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report of investigations 6118

SAMPLING OF LYNCH CREEK BERYLLIUM-TUNGSTEN PROSPECT, LANDER COUNTY, NEV.

By Robert Hall

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

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SAMPLING OF LYNCH CREEK BERYLLIUM-TUNGSTEN PROSPECT, LANDER COUNTY, NEV.

by

Robert Hall [1]

INTRODUCTION AND SUMMARY

The Lynch Creek beryllium-tungsten prospect was investigated as part of the domestic beryllium resource studies by the Bureau of Mines. This prospect is in the Birch Creek mining district, Lander County, Nev., 9 airline miles south of Austin. A tungsten mine was operated intermittently from 1952 to 1957. Beryl was identified in the pegmatite dikes in 1960, and the lode claims were relocated. No beryl has been produced.

Rocks in the area are Paleozoic sediments[2] cut by pegmatite and aplite dikes and quartz stringers. Beryl occurs in random pockets, as disseminations throughout the dikes, and in occasional pockets in the quartz stringers.

The property was examined by an engineer[3] from the Bureau of Mines in September 1960. Further investigations were recommended resulting in a sampling project which began June 26 and was completed July 8, 1961. Bureau of Mines work consisted of constructing 6,000 feet of access roads, 1,600 feet of bulldozer trenching, and percussion and hand drill sampling of the beryl-bearing pegmatite dikes and quartz stringers.

ACKNOWLEDGMENTS

Acknowledgments are made to Hugo Ostberg, co-owner of the property, for his continuous cooperation throughout the project, and to C. L. Gleason of the U.S. Department of Agriculture for loaning an aerial photograph and map of the area.

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[1]Mining engineer, Bureau of Mines, Division of Mineral Resources, Region II, San Francisco, Calif.

[2]Spurr, J. E. Geology of Nevada south of the 40th parallel. Geol. Survey Bull. 208, 1903, p. 95.

[3]George H. Holmes, Jr., Mining engineer, Bureau of Mines, Division of Mineral Resources, Region II, Reno, Nev.

Work on manuscript completed February 1962.

LOCATION AND ACCESSIBILITY

The property comprises six unpatented lode claims in sections 4, 5, 8, and 9, T. 17 N., R. 44 E, of the Mount Diablo base and meridian, Birch Creek mining district, Lander County, Nev.

The property is reached from Austin, the county seat, by traveling southeast on U.S. Highway 50, 12 miles to its junction with Nevada State Highway 8A, then south on Highway 8A for 6 miles to the Hickison ranch turnoff, and 5 miles northwesterly over an unimproved road to the mine area (fig. 1).

