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REPORT: ALUM WASH GEOLOGICAL RECONNAISSANCE

See Page 1 @ Bottom
Ferruginous Conglomerate
in Alum Wash &
Bismark Canyon

Author?
Date?
Good Work!

Surface mapping and drill core studies of Alum Wash and the area west of Mineral Park are complete. Two areas of potentially economic mineralization necessary to replace Ithaca Peak reserves in the future were located. Eight diamond drill holes are proposed to explore the extent of the existing mineralization.

GENERAL GEOLOGY

Precambrian metasediments (?) and granitic intrusives underlie most of Alum Wash and northwest Mineral Park (Plate I). They are known collectively as the Cerbat Complex and include crystalline rocks of granitic composition, chiefly granite, gneiss, granodiorite, granite gneiss, biotite schist and chlorite-biotite amphibolite. The Precambrian rocks were mapped as two units, those of granitic composition (dike rocks not included) and the schists and amphibolites. Precambrian (?) pegmatite dikes crop out within the area.

Tertiary quartz monzonite and numerous related rhyolite dikes have intruded the Precambrian complex (Plate I). The monzonite is smaller in plan and more irregular than Ithaca Peak. Both exhibit the same alteration mineral assemblages.

Recent black to reddish-brown ferruginous conglomerate, similar to that in Bismark Canyon, crops out along the central portions of Alum Wash and on the lower hillsides westward from the quartz monzonite stock. The conglomerate is

largely the result of cementing alluvium and colluvium by minerals precipitated from solutions derived from the leaching of the quartz monzonite.

Structural trends in Alum Wash are like those encountered at Mineral Park, i.e. northwesterly 35-60°. No major faults were noted; however, definite abnormal variations in foliation trends were noted southwest and west of Nigger-head. The Great White Dike is believed to have intruded a pre-Laramide fault fissure (Goulding, 1970). Mapping during this study substantiates this. A strong intersection of structure was mapped at the Eureka Mine where the Great White Dike striking N25°E intersects another rhyolite dike which strikes N30°W.

ECONOMIC GEOLOGY

Erosion and subsequent leaching of the Alum Wash quartz monzonite have left the stock well exposed. Stockwork-type veining, reddish color, and strong indigenous limonites in the cap rock are suggestive of porphyry copper mineralization.

Hydrothermal alteration of the Alum Wash quartz monzonite and the Precambrian granite adjacent to the monzonite was extensive. The rocks have been bleached, moderately to strongly argillized, sericitized, and, in localized instances, silicified. Alteration of the granites and the quartz monzonite stock has resulted in nearly identical mineral assemblages.

Subsurface Geology

Nine diamond drill holes have been drilled in the Alum Wash area. ALCOA drilled six holes after Duval had drilled three. Six of the nine holes contain anomalous mineralization. Three drill holes were collared in quartz monzonite and only one bottomed (?) in it. Drill cores indicate the quartz monzonite is shallow seated and has highly irregular borders (figures 1-6).

Alteration in the drill cores is strong. Like Ithaca Peak, sericite halos accompany most veinlets and argillization of the feldspars has been extensive. The Alum Wash quartz monzonite is more biotitic than Ithaca Peak quartz monzonite and contains numerous pods and inclusions of the Precambrian country rock.

ALCOA's DDH #'s 2, 5, and 6, Duval's DDH #'s 161 and 164 and Pat Patterson's drill hole #1 intercepted copper mineralization. Assays varied from .15% Cu to .31% Cu. Two anomalous areas stand out through surface geology and subsurface data.

Prospect A

Diamond drill holes #2, 6, 161, and 164 locate prospect A (figure 7). This largely undefined prospect covers an area which would contain 152,293 tons per vertical foot. GRADE Hole #2 intercepted 113 feet (64'-177') assaying from .11% Cu to 1.2% Cu, the average being .15% Cu. The last 22 feet of the interval assayed .51% Cu but a few intercepts higher in the hole were less than .10% Cu or were not assayed (they were assigned a zero value). Hole #6 on the far eastern border of the target contained 10 feet (68'-78') of .17% Cu; the southwestern limit is

EXPLANATION OF CROSS SECTIONS

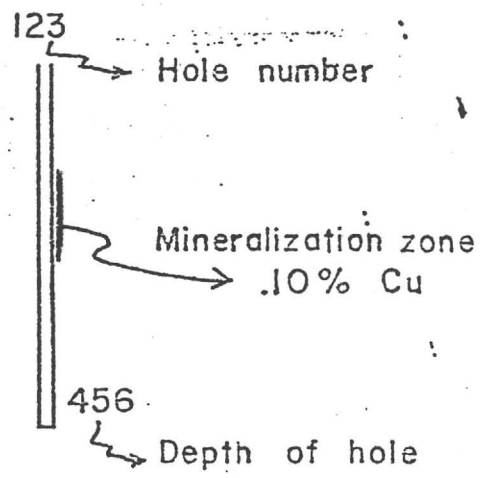
Rock Type Color Code

- Quartz monzonite
- Rhyolite
- Aplite
- Granite
- Granodiorite
- Schist
- Amphibolite

Reference Elev.

