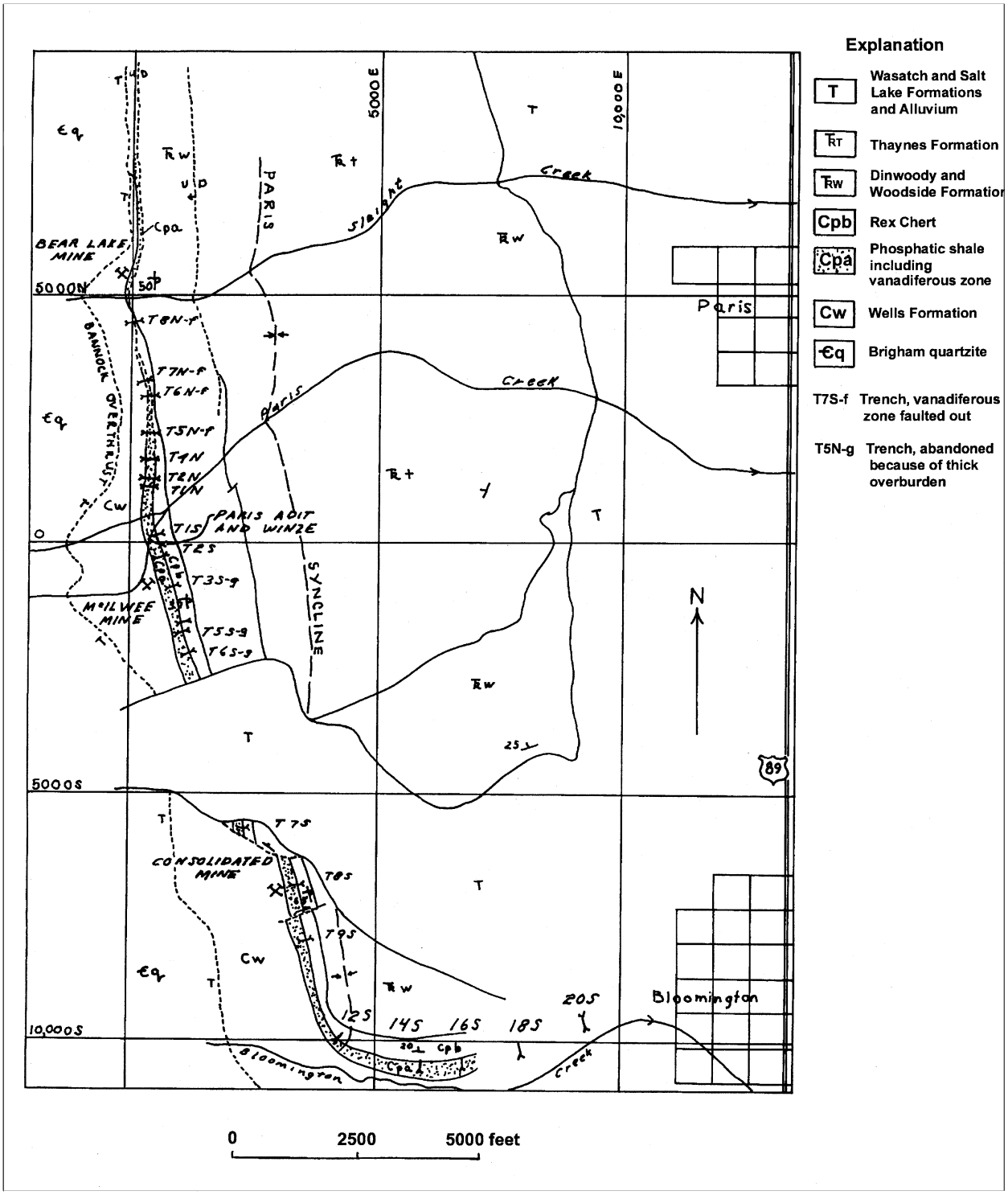

Figure 79. Geologic sketch map of the Paris-Bloomington vanadium area, adapted from Wyodak, 1944. Map by V. E. McKelvey and J. D. Strobell, December 5, 1943.

Once the MRC focused in on the Paris-Bloomington area, they started to acquire properties by either purchase or lease from the current owners. The Paris Post (1942b) reported that two individuals, C. E. Beymer and C. I. Wild (probably working for MRC) were in the area talking to landowners about purchasing their properties. The Paris Post (1942c) also reported that R. C. McIlwee had leased the McIlwee Mine property to the MRC. The MRC finally purchased 503.76 acres and leased 1,423.30 acres in the Paris-Bloomington area (Wyodak, 1944).