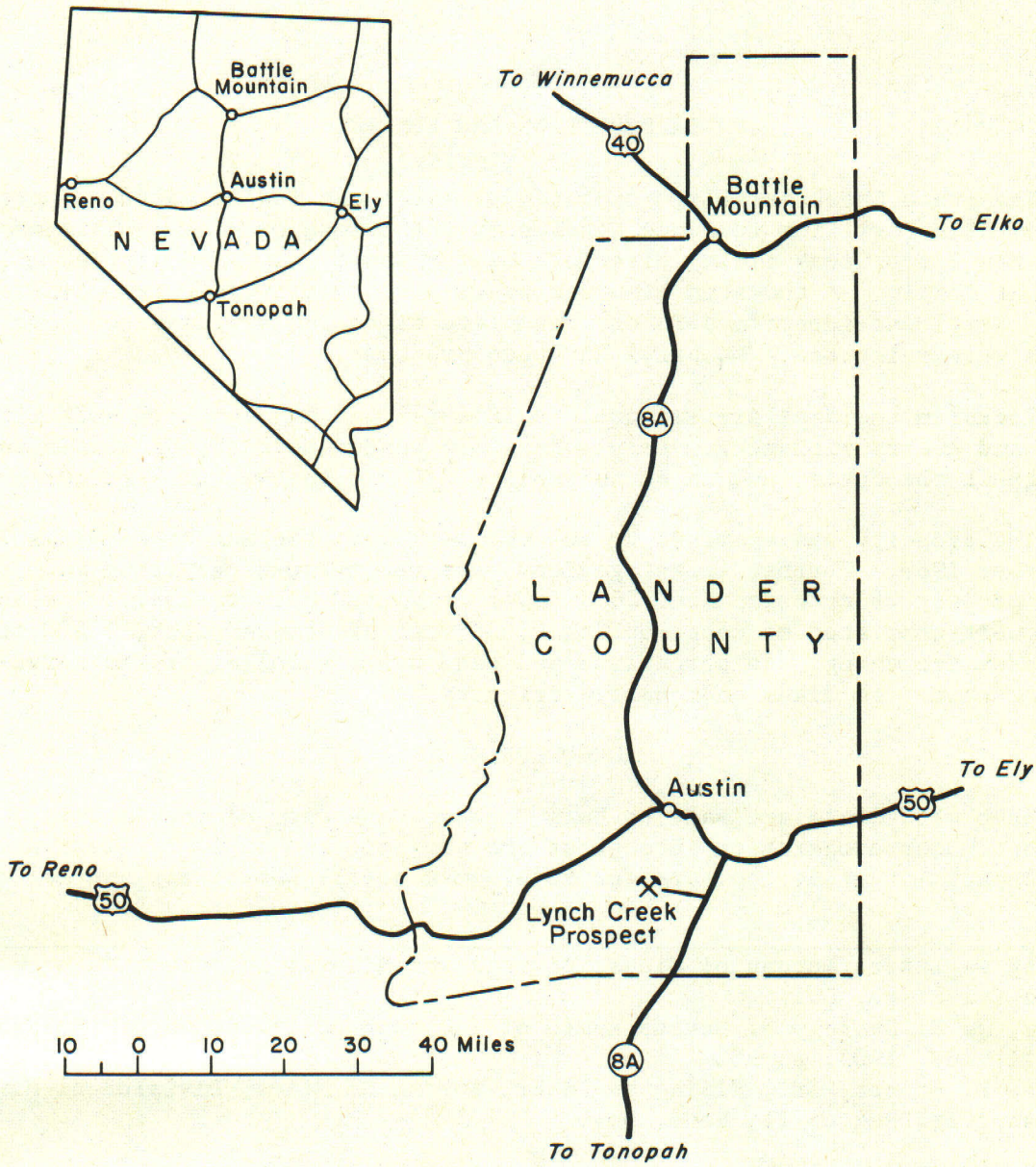

FIGURE 1. - Location Map, Lynch Creek Beryllium-Tungsten Prospect, Lander County, Nev.

PHYSICAL FEATURES AND CLIMATE

Typical climatic conditions of the area are warm summers, cold winters, and little precipitation. Vegetation includes sage brush, piñons, and mountain mahogany on the slopes, with aspen and birch along the creek bottoms.

The claims lie along the steep, rugged sides of Lynch Creek at elevations ranging from 7,200 to 8,800 feet (fig. 2). Water for domestic and mine use is obtained from Lynch Creek. No power or communication lines are installed at the mine.

Austin, the nearest supply center, has a motor freight depot, telephone and telegraph communications, and living accommodations. The nearest rail point is Battle Mountain, about 104 miles to the north on U.S. Highway 40, which is serviced by the Southern Pacific and Western Pacific railroads. All supplies for mining operations are trucked to the mine area. Skilled miners are available in the Austin, Eureka, and Round Mountain areas. Prevailing wage rates for miners in these areas range upward from $20 a day.

HISTORY

Scheelite was discovered in the pegmatite dikes of the Lynch Creek area by Orvin Hammond, Austin, Nev., who subsequently located the Blue Horizon group of six claims and operated the mine from 1952 through 1954. Frank Heskett, Reno, Nev., operated the mine in 1955. The work done through 1955 included a short adit, a raise to the surface, and some stoping.

In 1956 to 1957 the property was operated by the T & D Mining Company, Sparks, Nev. The company installed an aerial tramway, built a small gravity mill, drove the lower adit to cut the pegmatite dike, and started a stope.

The mine was active only during the Government's domestic tungsten purchase program. Only the mill foundations and tailings pile remain at the site. Total production was small.

In 1960 beryl was identified in the pegmatite dikes and quartz stringers by Hugo Ostberg, Austin, Nev., who, with Walter Dory, relocated the abandoned claims. No beryl has been produced up to the time of this investigation, July 1961.