—4600—

Drill Hole



0 200 400 feet

Scale

verticle = horizontal

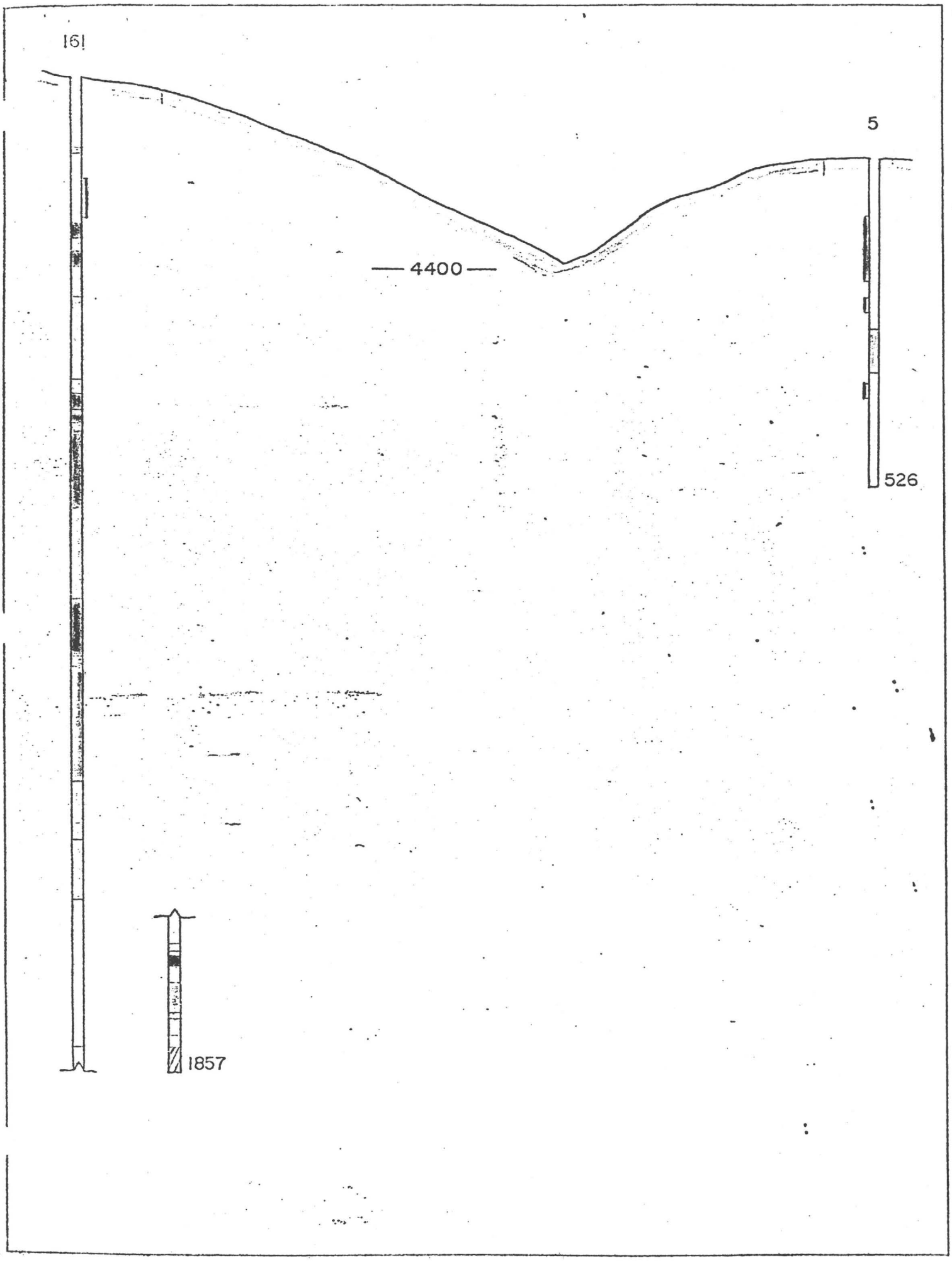


Figure 1

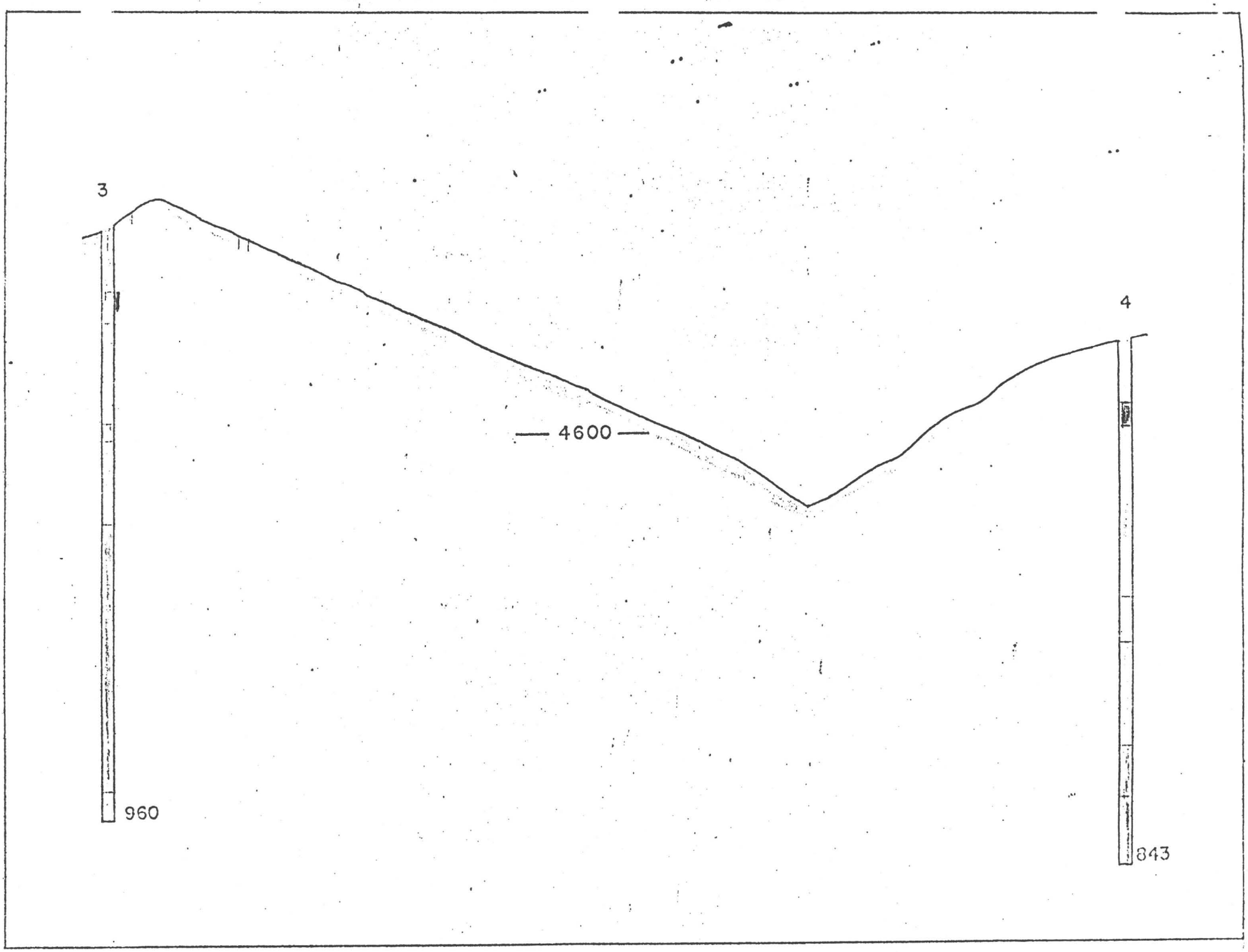


Figure 2

