OME 6030

See also DMEA 5018 and
OME 6077

(same property)

April 21, 1959
Re: OME 1030
L. M. Harris
Little Bob Mine
Paulding County, Georgia
Appl. Est. $12,044.10
Zinc-Copper

Memorandum

To: W. R. Griswold, Office of Minerals Exploration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of application

Under DMEA 3018, Roland F. Beers, Inc. applied for assistance in exploring for the possible downward extension of the Little Bob deposit by diamond drilling.

The examiners decided the drilling was not warranted as earlier drilling (1916-19 and 1951-53) had adequately explored for the extensions and consider the deposit has been more or less bottomed. The examiners did, however, recommend drilling of an unexplored area southwest of the mine where geophysical work has indicated anomalous conditions of the order of those shown in the explored area.

Roland F. Beers, Inc. has in the meantime assigned its rights in the property to Mr. L. M. Harris, the present applicant. This application does not outline a drilling program but apparently the intention is to reinstate the Beers proposal, since the estimate of the cost is the same as Beer's.

If such is the case, denial is recommended, but in case the Field Team is still of the opinion expressed in the examination report and the present applicant is agreeable, the alternate proposal, the calling for a greater expenditure than this applicant's estimate, should receive favorable consideration.

I recommend that the Field Team be requested to review the matter and find out if the present applicant is agreeable to the alternate proposal.

N. E. Nelson

cc: OME (3)
Director's reading
Branch reading
O.M. Bishop, 3020
Chron. file
Docket file

NENelson/ms
C-NO-4-21-59

MME Form 40
Dec. 1958

Budget Bureau No. 42-R1368 6030
Approval expires Dec. 31, 1963

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION

APPLICATION FOR FINANCIAL ASSISTANCE IN MINERALS EXPLORATION

Pursuant to Public Law 85-701 (72 Stat. 700; 30 U.S.C. 641)

NAME OF APPLICANT *(Full legal name and mailing address as they should appear on contract if one is executed.)*

L. M. HARRIS
2706 ROSWELL ROAD
MARIETTA, GEORGIA

APPLICANT DO NOT USE THIS BLOCK

DOCKET NUMBER: 6030

DATE RECEIVED: 4-1-59

REGION: V

DIVISION CODE: 500

BUSINESS ORGANIZATION *(Check one)*

INDIVIDUAL	X
CORPORATION	
PARTNERSHIP	
OTHER *(Specify)*	

STATE IN WHICH FIRM IS ORGANIZED

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

NAME	ADDRESS	TITLE
NOT APPLICABLE		

MINERAL(S) FOR WHICH YOU WISH TO EXPLORE: ZINC-COPPER

ESTIMATED COST OF PROJECT: $ 12,844.10

PROPERTY NAME	LOCATION COUNTY	STATE
LITTLE BOB	PAULDING	GEORGIA

GENERAL INSTRUCTIONS

Before filling out this application, please read the *OME Regulations for Obtaining Federal Assistance in Financing Explorations for Mineral Reserves* (30 CFR Chap. III). To assure prompt action, your application must provide all applicable material and information specified on the back of this application form. Avoid unnecessary correspondence and delays by submitting complete and accurate information. *Please submit four copies of this application and all accompanying papers* except as otherwise noted. Place your name and address on each sheet. Each item of information, maps, and reports required as a part of this application is described on the back of this form. Identify each attached statement by the item number to which it applies. If an item does not apply to your application, show the item number on your statement and after it write "not applicable." Maps or sketches should be used to supplement narrative descriptions of the property location and boundaries in item 2, existing mine workings and geology in item 3, and the proposed exploration work in item 5. When this information is not too complex, all of it may be shown on one map or sketch. All documents and other attachments submitted as a part of this application, except those in item 3(g) which you mark to be returned, become the property of the Government and will not be returned to the applicant. Send true copies, *not originals*, of leases, contracts, and other documents which are an essential part of your business records. *File this application with the Office of Minerals Exploration, Department of the Interior, Washington 25, D. C., or with the nearest OME Field Office.*

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief, and that he would not ordinarily undertake the proposed exploration under current conditions and circumstances at his sole expense.

MARCH 23, 1959
DATED

L M Harris
BY *(Signature)*

TITLE

A wilfully false statement or certification to any Department or Agency of the United States Government is a criminal offense. U. S. Code, Title 18, Sec. 1001.

INFORMATION REQUIRED WITH THIS APPLICATION

1. Financial Eligibility:

(a) Submit evidence of efforts made within 90 days preceding the filing of this application to obtain credit from your bank of account and at least one other banking institution or other private source of credit. Such evidence shall include true copies of correspondence which show: (1) date of loan request, (2) amount and terms requested, (3) proposed use of loan funds, and (4) the replies from credit sources. If the loan was offered under terms which you consider unreasonable, state why you consider them so.

(b) List names and addresses of affiliated, parent, or controlling companies or organizations and state extent and nature of their interest.

(c) State how you propose to furnish your share of the exploration [redacted] cost.

2. Applicant's Rights in Land:

(a) State your interest in the land and mineral rights, whether owner, lessee, purchaser under contract, or other. If you are not the owner, submit one true copy of the lease, contract, or other document (with address of owner) under which you control the property. Describe all liens, mortgages, or other encumbrances on the land and state book and page number and official place where recorded.

(b) State the legal description (section, township, and range; metes and bounds; patent number of claims) of the land upon which you wish to explore and all adjacent land which you own or control. Describe any part of the land or workings which should not be subject to Government royalty and liens. If the land consists of unpatented claims, state book and page number for each recorded location notice, including amended locations, and official place where recorded. State all the names by which you know the property.

(c) For all land or mineral rights encumbered or not owned, submit five copies of Lien and Subordination Agreements on MME Form 52. If the agreements cannot be obtained, state reasons and provide copies of letters of refusal.

3. Physical Description:

(a) Describe in detail and illustrate with maps or sketches all mining or exploration operations which you know have been or are being conducted upon the land. Include existing mine workings and all production facilities.

(b) State your interest, if any, in operations described in (a).

(c) State, if you know, the past and current production, supporting your statement with copies of settlement sheets, mine records, or published data if available.

(d) Describe known ore reserves, giving quantities and grades and sampling methods used. Support your statement with copies of assay certificates and assay maps if available.

(e) Describe by narrative and maps or sketches the geologic features of the property, including ore minerals, geologic formations if known, and type of deposit (vein, bedded, etc.).

(f) State your reasons for expecting to find ore, and if you have sampled the area you propose to explore, show where the samples were taken, describe sampling methods used, and provide copies of assay certificates.

(g) Send with your application at least *two* copies of all geologic or engineering reports, assay maps, or technologic information which you have, indicating whether you require their return.

4. Accessibility of Property:

(a) To aid the OME representative who may examine the property, state name and address of person who will meet him; give directions for reaching the property; and describe accessibility of property and of any mine workings.

(b) Name the shipping and supply points and state the distances to the property.

5. Exploration Work:

(a) Describe fully the proposed exploration work giving individual footages and sizes of openings *for each item of work.* Use narrative, maps, plans, and sections as necessary. Show location of the proposed work as related to geologic features such as veins, ore-bearing beds, contacts of rock formations, etc. Show also the relation of the proposed work to any existing mine workings and to *land boundaries* or to the closest identifiable corner.

(b) If an access road must be built, show the proposed location on the property map and state the length, type and construction methods proposed.

(c) If an OME contract is executed, state how soon thereafter work would be started and finished. State your anticipated average daily or monthly rate of progress for each type of work.

6. Experience:

State your operating experience and background to conduct this exploration work and also that of the person who will supervise the work.

7. Estimate of Costs:

Furnish detailed estimates of the necessary costs *for each item of the work proposed in 5(a)* under the headings listed below with a total for each heading and the estimated total cost of the work. Costs for any work to be performed by an independent contractor should be listed separately under category (a) below. Costs for any work that is not to be performed by an independent contractor should be listed under categories (b) through (g).

(a) Independent contracts. State the total cost of any proposed independent contract for all or any part of the work, and the number of units and the unit cost for each type of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, or per cubic yard of material moved. Cost estimates should be supported by bids from three contractors if possible. (*Note*—If none of the work is to be contracted, write "none" after this item.)

(b) Personal services. The cost of supervision, engineering and geological services, outside consultants, and labor should be itemized by numbers and classes of employees; rates of wages, salaries or fees; and periods of employment. State whether these services are available.

(c) Operating materials and supplies. List items of material and supplies giving quantity and cost of each. Include under this heading power, water, and fuel, and units of equipment and tools costing less than $50 each.

(d) Operating equipment. List items of equipment and tools costing $50 or more per unit. Give specifications and indicate how each item is to be acquired—i.e., rented, purchased or provided by the applicant. If rented or purchased, state the estimated rental or purchase price. If furnished by the applicant, state condition and present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of *initial* rehabilitation or repair of existing buildings, fixtures, installations (exclusive of mine workings), and movable operating equipment now owned by the applicant which will be used in the exploration work.

(f) New buildings, fixtures, installations. Describe each building, fixed improvement, and installation to be purchased, constructed, or installed for the exploration work, stating specifications and cost including labor, materials, and supervision.

(g) Miscellaneous. Describe the type and estimate the cost of repairs and maintenance of the operating equipment listed in 7(d). Do not repeat initial repairs listed in 7(e). Show also the costs of analytical work, accounting, workmen's compensation and employees' liability insurance, payroll taxes, and other required costs that do not fall within the previous categories. [*Note*—The Government will not contribute to costs incurred before the date of the contract, or to costs of or incident to: (1) acquiring, using, or possessing land and any existing improvements, facilities, buildings, installations, and appurtenances, or the depreciation and depletion thereof; (2) general overhead, corporate management, interest and taxes (other than payroll and sales taxes); (3) insurance (other than employees' liability insurance); and (4) damages to persons or property (other than authorized repair to or replacement of equipment or other property used in the work).]