DESCRIPTION OF DEPOSIT

The rocks in the area are Paleozoic calcareous shales with inclusions of argillaceous slates and dark-blue limestones.[4] In some areas the limestones have altered to marble and the shale to slate. The sediments strike northwesterly and dip 25° to 85° E. Granodiorite is present to the south and west of the mine area.

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[4]Work cited in footnote 2.

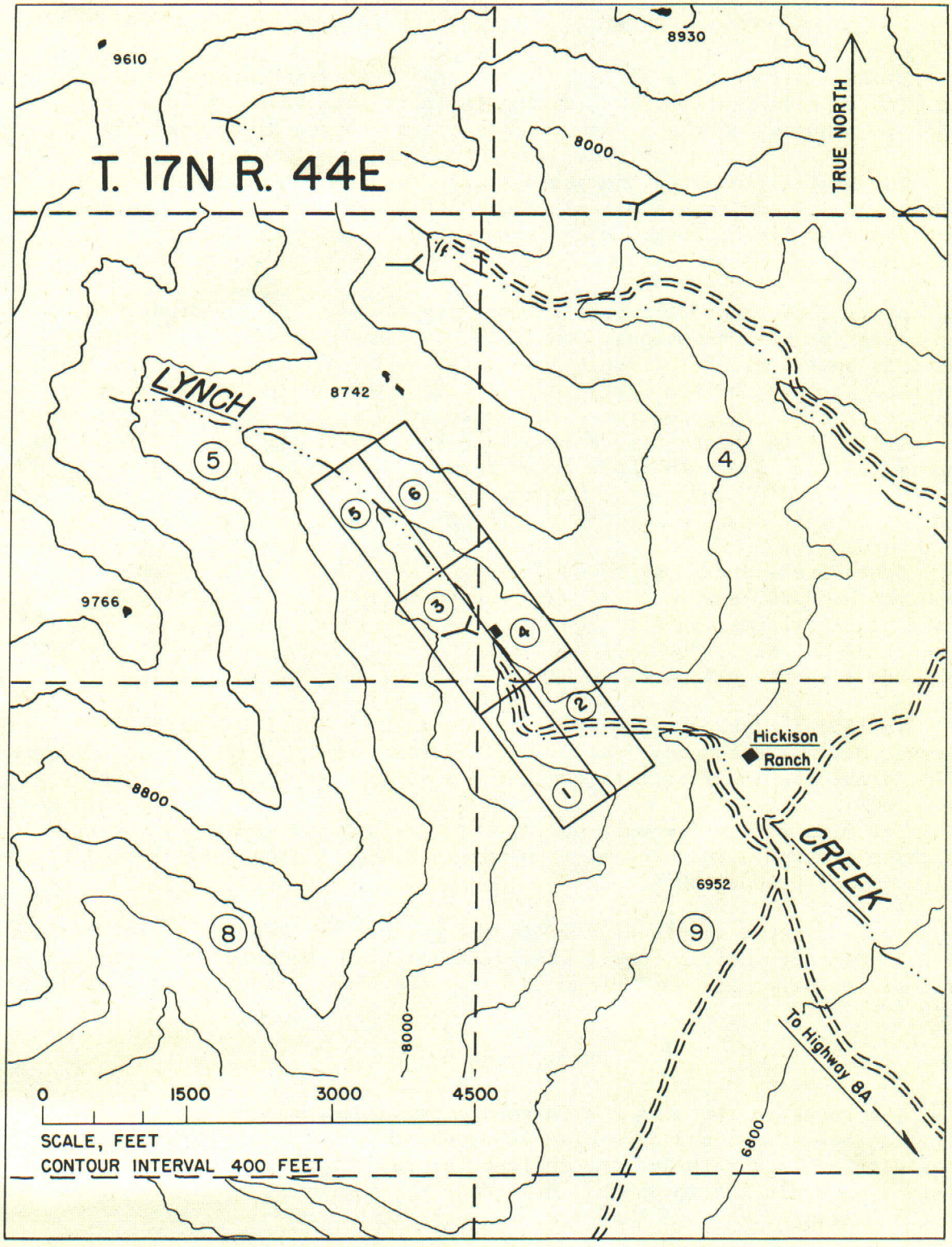

FIGURE 2. - Topographic Map Showing Locations of the Mining Claims.
(Adopted from Geological Survey Topographic Map, Austin Quadrangle)