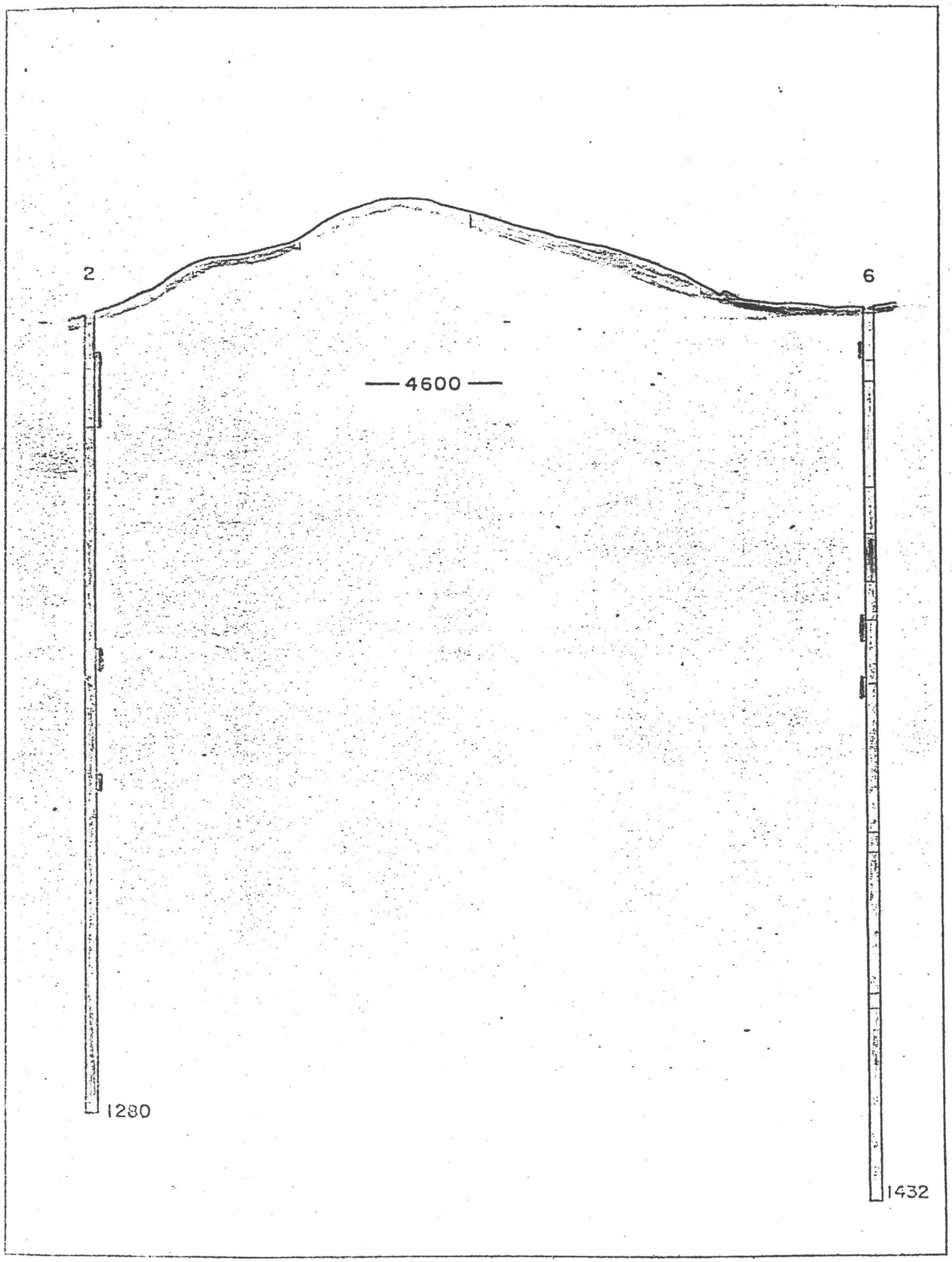
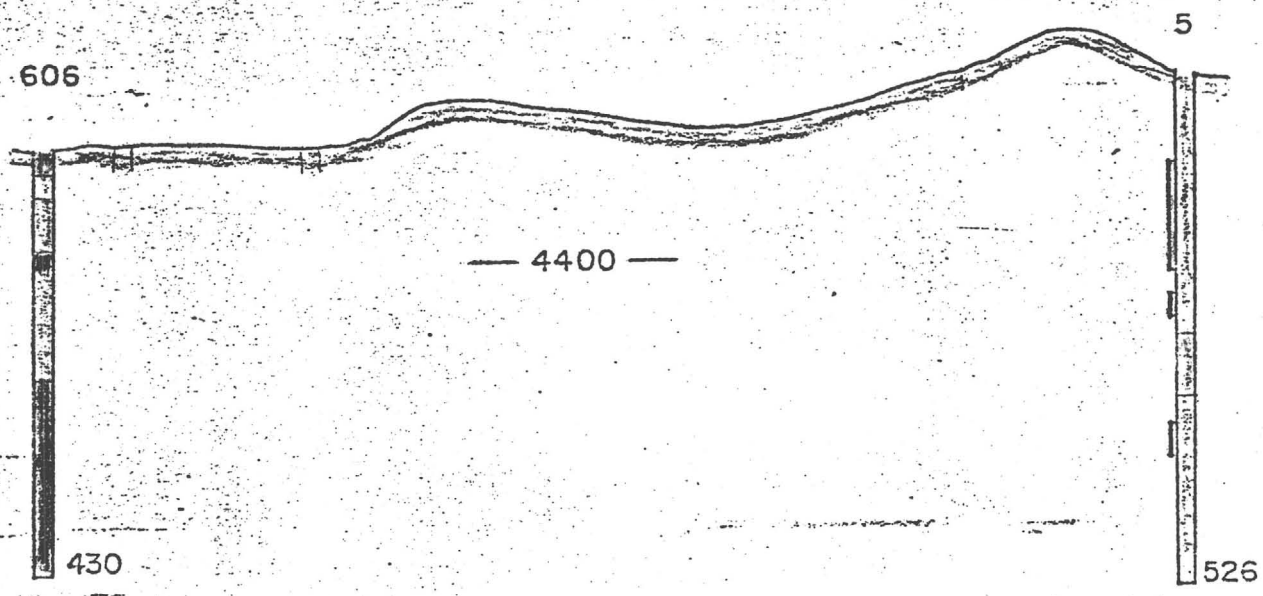