The MRC contracted with the Wyodak Coal and Manufacturing Company in September, 1942 as the agent to conduct mineral exploration, development, and operation. In February, 1943, Wyodak began an extensive exploration and development of the vanadium resource on the purchased and leased property in the vicinity of Paris and Bloomington. This exploration program included extensive trenching and underground development (Tables 7 and 8). The first event was plowing snow, surveying, reopening the old Consolidated Mine for sampling, and digging two trenches in Paris Canyon (McKelvey and Strobell, 1943a; Wyodak, 1944). The old McIlwee Mine was also to be reopened but it was found to be in such poor condition that idea was abandoned (Wyodak, 1944). A new adit was driven near the McIlwee Mine to sample the same beds as the mine in March, 1943.

By July, 1943, the new Paris adit was advanced 360 feet with a winze to a depth of 175 feet down dip. A drift was advanced 15 feet from the winze at the 125-foot level. A drift had been advanced 50 feet to the north in the Consolidated Mine. Two trenches had been completed, and two others were in progress. Phosphate rock at depth in the Paris winze and in the drift at the Consolidated Mine were found to contain oil and burned readily (McKelvey and Strobell, 1943b). Exploration in Bloomington Canyon also started in July (Figure 80) (Wyodak, 1944).

Table 7. Tabulation of Wyodak trenching, Paris-Bloomington phosphate/vanadium area, Idaho (from Wyodak, 1944).

Trench Number	Width of Trench	Length of Trench	Maximum depth	Trench Number	Width of Trench	Length of Trench	Maximum depth
T 1 N *	3 Ft.	135 Ft.	10.0 Ft.	T 5 S	3 Ft.	95 Ft.	62.5 Ft.
T 2 N *	3 Ft.	200 Ft.	12.0 Ft.	T 6 S	3 Ft.	31 Ft.	40 Ft.
T 4 N *	3 Ft.	89 Ft.	12.0 Ft.	T 7 S	3 Ft.	75 Ft.	10.0 Ft.
T 5 N	3 Ft.	80 Ft.	10.0 Ft.	T 8 S *	3 Ft.	61 Ft.	12.0 Ft.
T 6 N	3 Ft.	105 Ft.	5.0 Ft.	T 12 S	18 Ft.	60 Ft.	18.0 Ft.
T 7 N	3 Ft.	80 Ft.	7.0 Ft.	T 12 S (a)	18 Ft.	60 Ft.	16.0 Ft.
T 8 N	3 Ft.	50 Ft.	5.0 Ft.	T 12 S (b)	18 Ft.	120 Ft.	8.0 Ft.
T 11 N (a)	3 Ft.	6 Ft.	10.0 Ft.	T 12 S ©	18 Ft.	45 Ft.	11.0 Ft.
T 11 N (b)	3 Ft.	31 Ft.	18.0 Ft.	T 13 S	12 Ft.	60 Ft.	22.0 Ft.
T 1 S *	3 Ft.	164 Ft.	12.0 Ft.	T 13 S (a)	12 Ft.	80 Ft.	12.0 Ft.

Trench Number	Width of Trench	Length of Trench	Maximum depth	Trench Number	Width of Trench	Length of Trench	Maximum depth
T 2 S (a) *	4 Ft.	135 Ft.	14.0 Ft.	T 14 S (a) *	4 Ft.	78 Ft.	27.0 Ft.
T 2 S (b)	4 Ft.	35 Ft.	8.0 Ft.	T 14 S (b) *	16 Ft.	30 Ft.	6.5 Ft.
T 3 S (a)	4 Ft.	30 Ft.	6.0 Ft.	T 16 S *	4 Ft.	70 Ft.	20.0 Ft.
T 3 S (b)	3 Ft.	12 Ft.	18.5 Ft.	T 18 S	4 Ft.	225 Ft.	10.0 Ft.
T 4 S	3 Ft.	100 Ft.	7.5 Ft.	T 20 S	18 Ft.	50 Ft.	15.5 Ft.

* - Indicates trenches which located the vanadiferous phosphate beds

Table 8. Tabulation of Wyodak's underground development, Paris-Bloomington phosphate/vanadium area, Idaho (from Wyodak, 1944).