INT.-DUP. SEC., WASH., D.C. 48790

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
WASHINGTON 25, D. C.

JUL 14 1959

Mr. L. M. Harris
2706 Roswell Road
Marietta, Georgia

Re: Docket No. GMX-6830 (Zinc-Copper)
L. M. Harris
Little Bob Prospect
Paulding County, Georgia

Dear Mr. Harris:

We refer to our letter of April 13, 1959, requesting additional information concerning the subject application for exploration assistance, and to our subsequent letter, dated June 2.

We wish to cooperate with you fully in allowing ample time to supply the requested information; however, we cannot indefinitely postpone action on an application. Therefore, if we do not receive the requested information within thirty days from the date of this letter, we will assume that you are no longer interested in proceeding with your application, and we will consider it as having been withdrawn.

Sincerely yours,

Frank E. Johnson

Acting Director

WFKlugeschied/gla 7/14/59
cc to: Director's Reading File
Mr. Bishop, USGS
Mr. Kirkemo, USGS
GMX Field Team, Region V (2)
Docket
Chron

Mr. Kiilsgaard, USGS

APR 13 1959

Mr. L. M. Harris
2706 Bunwell Road
Marietta, Georgia

Re: Docket No. OME-4039 (Zinc-Copper)
L. M. Harris
Little Bob Prospect
Paulding County, Georgia

Dear Mr. Harris:

Your application for Government assistance to explore the cited property has been reviewed by the Division of Base Metals of the Office of Minerals Exploration.

Before we can continue to process the cited application, we will require some further information in order to determine your financial eligibility.

We must have a detailed statement of your assets, liabilities, and net worth. We would also like to know if any collateral was offered to the banks when the loan was solicited orally. From the correspondence we would assume that none was offered.

The letter from the Cobb Exchange Bank states: "The fact that the property is located outside of Cobb County makes it even more difficult for us to handle a loan of this nature." Although it is not directly stated, it would appear that this bank does not wish to make loans outside of the County. It will therefore, be necessary to contact some other bank, not so hampered in its loan policy, for its decision.

Roland F. Beers, Inc., submitted letters from the lessors to the effect that they would not sign Lien and Subordination Agreements and stated that a Performance Bond would be furnished by the Applicant if a contract were granted. Do you wish to follow the same procedure or would you prefer to try and obtain the Lien and Subordination Agreements if a contract is granted?

During the study of the data available concerning this property, it was noted that geophysical conditions similar to those over the Little Bob ore body exist in an undrilled area 600 to 2,000 feet southeast of the main mine shaft. These anomalous geophysical conditions suggest that a program of 6,000 feet of diamond drilling to test these ore bodies similar to those of the Little Bob would be preferable to the program outlined in the application. The drilling on the known ore body would only prove or disprove the extension of this body, whereas drilling of the new area would, if successful, be of much greater value.

Under 301.2 of the Regulations governing the Office of Minerals Exploration, (a) defines "Exploration" as the search for new or unexplored mineral deposits. With the holes already drilled, the older Little Bob area has been quite adequately explored. We would like to get your reaction to this new proposed plan.

In figuring the costs of the project, the application took into account only 3,200 feet of the drilling whereas 6,000 feet were specified, of which, 2,800 were to be reserved for work not outlined but to be determined by initial results obtained. If the 6,000 feet were to be figured on, the total cost of the proposed project would be approximately $20,000.00 instead of in the neighborhood of $13,000.00.

It would be well to check with Longyear, Sprague & Harwood, and Joy to see whether the bids they made for the drilling in 1958 are still valid.

We also require some document that will show that the agreement with American Minerals Company has been extended to January 13, 1960. It is stated in several places in the application but we have no documentary proof to that effect.

Sincerely yours,

W. R. Griswold (e)

W. R. Griswold, Chief
Division of Base Metals

WPKlugescheid/er 4-8&10-59
Copy to: Docket
Dir Read File
Mr. Bishop, USBM
Mr. Kilsgaard, USGS
Region V (2)
Chron.

2

Mr. L. M. Harris
2700 Roswell Road
Marietta, Georgia

Re: Docket No. OME-6030 (Zinc-Copper)
L. M. Harris
Little Bob Prospect
Paulding County, Georgia

Dear Mr. Harris:

We have had no reply from you to our letter of April 13. Would you be kind enough to advise us as soon as possible concerning the various points which we brought up in our letter. We desire to act upon your application as expeditiously as possible, but obviously we can do nothing until we hear from you.

Sincerely yours,

(signed) FRANK E. JOHNSON

Acting Director

WRGriswold/fw-6/1/59

cc: Docket
Dir.Read.File
Reg. V (2)
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

5018

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

EXTRA COPY
O. M. E.
RECEIVED NOV 13 1958

DATE	INITIALS	CC

November 12, 1958

Memorandum

To: Operating Committee, OME - Washington

From: Field Team, OME - Region V - Knoxville, Tennessee

Subject: Little Bob Prospect, Paulding County, Georgia.
DMEA-5018 (copper-zinc) Roland F. Beers, Inc.

Enclosed are the original and two copies of the subject field examination report on the Little Bob mine. This application was examined in June, but considerable time was required to obtain and study old drill records in order to properly evaluate the proposal. Much of this work, which was done by Mr. Wedow and Mr. Shirley, should have been done by the Applicant and included in the application.

There seems to be no merit in putting more drill holes down in the area that has been fairly completely drilled by other companies. However, the review of the data suggests a possibility of an ore body at the southwest end of the property, and approval of a contract to explore that area, as recommended by the Field Examiners is hereby recommended.

This altered proposal has not been discussed with the Applicant's staff. Therefore, if you agree with the recommendation, the new proposal should be discussed with the Applicant and his agreement should be obtained, before any time or effort is spent in drafting a contract.

Concurred by
OME (OPERATING COMMITTEE)

(Date)

Robert A. Laurence
Executive Officer, OME
Field Team, Region V

RAL/gm

Mr. A. Beck, for [illegible]

EXTRA COPY
O. M. E.
RECEIVED NOV 13 1958

DATE	INITIALS	CODE

UNITED STATES

DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

FIELD EXAMINATION REPORT, REGION V

DMEA-5018 (Zinc-lead-copper), LITTLE BOB MINE
Paulding County, Georgia

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

L. E. Shirley, Mining Engineer
U. S. Bureau of Mines

Reviewed by
OME OPERATING COMMITTEE

(date)

November 7, 1958

FIELD EXAMINATION REPORT

DMEA-5018 (Zinc-lead-copper), LITTLE BOB MINE

Paulding County, Georgia

Applicant: Roland F. Beers, Inc., Troy, New York

SUMMARY

The Little Bob mine in the Paulding County pyrite belt, Georgia, has produced between 20,000 and 267,000 tons of pyrite ore. This ore is reported to have contained as much as 5 percent copper. Inferred reserves, based on drilling done by the Hanna Minerals Company in 1918 and by the New Jersey Zinc Company in 1951-1953, amount to about 450,000 tons of ore, of which one-third probably contains 1 percent copper and 2 percent zinc, and two-thirds contains 4-5 percent zinc, 1/2 percent copper, and 1/10 percent lead.

The Applicant's proposal to drill six inclined holes to search for "extensions" of the Little Bob ore body down dip in different directions from known rake, on the supposition that the previous exploration had "missed the boat", is rejected. The examiners believe that the 36 or more holes, of which 30 totalled 12,520 feet, already completed have adequately explored the Little Bob shoot to a reasonable depth.

On the other hand, geophysical conditions similar to but perhaps stronger than those over the Little Bob ore body exist in an undrilled area 600 to 2,000 feet southwest of the main mine shaft. The examiners consider these anomalous geophysical conditions to be the prime exploration target in the surveyed area and recommend a program consisting of 6,000 feet of diamond drilling to test these conditions for ore bodies with habits similar to thoseof the Little Bob. The total cost of this program is $20,820.00 to which the Government would contribute, if a contract is granted, 50 percent or $10,410.00.

INTRODUCTION

Field Examination

The field examination of the Little Bob mine was made on June 4, 1958. The examiners were accompanied by Mr. Vernon R. Geyer of the Applicant's geological staff. In addition, the examiners spent several hours on June 5, 1958 at Atlanta reviewing related data with members of the Georgia State Geological Survey. Core specimens from previous drilling, now on file at the State Survey, were also studied.

References

In addition to information submitted with the application the examiners used data from sources as follows:

Shearer, H. K., and Hull, J. P. D., 1918, A preliminary report on a part of the pyrites deposits of Georgia: Georgia Geol. Survey Bull. 33, pp. 110-124.

Peyton, Garland, 1942, A compilation of the examination report of J. H. Watkins (August 28, 1939), the report of R. R. Horner to the War Minerals Relief Commission (April 6, 1920), and drill records of the Hanna Minerals Company: Unpublished report of the Division of Mines, Mining, and Geology (State of Georgia) to A. A. Smith, former agent of the American Minerals Company (September 25, 1942).

Espenshade, G. H., 1943, The Little Bob mine and the Mammoth mine, Paulding County, Georgia: U. S. Geological Survey, unpublished preliminary report.

Also miscellaneous unpublished data from the files of the U. S. Bureau of Mines, Norris, Tennessee, and the U. S. Geological Survey, Knoxville, Tennessee.

Location and Accessibility

The Little Bob mine is located in Land Lot 625, 2nd District, 3rd Section, Paulding County, Georgia. It lies about three and one-half miles southeast of Dallas, the county seat. In addition to Land Lot 625, the Applicant also holds leases on 23 other complete lots and portions of 5 others in the vicinity of the mine. The distribution of the lots included in the application and the owners of the mineral rights are shown in figure 1.

The Little Bob mine area is accessible by a network of poor dirt roads between State Highways 6 and 61 southeast of Dallas. Although road accessibility is poor, rail facilities are excellent as both the Southern Railway and the Seaboard Air Line Railway cross the leased area a short distance northeast of the mine. A former spur to the mine has long since been removed. (See fig. 2.).