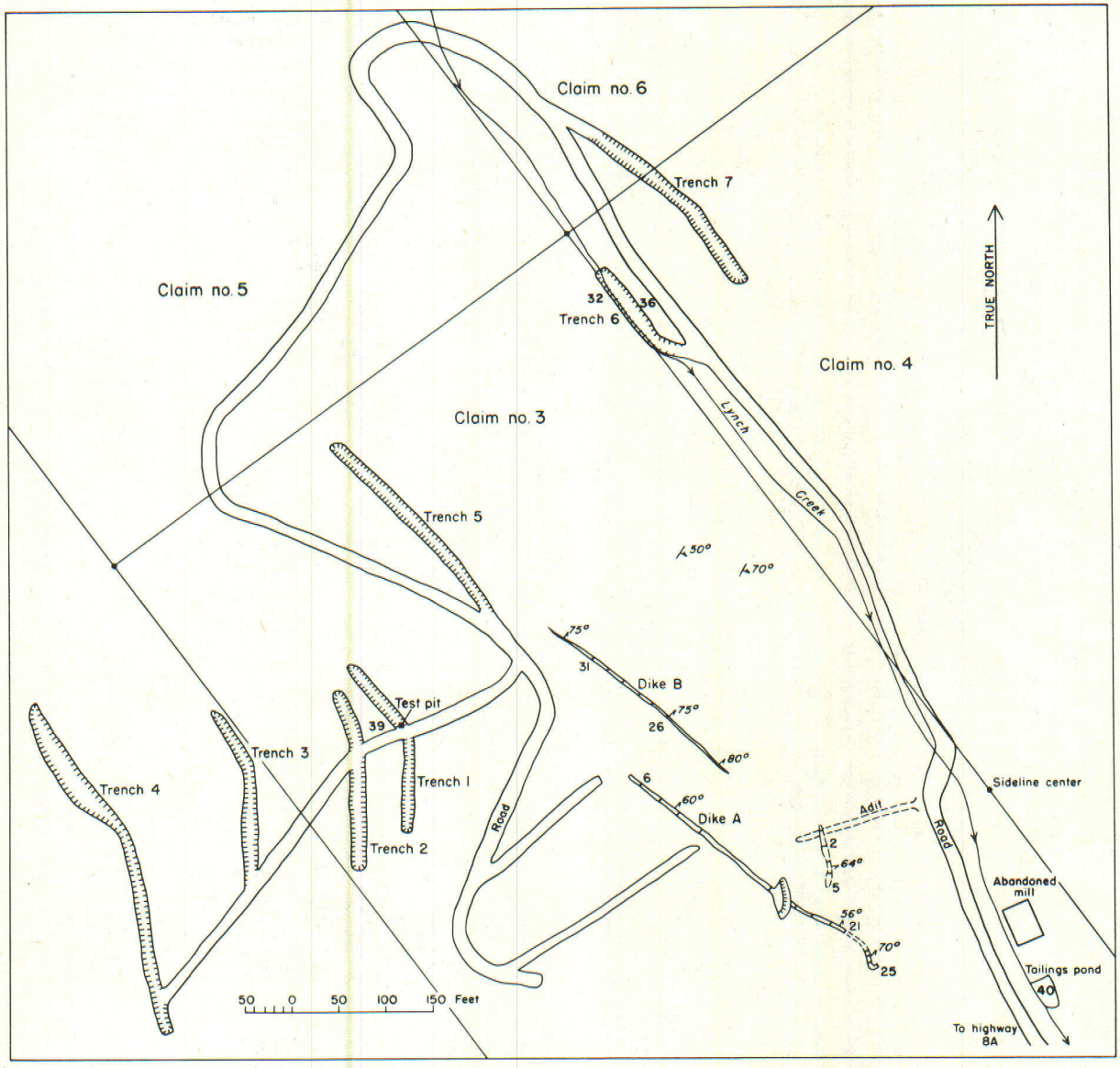

FIGURE 3. - Claim Map Showing Mine Workings, Trenches and Sample Locations.

Two narrow pegmatite dikes from 1 to 4 feet in width, striking N 55° W and dipping 60° to 70° E, have been traced on the surface more than 250 feet (fig. 3). Dike A is 350 feet long, averages 3 feet in width, and has been explored by the lower adit to a depth of 120 feet below its outcrop (fig. 4). Dike B is more than 250 feet long and averages 2 feet in width. Its depth is not known.