Drifts

Paris Creek	Number of Feet
Adit	
	400.0
No. 2 crosscut	30.0
No. 3 crosscut	15.5
2nd level station crosscut	32.0
South drift	12.0
Crosscut 20 feet below station	12.0
Bloomington Creek	
North drift, Consolidated Mine	417.0
No. 1 North crosscut	8.0
South drift, Consolidated Mine	148.0
No. 1 South crosscut	8.5
No. 9 South crosscut	188.0
No. 12 South adit	215.5
No. 14 South adit	384.5
Car drifts	12.0
No. 1 West drift	143.5
No. 16 South adit	223.5
No. 1 East drift	135.0
No. 18 South adit	195.5
Total drifts	2,614.0

Raises and Winzes

Paris Creek	Number of Feet
Winze	
	322.0
Bloomington Creek	
No. 12 South adit	
Exploratory raises	25.5
No. 14 South adit	
No. 1 West raise	61.0
No. 2 West raise	98.0
Exploratory raises	42.0
No. 16 South adit	
Exploratory raises	11.0
Winze	25.0
Total raises and winzes	584.5
Total underground development	3,198.5

By August, 1943, the Paris adit had advanced to 395 feet and the winze was at 250 feet. The north drift in the Consolidated Mine had advanced to 190 feet and a new drift to the south was at 60 feet. Trenching and sampling continued and inclines and drifts were driven off of those trenches that intersected the vanadium zones. There were two inclines driven off of trenches; a 120-foot incline out of 14S (Figure 81), and a 30-foot incline out of 16S. Three trenches were completed (McKelvey and Strobell, 1943c).

By October, 1943, both north and south drifts in the Consolidated Mine were advanced, along with the 14S and 16S inclines. Water was encountered at the 200-foot level in the Paris winze (30 gpm). The Paris adit was eventually advanced to a length of 400 feet and the winze was sunk to a depth of 322

Figure 80. Phosphate prospects on north side of Bloomington Canyon, Idaho. The outcrop of the bedrock formation is completely concealed by a wash of boulders derived from Eocene or Pliocene conglomerates. Trench numbers correspond to Figures 78 and 79. Photo by R. W. Richards, #118, USGS Photographic Library.

feet where it was discontinued because pumps could no longer keep up with the water flow. Several new trenches and inclines were started (McKelvey and Strobell, 1943d). There was some question about how much longer the exploration would continue in the area. In an unpublished letter, McKelvey reported that the ore stockpile at the 14S incline was on fire, apparently started by spontaneous combustion. Perhaps the early prospectors who mistook the phosphate shale for coal were not so far off!

By November, 1943, the drifts in the Consolidated Mine were discontinued, trial stopes in the 14S west incline were developed (Figure 82), and trenching for the most part was completed. Stoping proved to be quite risky as the hanging wall continued to break between timbers and after about three days, the stopes would completely cave. No new instructions for continuing exploration had been received from the MRC, so the future was uncertain for the project (McKelvey, 1943).

McKelvey, in a letter to R. P. Fischer, dated November 24, 1943, reported that the order to cease work in the Paris-Bloomington area had been received by Wyodak. Underground work stopped on November 27 with the completion of the 14S incline (380 feet) and the 16S incline (260 feet), and all ground work (track pulling, removal and shipping of equipment, etc. was completed in December, 1943.

With the completion of the vanadium exploration in December, 1943, the total development between Sleight and Bloomington Canyons consisted of 30 trenches, nearly 2,500 feet of underground

Figure 81. Bloomington Canyon, view north, showing Bloomington Creek, compressor equipment in an old road-metal quarry, and the dump at No. 14 South incline, 1944. Photo from Wyodak, 1944.

Figure 82. Number 1 west stope, 14S incline, Bloomington Canyon, 1944, view north toward the chute from the upper end of the stope. Photo from Wyodak, 1944.

development consisting of drifts, crosscuts, raises, winzes and several experimental stopes (Service, 1967; McKelvey and others, 1986). Broken down by area, Paris Canyon was explored and sampled by 725 feet of underground workings, six trenches and one short crosscut. The Consolidated Mine had 500 feet of new workings along with three trenches. Bloomington Canyon was explored and sampled by 1,200 feet of underground workings, several experimental stopes, and five trenches. The results of the geologic mapping program and vanadium zone identification were published by McKelvey and Strobell (1955).