Property

The property included in the application has been mentioned above. The area totals 1,019 acres, most of which are held by the American Minerals Company of Cincinnati, Ohio, owners of the Little Bob mine. Expiration dates of the Applicant's option agreements are given below:

Property Owner	Option expiration Date
American Minerals Company	January 1, 1960
L. E. and M. W. Green	January 17, 1960
L. M. Tibbitts	January 21, 1960
T. L. Williams	January 24, 1960
L. M. Harris	Joint venture agreement with no expiration date

History

The Little Bob mine was first prospected in 1860. A small tonnage of pyrite ore was mined about 1885 for sulfur, but from then until World War I the property was idle. In 1916 the American Minerals Company began prospecting the deposit, leasing it to the Georgia Mining Company in 1917 for the production of pyrite ore. Subsequently, the mine was leased to the Hanna Minerals Company, who shipped pyrite ore for about a year in the period 1918-1919. During this period twelve diamond drill-holes were cored for exploration. With the closing of the mine in 1920 the property remained idle until 1939 when it was unwatered for examination by representatives of Armour & Company, the Texas Gulf Sulphur Company, and the General Chemical Company. Following these examinations the mine again flooded and has so remained. In 1943 G. H. Espenshade recommended a relatively small drilling program after examining the property for the U. S. Geological Survey under the war-time Strategic Minerals Program. This drilling was never implemented. As far as is known to the examiners, no further work was done at the Little Bob mine until the period 1951-1953 when The New Jersey Zinc Company conducted geological, geophysical, and geochemical surveys in the vicinity of the mine and drilled a minimum of 24 holes in an attempt to follow the rake extension of the ore body. This exploration program collapsed with the depression of zinc prices in 1953 and was not continued later for reasons unknown to the examiners. In 1957 the Applicant, Roland F. Beers, Inc., acquired options on the properties surrounding the Little Bob mine after

making aerial magnetic surveys of the Paulding County pyrite belt. Subsequently, more detailed ground magnetic and self-potential surveys were completed. As the results of the surveys, along with such data from previous drilling as were available, suggested that favorable exploration targets remain in the mine area, Beers submitted his application for DMEA assistance for diamond drilling such targets. Although the field examination was made in the early part of June 1958, sufficient time was not available to the examiners to complete: (1) an adequate interpretation of the wealth of data available from previous drilling, and (2) a review of the Applicant's geophysical data--prior to the expiration of the DMEA program on June 30, 1958.

Production

Except for 1,000 tons of ore in 1885, the only production was from the Little Bob mine was during the World War I period. According to Espenshade (1943) the data on production during this period are conflicting, and actual production may have been as little as 20,000 tons or as much as 267,000 tons of pyrite ore. This ore is reported to have contained as much as 5 percent copper.

GEOLOGY

The geologic setting of the Little Bob mine area has been described adequately by Shearer and Hull (1918), Espenshade (1943), and the Applicant. Data used herein on the mine have been taken from the reports by Peyton (1942) and Espenshade (1943). These reports include data on ten of the twelve drill-holes put down by the Hanna Company.

Available data on 20 of the holes drilled by New Jersey Zinc were furnished in the application and were apparently obtained from the property owners. Data on the 30 drill holes have been summarized in table 1 and are also shown on the accompanying maps and sections (figs. 2, 3, and 4).

The copper- and zinc-bearing pyrite deposits in the Little Bob area are chiefly lenticular bodies, both massive and disseminated, generally concordant with the foliation of the enclosing garnetized amphibolite and quartz-sericite schists. The strike of the schistosity varies from N. 20° E. to N. 40° E. with dips ranging from 35° to 50° SE. The original main ore lens at the Little Bob mine appears to be about 500 feet long and about 300 feet wide with thicknesses ranging from 1 foot to 30 feet or more. Other lenses of both massive and disseminated sulfides lie both above and below, but chiefly below, and generally northward from the main ore body. Thus, in general, the ore bodies fall in a mineralized zone that may be as much as 150 feet thick, stratigraphically, and strikes approximately N. 35° E., dips on the average about 35° SE., and plunges about 50°-60° E. Elongation of individual ore bodies appears to be chiefly in the plunge direction.

The sulfide minerals at the Little Bob mine are largely pyrite and pyrrhotite with lesser amounts of sphalerite, chalcopyrite, and galena. The gangue is quartz, calcite, hornblende, garnet, and magnetite. The magnetite appears to be a consistent constituent of the ore and, according to Shearer and Hull (1918, p. 116), makes up about 8 to 15 percent of the ore.

Reserves.--According to Espenshade (1943) the inferred reserves at the Little Bob mine, including the results of the Hanna Minerals Company drilling, showed a total of about 150,000 tons of ore containing 1 percent copper and 2 percent zinc. The reserve figures given by Espenshade are for an area that extends to 50 feet northeast of Holes H-5 and -9 and are verified by one of the three New Jersey Zinc ore penetrations (Hole J-13). In addition to the reserves calculated by Espenshade, the remaining two New Jersey Zinc ore penetrations (Holes J-18 and -26) add about 300,000 tons of inferred ore containing about 4-5 percent zinc, 1/2 percent copper, and 1/10 percent lead.

Overburden.--The quartz-sericite and amphibolite schists are decomposed to a saprolite overburden by weathering. The only data available on the thickness of the overburden or the depth of serious weathering is that furnished by the 30 diamond drill-holes. The ten Hanna holes show a range of 8 to 43 feet in vertical thickness of overburden for an average of 26 feet. In the 20 New Jersey Zinc holes the overburden ranges from 10 to 80 feet with an average of 39 feet. The average vertical thickness for all holes is about 35 feet.

GEOPHYSICS

After airborne reconnaissance surveys the Applicant conducted both magnetic and self-potential geophysical surveys on the ground. The only statement made in the application on the interpretation of the results of these surveys is as follows:

> " . . . . . In April 1957, a preliminary geophysical survey was completed on the prospect and its extensions. This survey consisted of self-potential and magnetometer. Survey data are shown on accompanying geophysical-grid maps. Results are those expected; a small SP high around the outcrop area of the mineralized zone and a magnetic halo extending eastward from this same outcrop area. A reconnaissance ground electromagnetic survey, although hampered greatly by nearby power lines, indicated a 1000 ft. conducting zone."

In addition, under the section on proposed holes, the Applicant states that proposed hole no. 6 is designed "to test Little Bob and Mammoth trends and also a geophysical lead in the Mammoth area."

Review of the geophysical data presented on the Applicant's grid map shows a maximum relief in magnetic intensity of 4,425 gammas. The relief in self-potential is 470 mv. As the Applicant has stated, there is a small SP anomaly in the vicinity of the original gossan outcrop and a surrounding magnetic halo. However, in the proposed drilling program no mention is made of the analogous anomalous geophysical conditions in the southwestern section of the surveyed area. Here, the self-potential anomaly appears to be stronger and larger and is also surrounded by a magnetic halo. (See fig. 5.)

PROPOSED EXPLORATION

Applicant's Proposal

The Applicant has proposed an exploration program consisting of 3,200 feet of diamond drilling in six holes with an additional 2,800 feet of "reserve" drilling for following up significant trends. The locations of these proposed holes are shown on figure 2. Proposed holes nos. 5 and 6 are also shown in sections I-I' and J-J' on figure 4.

It is the examiners' opinion that further exploration of the Little Bob orebody, as outlined from data obtained in the drilling by Hanna and New Jersey Zinc, is not warranted at this time. As shown on the accompanying maps and sections (figs. 2-4), the orebody appears to be tapering down-plunge and its lateral limits have been reasonably well established to the 400-foot depth by drilling already completed. The two vertical holes (APH-3 and -4) would suffice only to check mineralization midway between two drill-hole fences only about 250 feet apart. Holes APH-5 and -6, designed "to test the Little Bob and Mammoth trends and also a geophysical lead in the Mammoth area" will obviously overshoot the apparent trend of the Little Bob orebody. The Mammoth "orebody" shows no analogous small SP anomaly, which, coupled with the fact that no copper or massive pyrite has been found there (Espenshade, 1943), suggests that it does not appear to be a target of sufficient significance to warrant the drilling proposed.

Proposed holes APH-1 and -2 to the southwest of the Little Bob shaft show more merit than the other four holes. However, they would be a test in an area of negative magnetic conditions and thus not analogous to the geophysical conditions overlying the main Little Bob orebody.

Alternate Program

The field examiners believe that the prime exploration target in the Little Bob area lies from about 600 to 2,000 feet southwest of the main Little Bob shaft. This area, according to the studies made by the Applicant, shows geophysical conditions, both magnetic and self-potential, similar to those at the Little Bob itself. (See fig. 5; also geophysical-grid maps accompanying application.) It is recommended, therefore, that if a contract is granted, drilling be confined to the area southwest of the shaft.

The examiners propose eight holes for the initial stage of drilling. Four of these holes would be inclined essentially normal to the plane of dip; the remaining four would be vertical. The attitudes, collar-site coordinates, and probable depths of these holes are given below:

Hole No.	Collar-site Coordinates	Attitude	Probable depth (feet)
EPH*-1	800-S;100-E	N. 45° W., -45°	400
-2	800-S; 100-E	Vertical	525
-3	1200-S; 100-E	N. 45° W., -45°	350
-4	1200-S; 100-E	Vertical	500
-5	1600-S; 100-E	N. 45° W., -45°	450
-6	1600-S; 100-E	Vertical	600
-7	2000-S; 100-E	N. 45° W., -45°	500
-8	2000-S; 100-E	Vertical	675

* EPH--Examiners' Proposed Hole

Thus, the eight holes are grouped in pairs on four dip fences. The collar-sites of each pair are shown on figure 5. Sections showing the relationship of the holes on each fence are given in figures 6 and 7. In selecting the drill-hole sites and depths it has been assumed that the significant anomalous self-potential readings are those less than minus 300 mv. Therefore, the zone of minus 300 mv. or less has been projected from the geophysical profiles (figs. 6 and 7) at a 45 degree dip in the vertical sections as the "target zone" and the hole depths computed accordingly. As seen from the tabulation the inclined holes range from 350 to 500 feet in depth and the vertical holes from 500 to 675 feet. The total initial drilling is thus 4,000 feet. Provision should also be made to include an additional 2,000 feet for supplementary holes in intermediate fences (e.g., along sections 400-S, 600-S, 1000-S, etc.) or elsewhere up or down dip in the initial fences in order to gain information on ore trends should an ore body be discovered.