Two other dikes were disclosed by the trenching and sampling project (fig. 5). Dike C averages 1.5 feet in width, strikes N 35° E, dips 60° W, and was exposed for a length of 30 feet in Trench 6. Dike D includes 3 stringers, each averaging 1.5 feet in width, striking N 10° E, and dipping

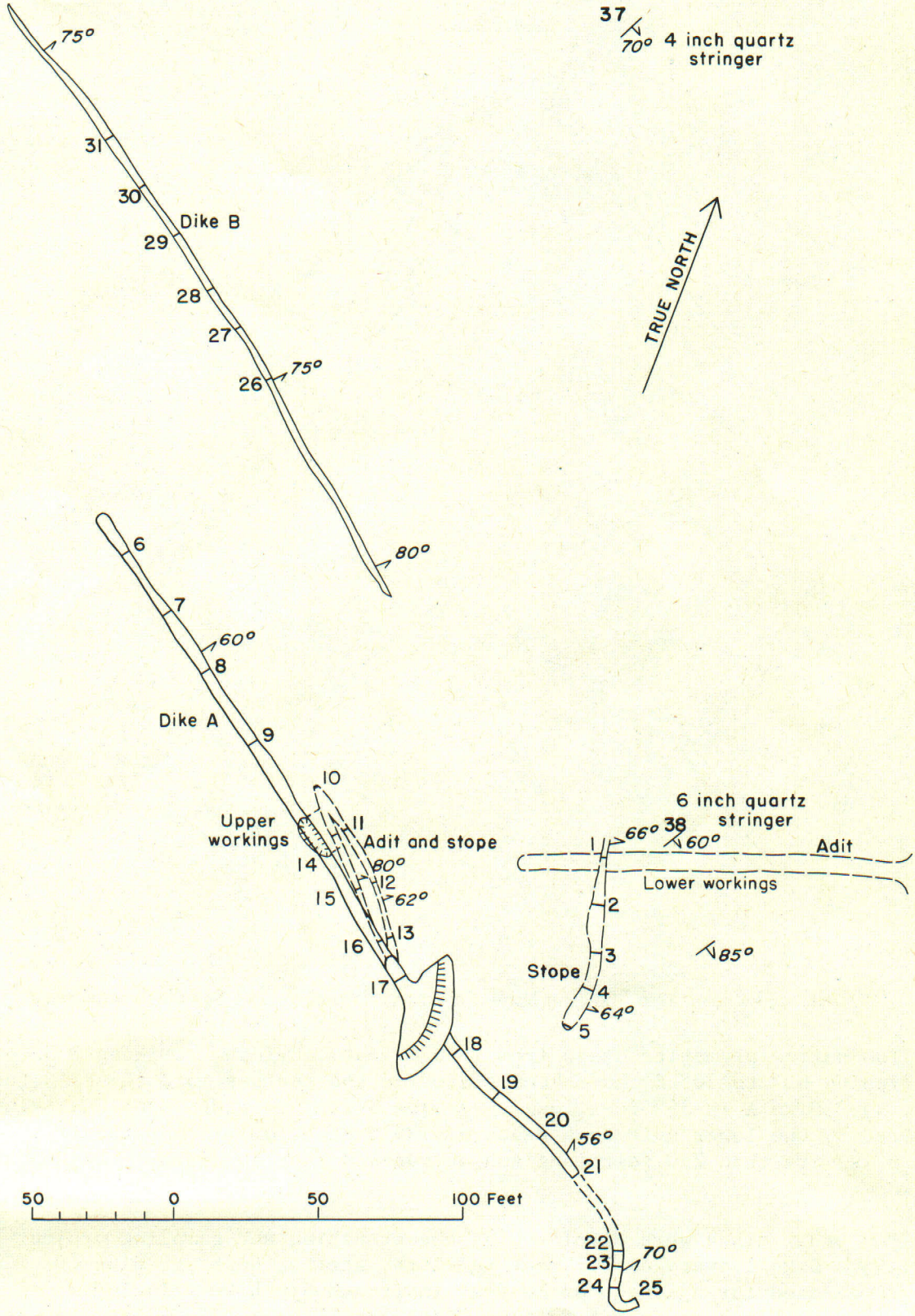

FIGURE 4. - Detail Map of Upper and Lower Workings Showing Sample Locations.