Figure 3



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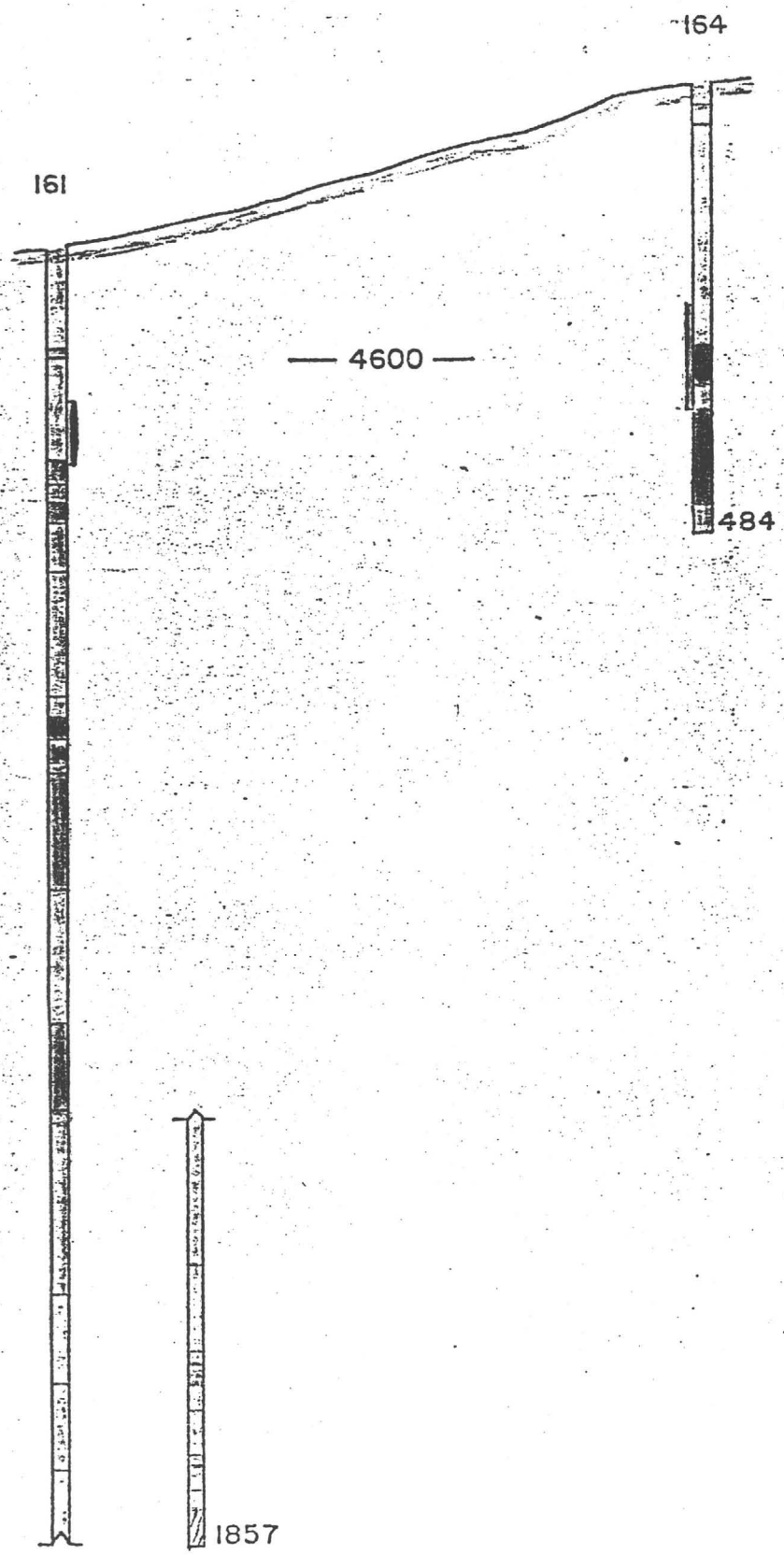