Estimated costs for the examiners' alternate proposal are as follows:

ESTIMATED COSTS

Independent Contracts

Diamond drilling 0-700 ft (including overburden) 6,000 ft @ $2.75/ft EX drilling @ $2.60/ft	$16,500.00	
Mobilization and demobilization of equipment	300.00	
Cementing, reaming, etc. 30 hours @ $7.50/hr	225.00	
Delays not responsible to drillers 20 hours @ $6.50/hr	130.00	
Surveying drill holes @ approximately 200 ft intervals 20 hours @ $7.50/hr	150.00	
		$17,305.00

Building (Rental)

Rental of building for core storage 5 months @ $10.00 per month		50.00

Miscellaneous Costs

Assaying - 40 samples for zinc and copper @ $3.00/each	120.00	
Core boxes - 125 @ $3.00/each	375.00	
		495.00

Incidental allowances

6,000 ft @ $49.50/ft		2,970.00

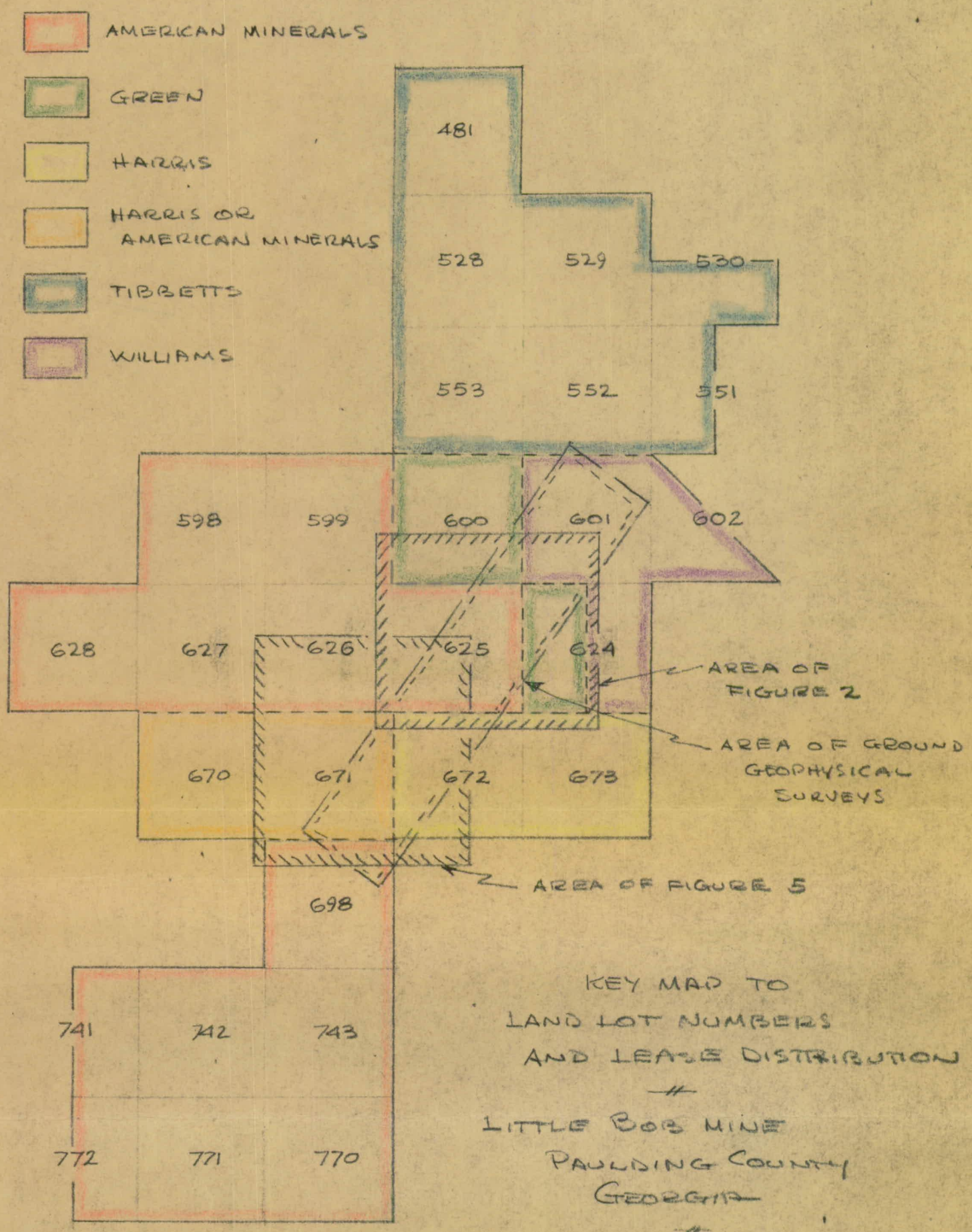
The above incidental allowance includes the following costs:

1 Geologist (half time) @ $800.00	2000.00
Accounting and stenographic service - 5 mos. @ $30.00/mo.	150.00
Surveying and drafting	500.00
Transportation - 2500 miles @ 8¢ per mile	200.00
Liability Insurance, Social Security and payroll taxes (Virginia 5.52%)	120.00

TOTAL ESTIMATED COST OF PROJECT	$20,820.00
Government participation @ 50%	$10,410.00

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

L. E. Shirley, Mining Engineer
U. S. Bureau of Mines



KEY MAP TO
LAND LOT NUMBERS
AND LEASE DISTRIBUTION

LITTLE BOB MINE
PAULDING COUNTY
GEORGIA

SCALE 1" = 1/4 MILE

DMEA - 5018 (ZING - LEAD - COPPER)