65° to 76° W. The stringers, contained in an overall width of 10 feet, are cut off by Dike C. Further trenching by the Bureau of Mines failed to find extensions of the outcrops of Dike D.

Beryl occurs in the pegmatite dikes as random pockets and disseminations. Its color varies from colorless, to white, to green.

Several quartz stringers, ranging from 2 to 12 inches in width, along the joint and bedding planes in the shale and limestones contain random concentrations of beryl.

Aplite dikes in the area strike northeasterly, dip to the north, and average 5 feet in width.

DESCRIPTION OF MINE WORKINGS

Mine workings include two adits, a raise and two stopes (fig. 4). The upper workings are a 4- by 6-foot adit driven for 50 feet along Dike A with a short raise to surface. Some stoping was done from the raise and the floor of the adit. The lower adit is 4 by 6 feet and 140 feet long, is driven from the creek level, and cuts Dike A at 105 feet from the portal. The dike has been stoped laterally for 80 feet from the lower adit. All mine workings were accessible in July 1961.

WORK DONE BY THE BUREAU OF MINES

A preliminary examination of the property was made on September 21, 1960, by George H. Holmes, Jr., an engineer from the Bureau of Mines, who recommended further investigation. A project was conducted from June 26 to July 8, 1961. It included constructing and rebuilding an access road, trenching, and sampling the pegmatite dike and quartz stringers. A sample was also taken from the tailings pile.

The equipment used was a Caterpillar D-7[5] bulldozer with a 12-foot 6-inch blade, a 210 cfm truck-mounted air compressor, and a jackhammer, using integral carbide-tipped steel.

The existing road from the Hickison ranch to the lower adit and millsite was rebuilt, and a new road was constructed to the top of the ridge for access to the upper mine workings and trenching sites, a total length of 6,000 feet.

Seven trenches, totaling 1,600 feet, were excavated by bulldozing to locate extensions of known dikes and to explore for additional occurrences. Two pegmatite dikes were uncovered in Trench 6 along the bottom of Lynch Creek. Further work failed to locate their lateral extensions (fig. 5).

Chip samples were taken in the lower workings; other samples were taken by drilling shallow holes and blasting to obtain fresh unweathered material.

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[5]References to specific models of equipment is made to facilitate understanding and does not imply endorsement of such items by the Bureau of Mines.