Figure 5

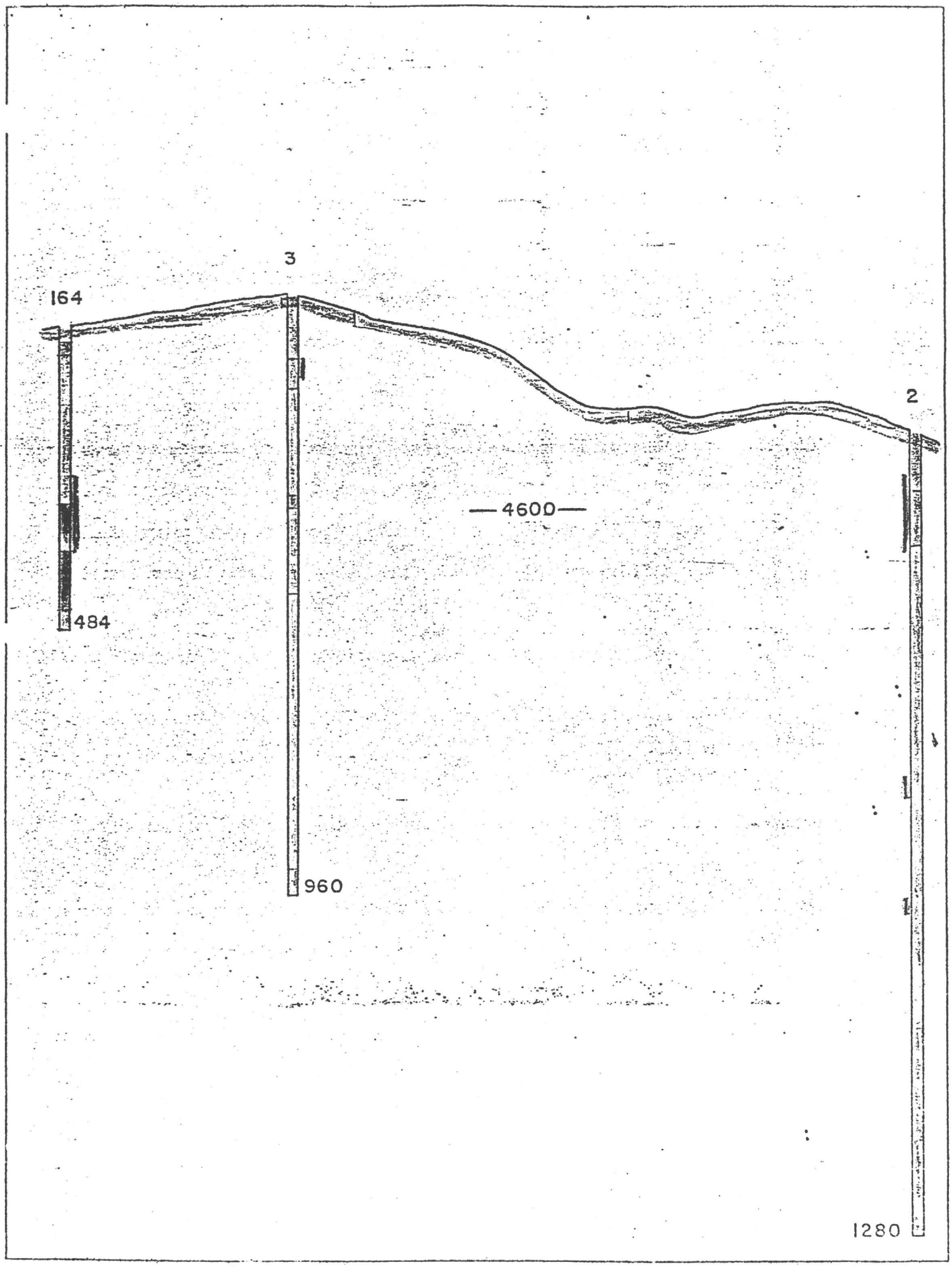


Figure 6

defined by hole number 161 containing 50 feet (170'-220') assaying .34% Cu. Hole 164, almost halfway between #2 and #161, contained 110 feet of .16% Cu.

Prospect B

Prospect B has been located by two drill holes, ALCOA's #5 and Patterson's #1 (figure 7). Number 5 intercepted 105 feet (86'-191') of .23% Cu and #1 cut 70 feet (80'-150') of .31% Cu. These two holes are 300 feet apart. Hole 5 was collared and bottomed in quartz monzonite (figure 1), whereas hole #1 was collared in Precambrian granite (Plate I). Geologic logs are not available for hole #1 as the drill cuttings were too finely ground to determine rock types. Preliminary tonnage and grade calculations indicate 989,100 tons of .26% Cu is within the adjacent areas of influence of the two drill holes.

CONCLUSIONS AND RECOMMENDATIONS

Prospect A

The mineralized zone extending from DDH #161 to #2 varies in thickness (50 to 120 feet) and grade (.15% to .34% Cu). Three diamond drill holes are proposed to determine the continuity of the mineralized zone in the northern portion of prospect A (figure 7). Locations of the proposed holes are on existing roads and at selected elevations to intercept the target zone at depths of no more than 800 feet. There exists the possibility of developing 8 million tons of .25% Cu if the proposed drilling is successful. This tonnage figure is for the northern portion of prospect A only. Successful drilling of the southern portion could add an additional 7 million tons.