FIGURE 1

HW - 10/58

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DATE	INITIALS	CODE

TABLE 1.-- SUMMARY OF DIAMOND DRILL-HOLE DATA, LITTLE BOB MINE, PAULDING COUNTY, GEORGIA

	HOLE NO.	HOLE DEPTH / THICK. OF OVERBURDEN	BEARING / INCLINATION (AT COLLAR)	ELEVATIONS AT COLLAR / BOTTOM*	COLLAR TO BOTTOM — BEARING / LATERAL DRIFT / ANGLE	MINERALIZATION (INCLUDING SUMMARIES AND AVERAGES OF ASSAY DATA)
HANNA MINERALS CO. HOLES 1918	H-1	231 22	N 45½° W -60°	954 754		121½ - 125 (3½') 0.44% Cu, 2.35% Zn; 130-138 (8') 0.46% Cu, 0.50% Zn; 167½ - 174 (6½') 0.77% Cu, 1.25% Zn
	H-2	245 11	N 40½° W -60°	955 743		122 - 129.5 (7.5') 0.28% Cu, 2.80% Zn; 146.4 - 150.2 (3.8') 0.47% Cu, 5.02% Zn; 181.5 - 183 (1.5') 1.68% Cu; 180.5 - 186 (5.5') 2.00% Zn; 192.5 - 201 (8.5') 1.76% Cu, 1.93% Zn; 202.5 - 206.2 (3.7') 0.18% Cu
	H-3	284 40	N 43½° W -50°	958 740		164 - 175 (21') 0.90 Cu, 5.00% Zn; 185 - 188.3 (3.3') 1.01% Cu, 2.55% Zn; 193 - 201 (8') 0.98% Cu, 1.40% Zn; 196 - 198 (2') 5.95% Zn; 267 - 270 (3') ±10% Fe
	H-4	233 50	N 41½° W -50°	963 785		127 - 151 (24') 0.78% Cu, 2.35% Zn; 163½ - 170 (6½') 1.38% Cu, 1.51% Zn; 170 - 177 (7') ±14% Fe
	H-5	352 49	N 62½° W -60°	966 661		215½ - 238½ (26') 0.25% Cu, 2.05% Zn; 248½ - 258 (9½') 0.08% Cu; 276 - 283 (7') 0.03% Cu; 287 - 288½ (1½') 2.09% Cu, 10.75% Zn; 288½ - 295 (6½') 0.04% Cu; 319 - 326 (7') 0.03% Cu
	H-6	269 10	N 57° W -60°	947 714		42 - 78 (36'), 83 - 87 (4'), 95 - 117 (22') — 5-10% S
	H-7	398 60	N 69° W -60°	982 637		242 - 252 (10') 6% S; 280 - 288 (8') 3% S
	H-8	204 17	N 58½° W -60°	949 772		41 - 95 (54') 0.24% Cu; 155 - 157 (2') 0.45% Cu; 198 - 203 (5') 0.23% Cu
	H-9	235 40	N 63½° W -60°	980 776		123 - 127 (4') 0.10% Cu; 135 - 139 (4') 0.15% Cu, 2.10% Zn
	H-12	180 10	N 58° W -60°	945 789		28 - 33 (5'), 45 - 49 (4'), 70 - 77 (7'), 99½ - 108 (8½') — 12 - 14% S; 127 - 136½ (9½') 1.2% Cu
HANNA MINERALS CO. HOLES 1951 - 1952	J-13	405 35	NONE -90°	985 584 (580)	N 71° W 54' -83°	159 - 187½ (28½') 0.17% Cu, 0.10% Pb, 6.07% Zn; 251½ - 308 (56½') 0.30% Zn; LOCAL TRACES OF SULFIDES THROUGHOUT UNASSAYED PART OF HOLE
	J-14	423 50	NONE -90°	964 547 (541)	N 87° W 63' -81°	TRACE Zn AT 145; TRACES Zn & Cu AT 146 - 170; 210½ - 220 (9½') 0.23% Cu, 0.05% Pb, 0.95% Zn; 257 - 263 (6') 0.17% Cu, 0.91% Zn; 275 - 298½ (23½') 0.35% Cu, 0.13% Zn; 307 - 349 (42') 0.05% Cu, 0.38% Zn; LOCAL TRACES THROUGHOUT
	J-15	300 41	NONE -90°	946 650 (646)	N 41½° W 37' -83°	41 - 279 (238') LOCAL TRACES OF SULFIDES
	J-16	306 51	NONE -90°	1006 794 (700)	N 78° W 41' -82°	73 - 114 (41') WEAK TRACES OF SULFIDES; 122 - 269 (147') TRACES OF SULFIDES
	J-17	386 60	NONE -90°	1001 621 (615)	N 68° W 60' -81°	81 - 272 (189') TRACES OF SULFIDES; 212 - 213 (1') EST. 2% Zn; 305 - 311 (6') AND 357 - 386 (29') TRACES OF SULFIDES
	J-18	453 80	S 80° E -80°	994 541 (547)	N 83° E 46' -84°	80 - 175 (95') TRACES OF SULFIDES; 316½ - 321 (4½') TRACE Cu, 3.30% Zn; 330½ - 393 (62½') 0.59% Cu, 0.14% Pb, 5.69% Zn; 393 - 453 WEAK TRACES
	J-19	780 10	NONE -90°	948 173 (168)	N 83° W 81' -84°	10 - 235 (225'), 300 - 318 (18'), 322 - 327 (5'), 344 - 398 (54'), 448 - 477 (29'), 507 - 516 (9'), 531 - 599 (68') TRACES AND WEAK TRACES OF SULFIDES
	J-20	589 37	N 60° W -50°	949 481 (499)	N 61½° W 364' -52°	37 - 241 (204') AND 246 - 589 (343') WEAK TRACES OF SULFIDES; 398 - 458 (60') TRACES OF Cu & Zn; 488 - 551 (63') TRACES OF Cu
	J-23	863 10	NONE -90°	970 113 (107)	N 88° W 108' -83°	WEAK TRACES THROUGHOUT, SLIGHTLY STRONGER 10 - 212 (202'), 223 - 267 (44'), 410 - 413 (3'), 545 - 556 (11'); 633 - 641 (8') EST. ½% Zn - TRACE Cu; 657 - 660 (3') TRACES Cu & Zn; 660 - 672 (12') EST. ½% Zn
	J-24	425 50	NONE -90°	1035 615 (610)	N 56° W 70' -80°	62 - 197 (135') AND 220 - 425 (205') TRACES OF SULFIDES
	J-25	305 51	NONE -90°	1018 715 (713)	N 63° W 35' -83°	51 - 289 (238') AND 295 - 305 (10') TRACES OF SULFIDES
	J-26	471 54	NONE -90°	962 492 (491)	S 84° W 35' -85°	54 - 217 (163') AND 225 - 232 (7') TRACES OF SULFIDES; 270 - 329 (59') 0.22% Cu, TRACE Pb 1.77% Zn; 355 - 403 (48') 0.79% Cu, 0.21% Pb, 4.73% Zn; 403 - 471 (68') WK. TRACES
	J-27	535 39	NONE -90°	949 416 (414)	S 89° W 57' -84°	82 - 87 (5'), 94 - 182 (78'), 191 - 207 (16'), 218 - 329 (109'), 333 - 535 (202') TRACES AND WEAK TRACES OF SULFIDES WITH LOCAL Zn 218 - 278 (60'), EST. ½% Zn 349 - 350 (1'), AND STRONGER SULFIDES 333 - 370 (37') AND 406 - 466 (60')
	J-28	300 80	N 60° W -45°	1010 798 (-)	N 60° W 212' -45°	80 - 208 (128'), 219 - 300 (81') TRACES OF SULFIDES
	J-29	698 26	NONE -90°	948 253 (250)	N 80° W 61' -85°	26 - 98½ (72½'), 103 - 152 (49'), 190 - 231 (41'), 236 - 268 (32'), 280 - 345 (65'), 356 - 474 (118') TRACES OF SULFIDES; 474 - 495 (21') TRACE Cu, 0.71% Zn; 531 - 561 (30') TRACES Cu, Pb, 0.35% Zn; 569 - 595 (26') 0.05% Cu, 0.05% Pb, 0.65% Zn; 595 - 683 WK. TRS.
	J-32	367 24	NONE -90°	955 589 (588)	N 89° W 17' -87°	24 - 79 (55'), 94 - 102 (8'), 111 - 181 (70') TRACES OF SULFIDES; 181 - 211 (30') 0.23% Cu, 1.12% Zn; 211 - 367 (156') TRACES OF SULFIDES, STRONGER 211 - 242 (31') AND 336 - 342 (6')
	J-33	292 14	NONE -90°	952 659 (658)	N 17½° W 11' -88°	14 - 96 (82') TRACES OF SULFIDES; 96 - 135 (39') 0.12% Cu, 0.50% Zn; 135 - 153 (18') TRACES OF SULFIDES; 153 - 159½ (6½') TRACE Cu, 0.28% Pb, 0.54% Zn; 159½ - 203 (43½') STRONG TRACES WITH Cu & Zn; 203 - 237 (34') TRACES OF SULFIDES
	J-34	550 51	NONE -90°	946 408 (396)	S 89° W 110' -79°	51 - 479 (428') TRACES OF SULFIDES, STRONGER 320 - 399 (79')
	J-35	750 15	NONE -90°	947 217 (197)	S 81° W 168' -77°	TRACES OF SULFIDES THROUGHOUT WITH 2" EST AT 10% Zn AT 251 AND A STRONG SHINE OF Cu AT 692
	J-36	671 22	N 60° W -80½°	970 310 (291)	N 74° W 203' -73°	22 - 286 (264') VERY WEAK TRACES OF SULFIDES WITH SHINE OF Zn AT 152; 324 - 691 (367') WEAK TRACES OF SULFIDES

* ELEVATIONS IN ( )' ARE THOSE OF HOLE BOTTOMS NOT CORRECTED FOR DEVIATION

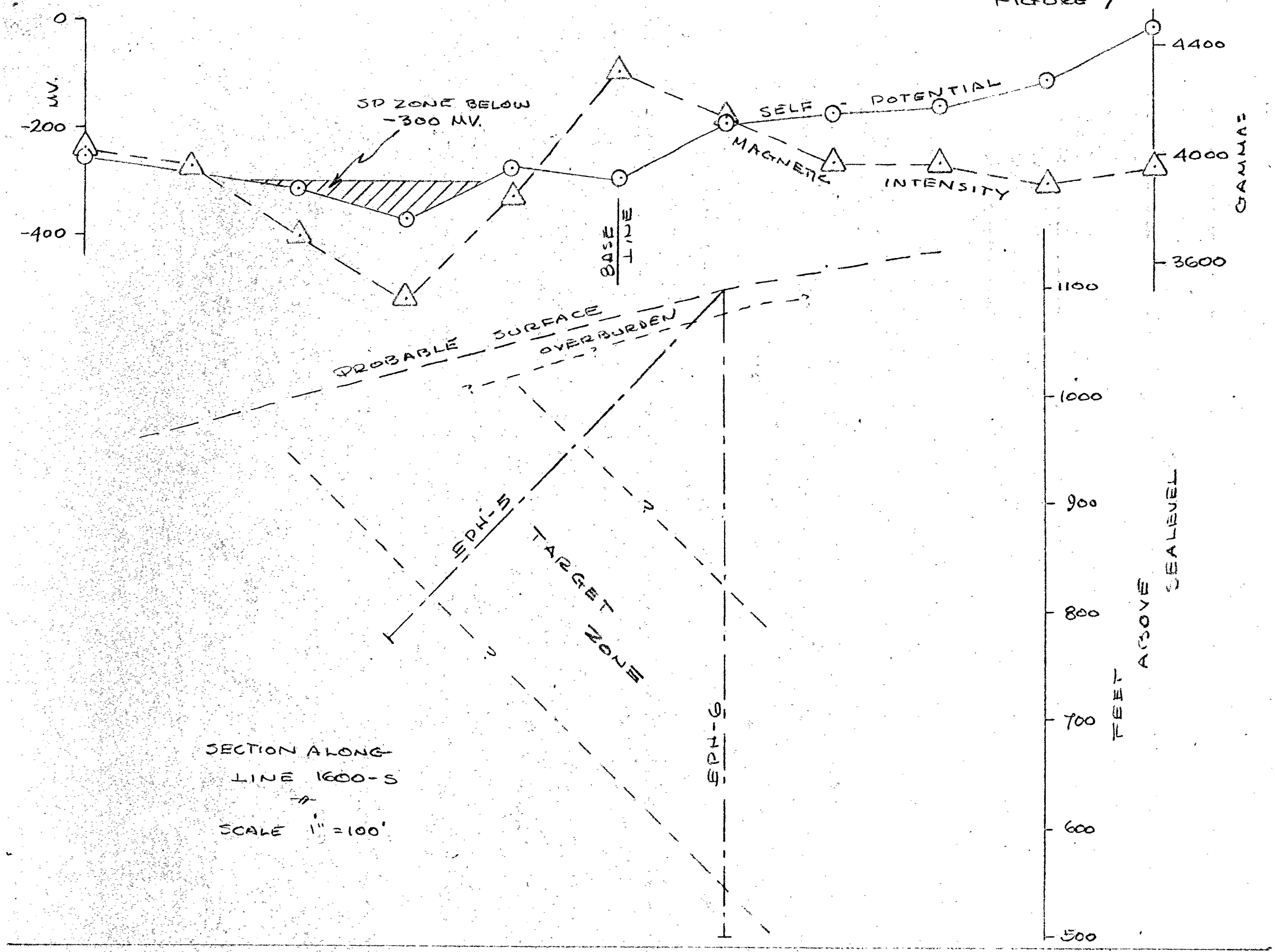
ASSAYS SHOWING 0.5% Cu AND/OR 2.00% Zn OR MORE