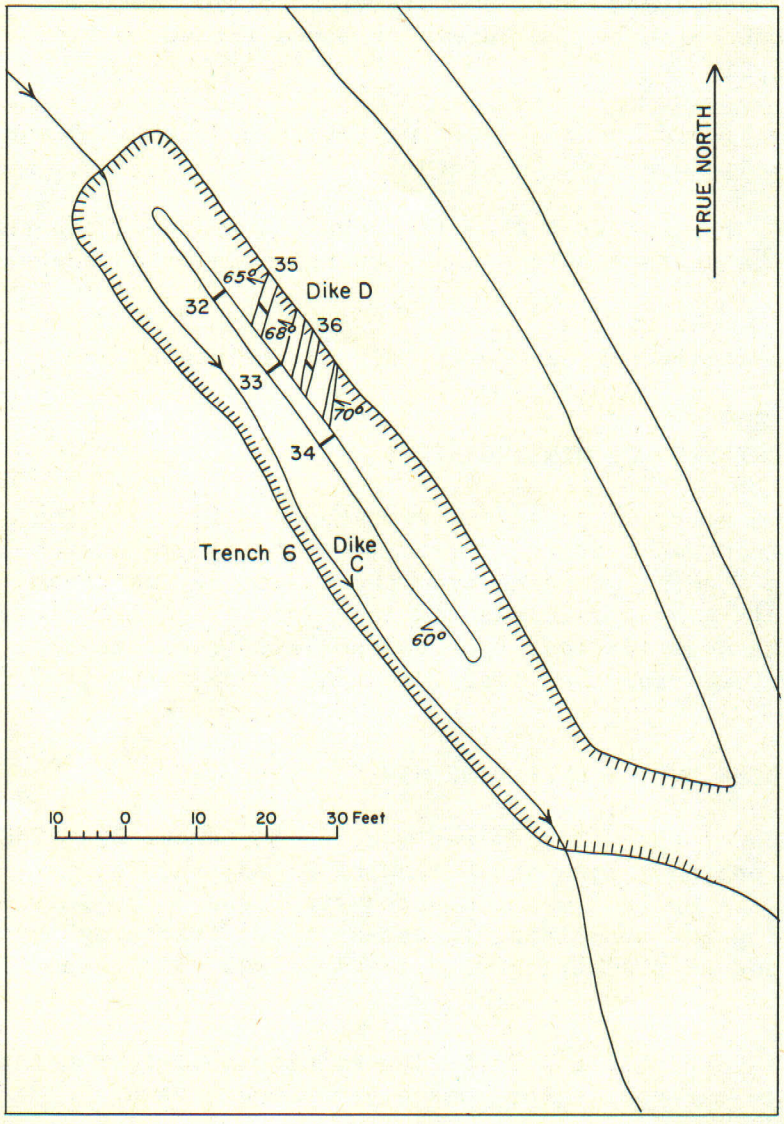

FIGURE 5. - Detail Map of Trench 6 Showing Pegmatite Dikes C and D and Sample Locations.

As the beryl crystals shatter easily when blasted, precautions were taken to prevent their loss. A canvass was laid down adjacent to the drill hole, and most of the fines were saved.

A pipe sample was taken from the 100-ton tailings pile.

Forty samples were taken from the pegmatite dikes, quartz stringers, and mill tailings (figs. 3, 4, and 5). All samples were analyzed for beryllium oxide (BeO), and for tungsten trioxide (WO_3) at the Bureau's Metallurgy Research Center at Reno (Nev.). The results are shown in table 1.

The trenching and sampling project indicated the pegmatite dikes to be narrow, limited in extent, and varying greatly in grade.

COSTS

The contract costs of the project are shown in table 2. Engineering and technical services were rendered by the Bureau of Mines. Wage rates, determined by the U.S. Department of Labor and paid by the contractor, were $4.00 an hour for the bulldozer operator and $3.75 an hour for the drillers and powder men.

TABLE 1. - Analysis of samples

Sample No.	Location	Width, feet	Analysis, percent BeO	Analysis, percent WO_3
Pegmatite Dike A:				
Lower workings:				
1	Adit	1.5	0.03	0.05
2	Stope (chip sample).	5.0	-	
3	do.	3.0	-	.03
4	do.	4.0	.08	
5	do.	2.0	.03	<.02
Upper workings:				
6	Outcrop	3.0	.44	.06
7	do.	2.5	.16	
8	do.	3.0	.21	.02
9	do.	4.0	1.11	
10	Hanging wall	2.0	.48	1.70
11	do.	2.0	.08	
12	do.	3.0	.15	.07
13	do.	2.5	.17	
14	Foot wall	1.5	-	
15	do.	1.5	.04	.09
16	do.	2.0	.04	
17	Outcrop	2.5	-	<.02
18	do.	3.0	.14	
19	do.	3.0	.49	.05
20	Outcrop	2.5	.50	
21	do.	2.5	.02	1.00
22	do.	2.5	-	
23	do.	2.5	.03	.08
24	do.	1.5	.08	
25	do.	1.0	1.07	<.02
Pegmatite Dike B:				
26	do.	2.0	1.78	.05
27	do.	2.0	.24	
28	do.	2.0	.41	
29	do.	3.0	1.19	<.02
30	do.	2.0	.26	
31	do.	3.0	.24	.05
Pegmatite Dike C:				
32	do.	1.5	-	<.02
33	do.	1.0	-	
34	do.	2.0	-	
Pegmatite Dike D:				
35	do.	2.0	.05	
36	do.	1.5	2.19	<.02
Quartz Stringers				
37	Outcrop	.3	.31	
38	do.	.5	.77	
Trench No. 1				
39	Test Pit	5.0	-	
Tailings Sample				
40	Pipe	-	.31	

TABLE 2. - Direct contract costs

Equipment	Work completed	Unit price per hour	Hours operated	Total cost
Bulldozer with operator.	Access road construction and trenching.	$17.50	78	$1,365.00
Compressor, drilling equipment with operators.	Sampling	14.40	56	806.40
Hand trenching with labor and tools.	Preparation, sampling, and miscellaneous.	8.00	32	256.00
Supplies (powder, caps, and fuse).	-	-	-	42.33
Total contracted costs.....				2,469.73

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