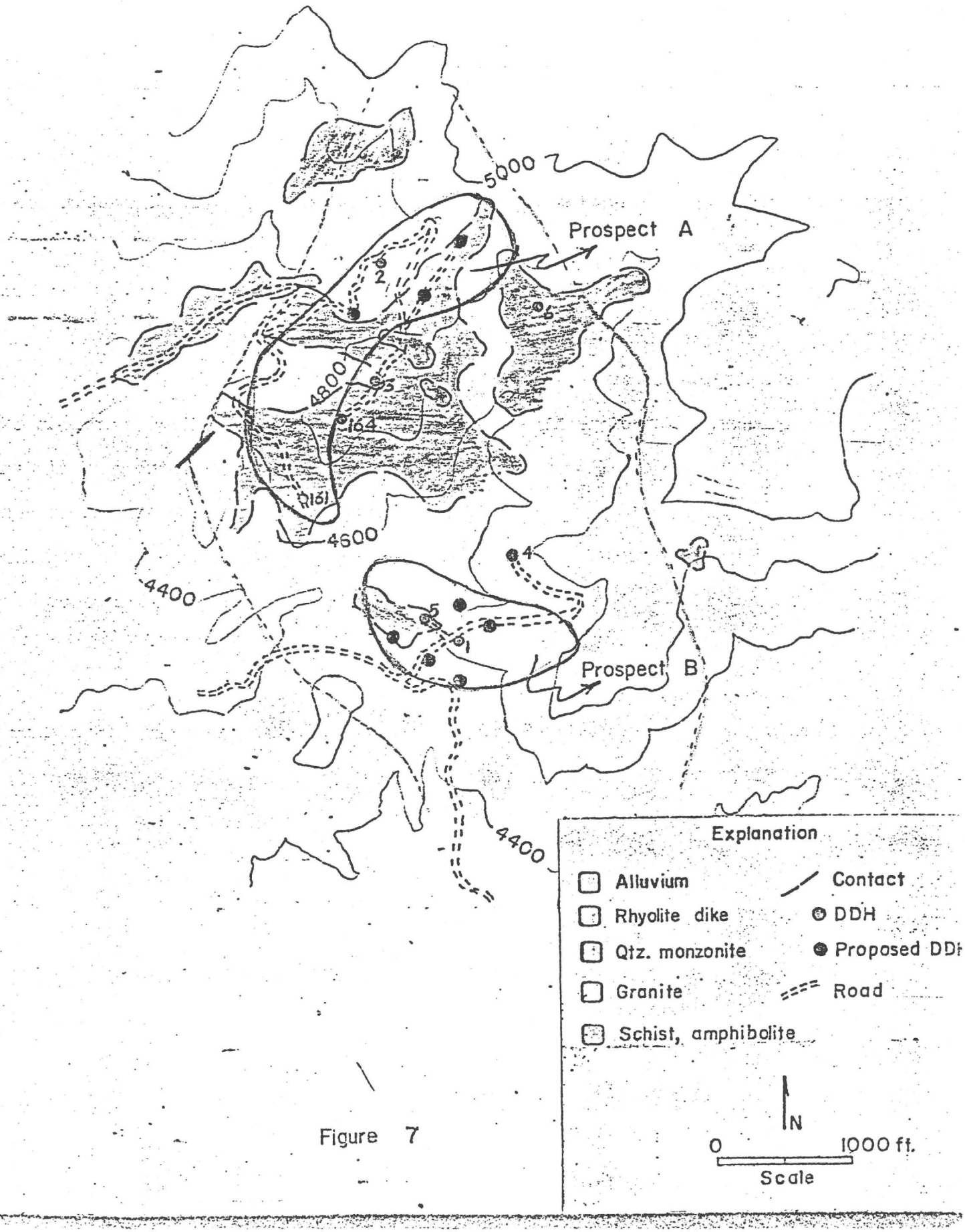

5000
Prospect A
2
6
4800
3
164
161
4600
4400
4
5
1
Prospect B
4400
Explanation
Alluvium
Rhyolite dike
Qtz. monzonite
Granite
Schist, amphibolite
Contact
DDH
Proposed DDH
Road
N
0
1000 ft.
Scale

Figure 7

Economic mineralization is limited to the quartz monzonite; diamond drilling would provide sufficient structural and lithologic information to prevent drilling unnecessary footage in the Precambrian granite.

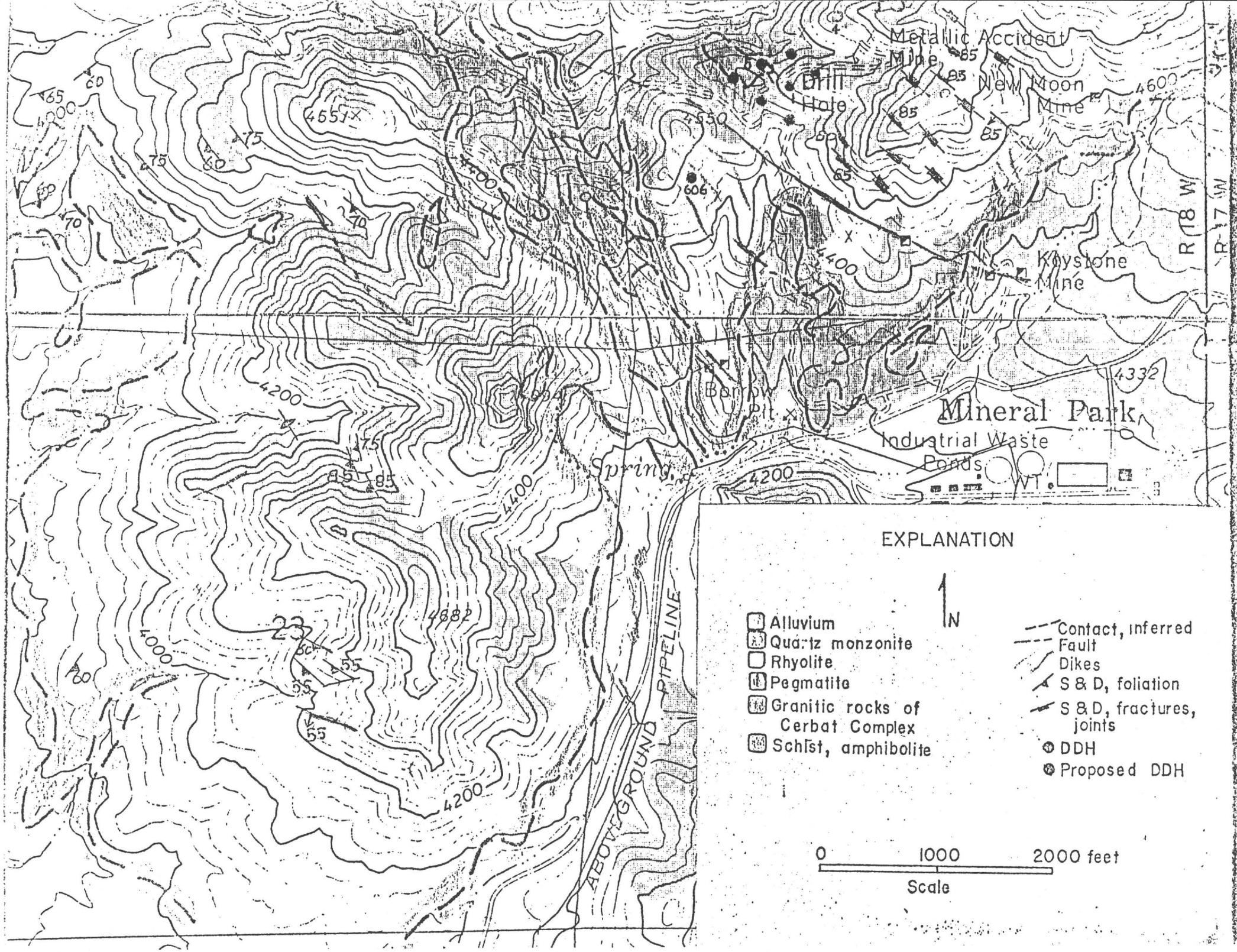
Prospect B

Nearly a million tons of .26% Cu has been drilled in this prospect. The mineralization is found in both the Laramide quartz monzonite and the Precambrian granite (?). Factors which controlled the mineralization, i.e. lithology, structure, temperature and pressure gradients are unknown.