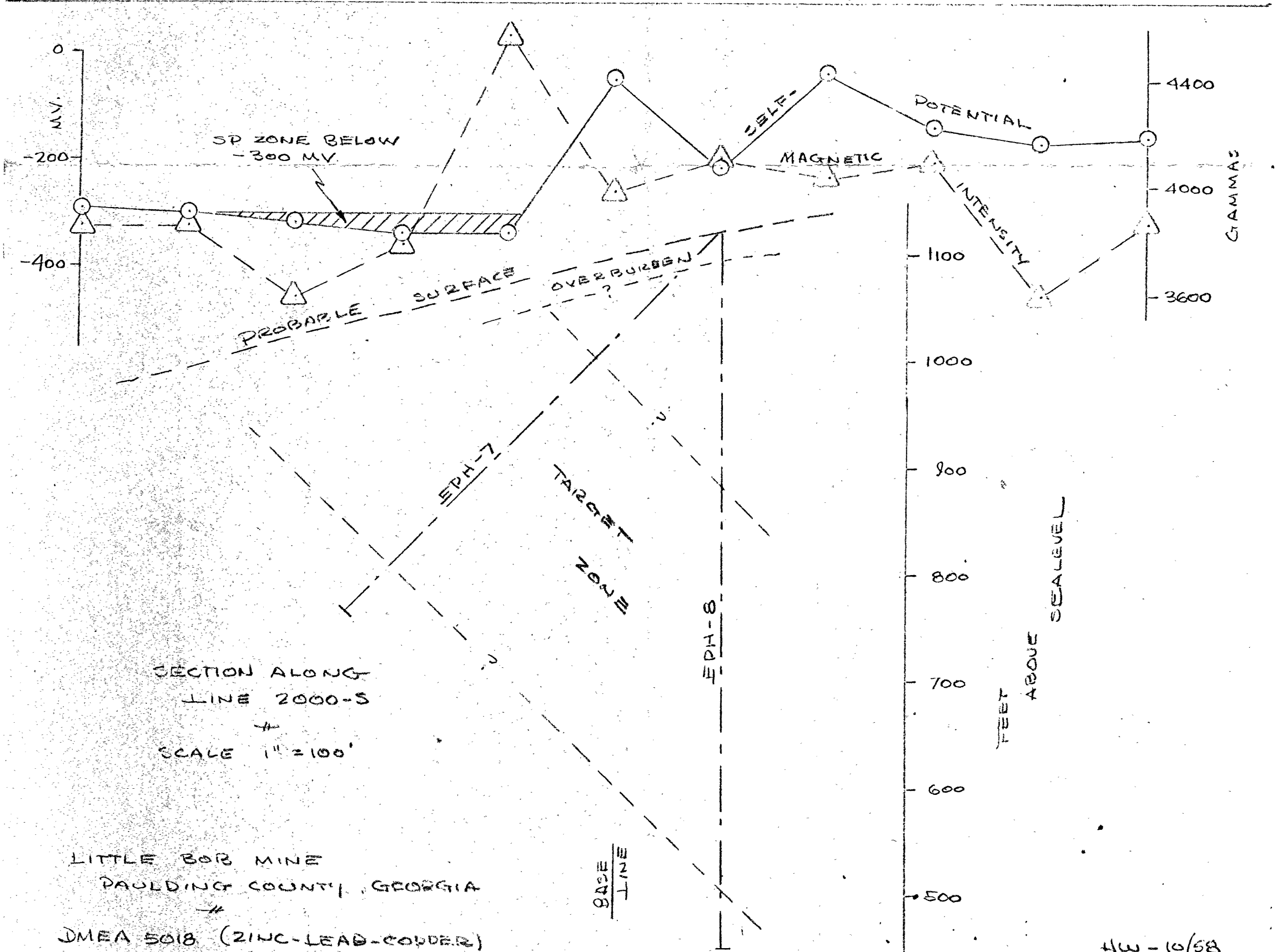
ASSAYS SHOWING 0.1% Cu AND/OR 0.5% Zn BUT LESS THAN 0.5% Cu AND/OR 2.00% Zn

LITTLE BOB MINE
DMEA-5018
(ZINC-LEAD-COPPER)

HW-8/58

FIGURE 7



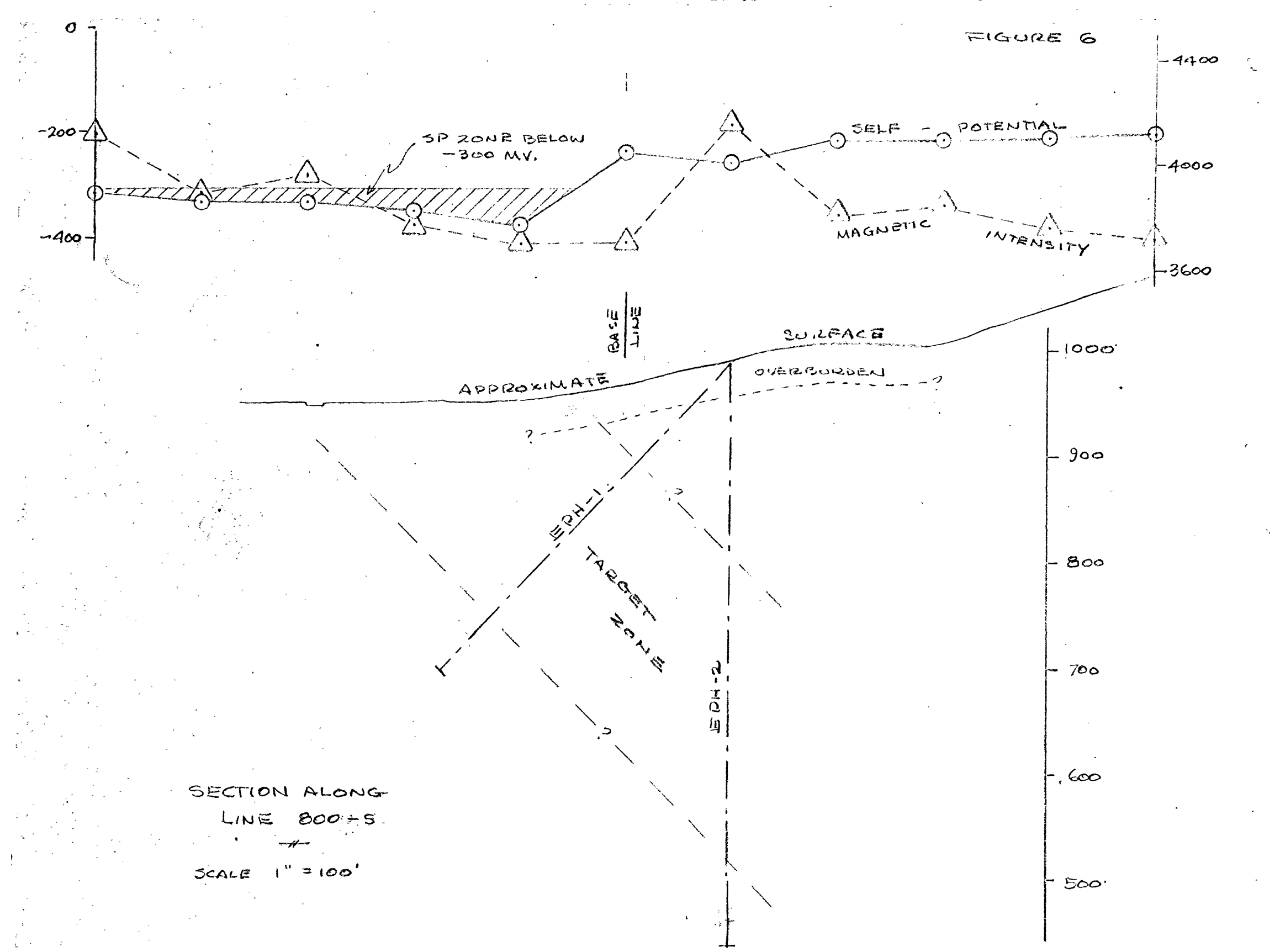


LITTLE BOB MINE
PAULDING COUNTY, GEORGIA

DMEA 5018 (ZINC-LEAD-COPPER)

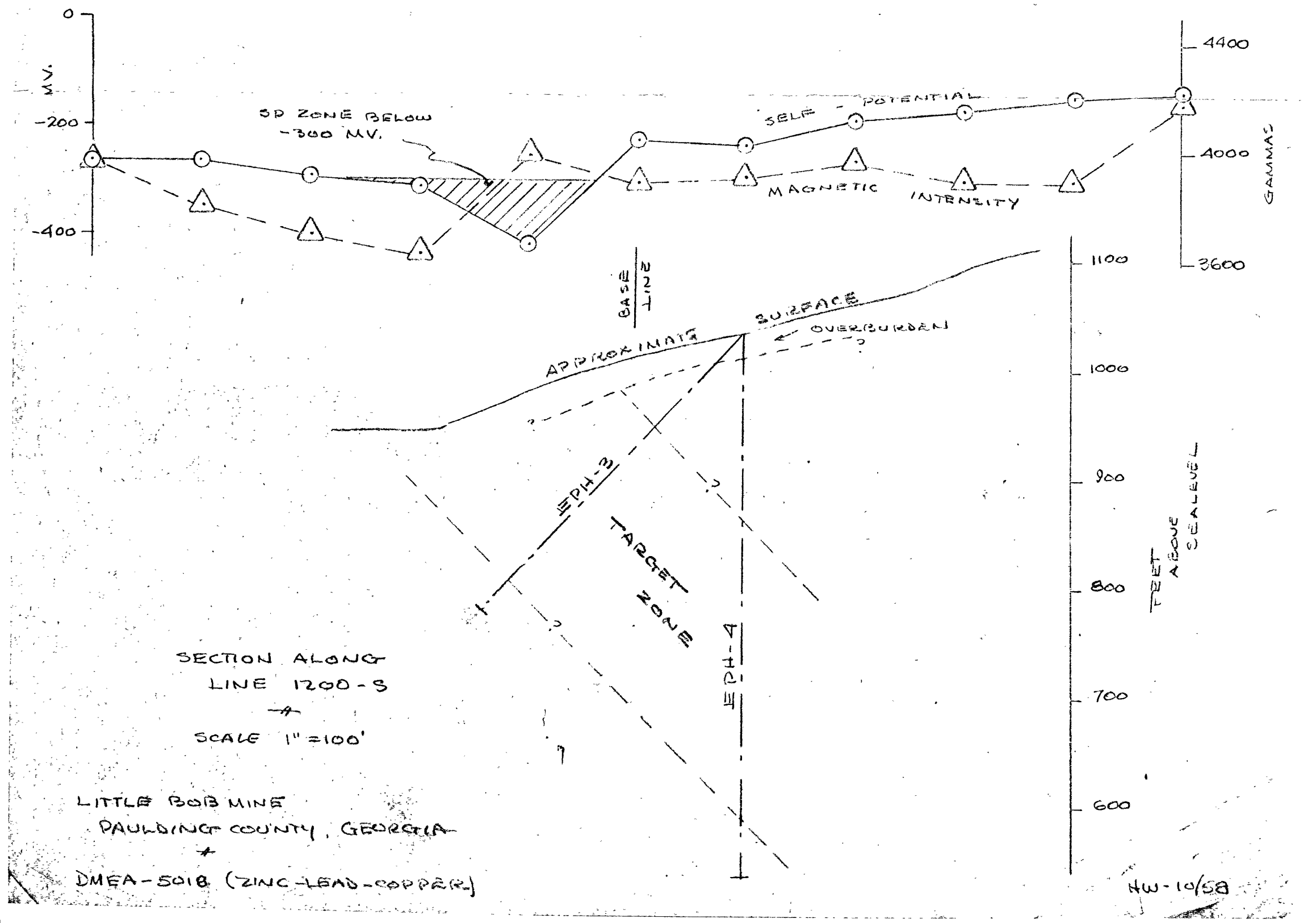
HW - 10/58

FIGURE 6



SECTION ALONG
LINE 800+S

SCALE 1" = 100'



SECTION ALONG
LINE 1200-S

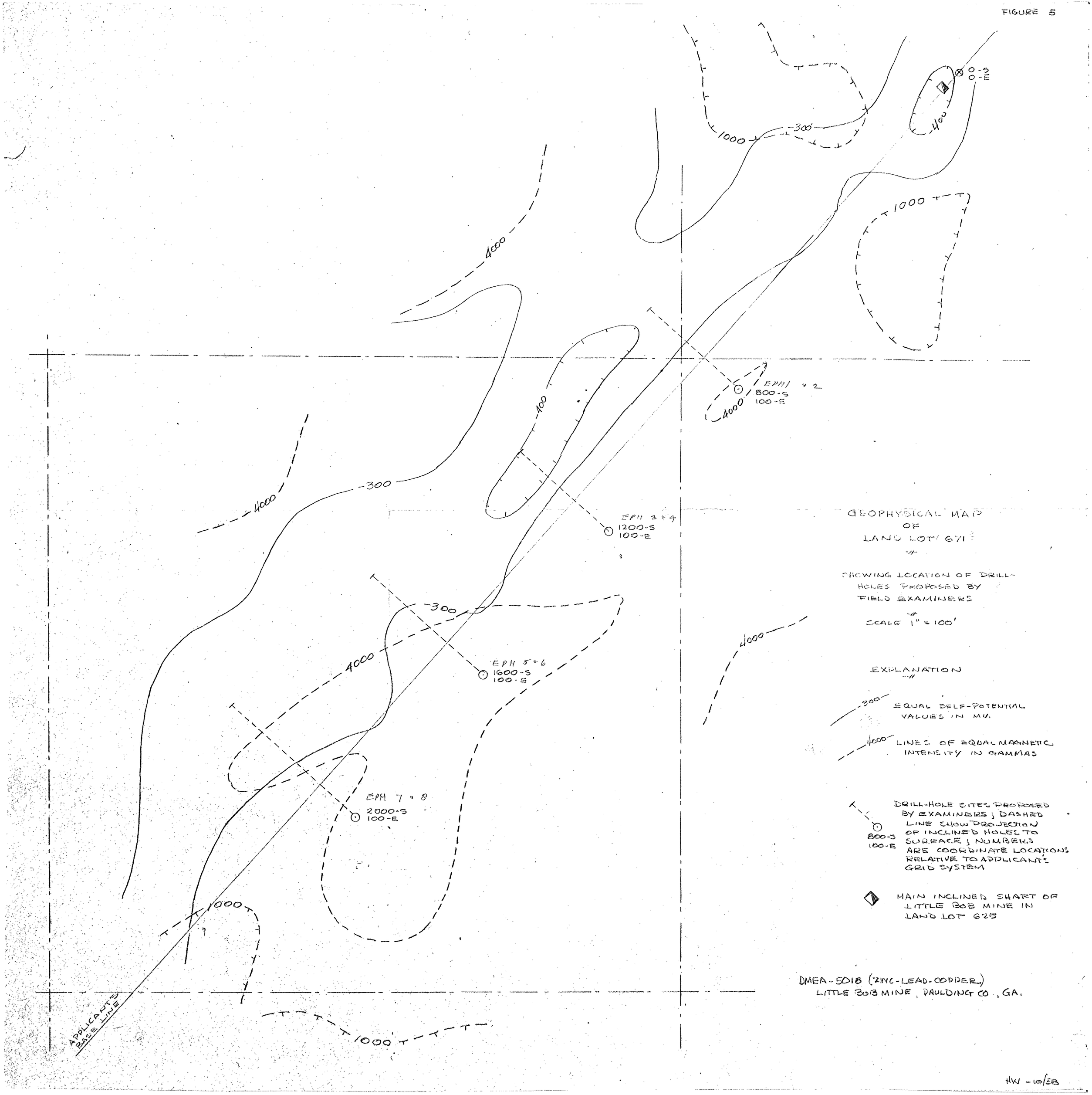
SCALE 1" = 100'

LITTLE BOB MINE
PAULDING COUNTY, GEORGIA

DMEA-5018 (ZINC-LEAD-COPPER)

HW-10/58

FIGURE 5



DMEA-5018 (ZINC-LEAD-COPPER)
LITTLE BOB MINE, PAULDING CO., GA.

HW - 10/58

FIGURE 4

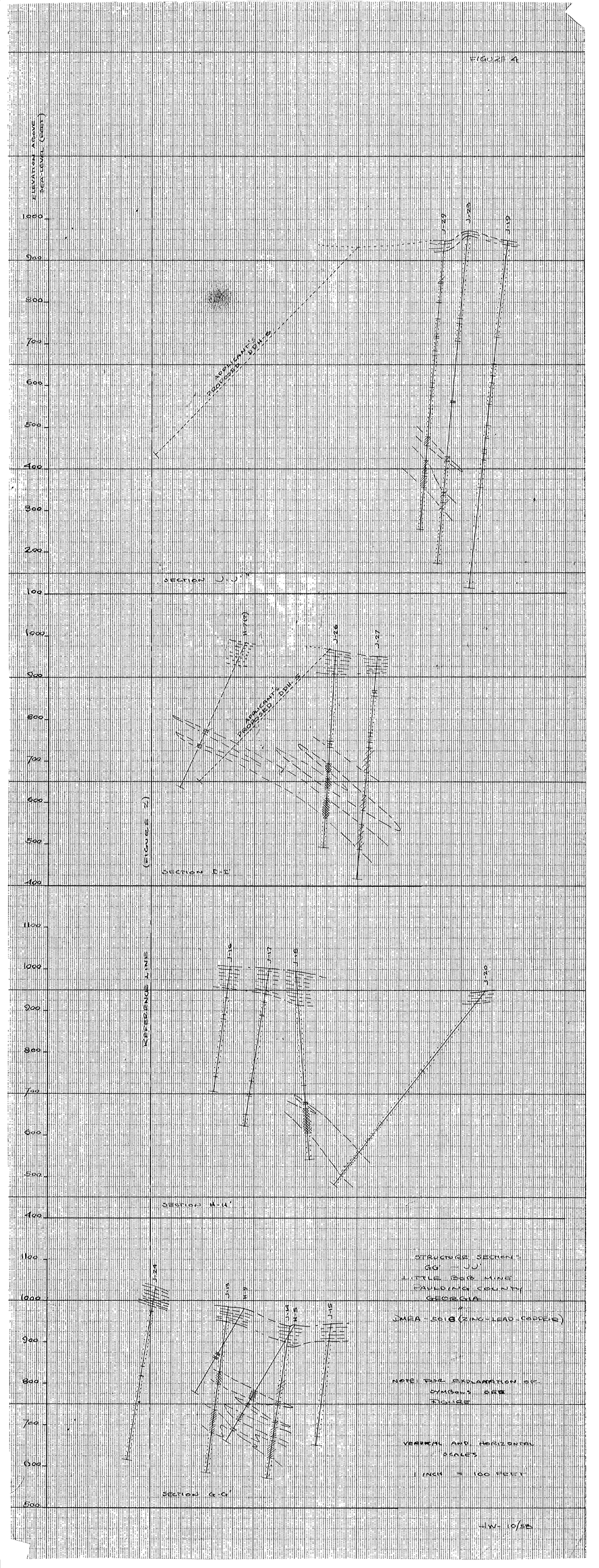

ELEVATION ABOVE SEA LEVEL (FEET)
1000
900
800
700
600
500
400
300
200
100
APPALACHIAN PROPERTIES DDH-5
J-29
J-28
J-10
SECTION J-J'
H-10
J-26
J-27
APPALACHIAN PROPERTIES DDH-5
SECTION D-D'
(FIGURE 2)
REFERENCE LINE
1100
J-16
J-17
J-18
J-20
SECTION H-H'
J-24
J-15
H-9
J-14
H-5
J-25
SECTION G-G'
STRUCTURE SECTIONS
GG' — JJ'
LITTLE BOB MINE
PAULDING COUNTY
GEORGIA
JMEA - 5618 (ZINC-LEAD-COPPER)
NOTE: FOR EXPLANATION OF SYMBOLS SEE FIGURE
VERTICAL AND HORIZONTAL SCALES
1 INCH = 100 FEET
HW 10/56