Five diamond drill holes are proposed to further prove out the mineralized area of prospect B (see figure 7). These holes would explore the extension of mineralized ground in all directions from DDH #'s 1 and 5. Depth of the proposed holes would be between 700 and 800 feet. Road construction for this drilling would be minimal. All sites are less than 200 feet from the existing road; three are less than 100 feet.

Important economic mineralization necessary to replace depleted ore reserves at Ithaca Peak may well exist in prospects A and B in Alum Wash. Indeed, almost a million tons of .34% Cu have been proven. The proposed drilling would provide a thorough look at Alum Wash as a replacement for Ithaca Peak.

R. D. Ellis
Geologist
November, 1972


Metallic Accident Mine
Drill Hole
New Moon Mine
Keystone Mine
Borrow Pit
Mineral Park
Industrial Waste Ponds
Spring
ABOVEGROUND PIPELINE
R 18 W
R 17 W
4600
4550
4551
4400
4332
4200
4000
4882
606
EXPLANATION
N
Alluvium
Quartz monzonite
Rhyolite
Pegmatite
Granitic rocks of Cerbat Complex
Schist, amphibolite
Contact, inferred
Fault
Dikes
S & D, foliation
S & D, fractures, joints
DDH
Proposed DDH
0
1000
2000 feet
Scale

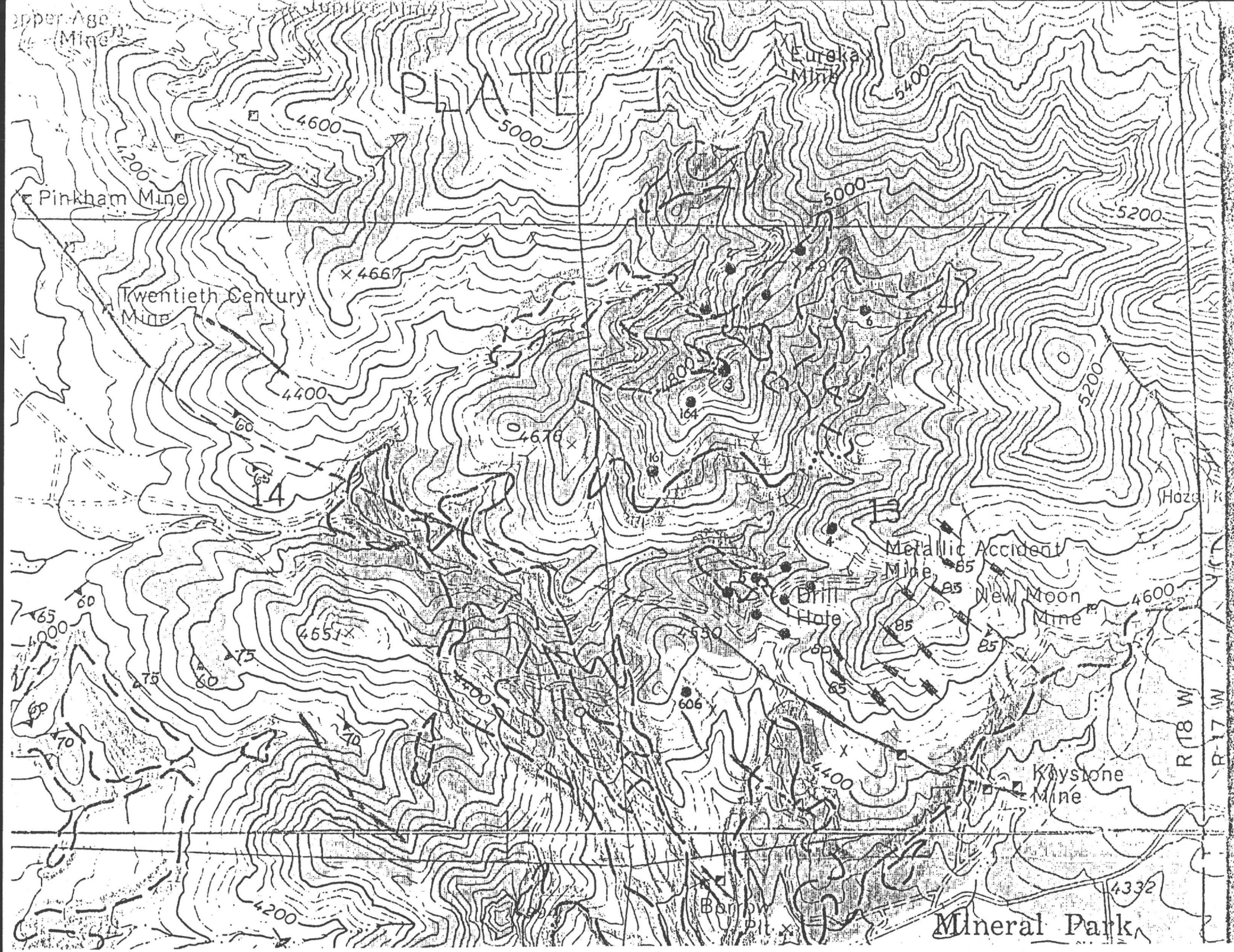


PLATE I
Eureka Mine
Pinkham Mine
Twentieth Century Mine
Metallic Accident Mine
Drill Hole
New Moon Mine
Keystone Mine
Borrow Pit
Mineral Park
R 18 W
R 17 W
14
13
4600
5000
5400
5200
4400
4200
4000
4667
4676
4551
4550
4332
606
164
161
60
65
70
75
85