FIGURE 2

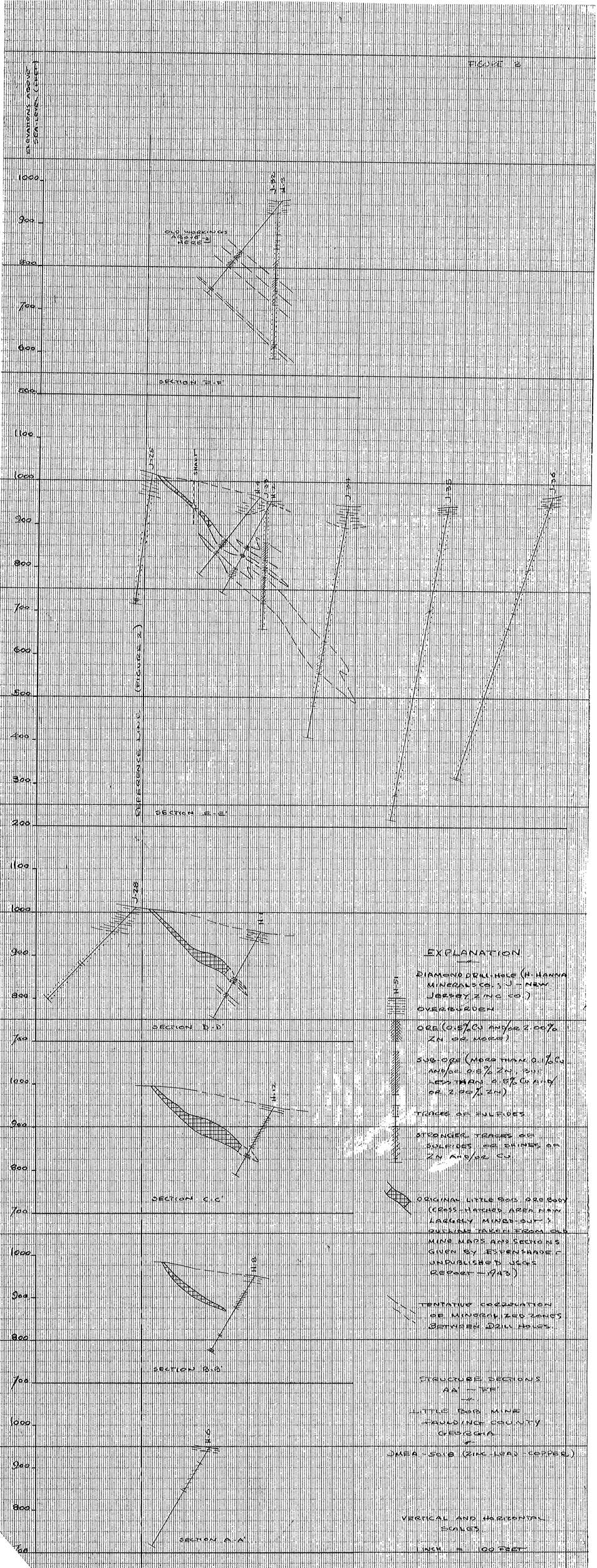
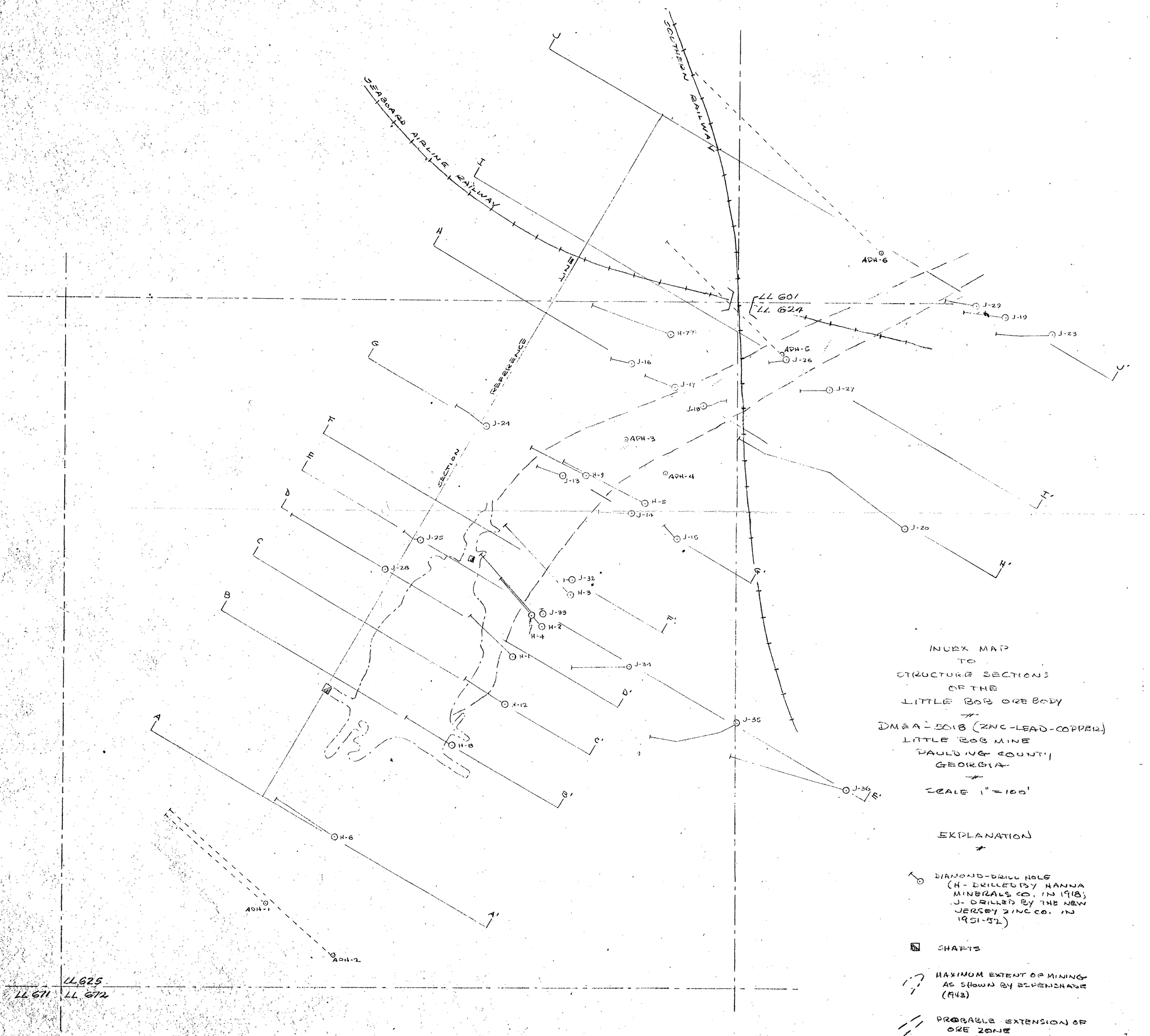

ELEVATIONS ABOVE SEA LEVEL (FEET)
1000
900
800
700
600
500
400
300
200
100
OLD WORKINGS (CROSS HATCHED AREA)
J-28
SECTION E-E'
SHALE
H-4
J-26
J-24
REFERENCE LINE (FIGURE 2)
SECTION B-B'
H-6
SECTION D-D'
H-2
SECTION C-C'
H-10
SECTION B-B'
SECTION A-A'
EXPLANATION
DIAMOND DRILL HOLE (H. HANNA MINERALS CO.) J - NEW JERSEY ZINC CO.)
OVERBURDEN
ORE (0.5% Cu AND/OR 2.00% ZN OR MORE)
SUB ORE (MORE THAN 0.1% Cu AND/OR 0.5% ZN, BUT LESS THAN 0.5% Cu AND/OR 2.00% ZN)
TRACE OF SULFIDES
STRONGER TRACES OF SULFIDES OR SHINES OF ZN AND/OR CU.
ORIGINAL LITTLE BOB ORE BODY (CROSS-HATCHED AREA NOW LARGELY MINED-OUT - OUTLINE TAKEN FROM OLD MINE MAPS AND SECTIONS GIVEN BY ESTERNBRADE IN UNPUBLISHED JCES REPORT - 1943)
TENTATIVE CORRELATION OF MINERALIZED ZONES BETWEEN DRILL HOLES.
STRUCTURE SECTIONS AA' - EE'
LITTLE BOB MINE
PAULDING COUNTY
GEORGIA
AREA - SOIB (ZINC-LEAD-COPPER)
VERTICAL AND HORIZONTAL SCALES
1 INCH = 100 FEET
HW - 10/58

FIGURE 2



INDEX MAP
TO
STRUCTURE SECTIONS
OF THE
LITTLE BOB ORE BODY

DMEA-5018 (ZINC-LEAD-COPPER)
LITTLE BOB MINE
PAULDING COUNTY
GEORGIA

SCALE 1" = 100'

EXPLANATION

DIAMOND-DRILL HOLE (H - DRILLED BY HANNA MINERALS CO. IN 1918; J - DRILLED BY THE NEW JERSEY ZINC CO. IN 1951-52)

SHAFTS

MAXIMUM EXTENT OF MINING AS SHOWN BY ECHENSHADE (1943)

PROBABLE EXTENSION OF ORE ZONE

APH-1 DRILL HOLES PROPOSED BY APPLICANT

HW-10/58