CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
3550 N. Central Ave, 2nd floor
Phoenix, AZ, 85012
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

The following file is part of the John E. Kinnison mining collection

ACCESS STATEMENT

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

CONSTRAINTS STATEMENT

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

QUALITY STATEMENT

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

JEK Notes July 1982

Swansea

Planet Dist

from: Base and Precious Metal mineralization related to low-angle tectonic features in the Whipple Mts Cal and Buckskin Mt. Az. p182-202

in: Mesozoic-Cenozoic Tectonic Evolution of the Colo River Region, Cal., Ariz, and Nev; Anderson-Hamilton volume, edited by E.G. Frost and D.L. Martin. April 1982

Cord. Rocky Publishing, San Diego, Calif
6203 Lake Altmont Ave
San Diego Calif 92119

Detailed study of the Copper Penny deposit, 2½ miles due West of Swansea. Use this as a base model for other deposits - Mineral Hill, Swansea, Planet, Ca Basin (Calif)

Marble breccia believed not to be Paleozoic, but a lime unit in the Artillery fm. Chloritic sericite is propylitic alt. Ore deposition of Cpy-py-hem was introduced into the low angle fault. By K Ar ages adjacent "gouge" to/across the fault surface (Argon loss) indicating mylonites on fault zone must have been > 400°C. Conclude "an internal maximum temp. of 400°C is prob. too high due to substantial argon loss through mechanical annealing and Pb loss. We suspect .... fluids .. 100-150°C at the detachment surface."

John Challinor listed as an owner who gave assistance to field work and supplied data on drilling. Held the property since 1950's.

SWANSEA District

Talk at AGS March 75
P.C. Wicklein

Artillery Fm - Miocene. Tobin Range, Camel Tracks in red sandstone near Swansea.

pC granger Gneiss / Fault Pre-Jurassic, Planet Volc - weakly metamorphosed.

Signal Diorite may be pre-C.

Younger g - possibly Laramide, intrudes Planet volc and Signal diorite.

At Swansea - Signal Diorite grades into carbonatized host rock at Swansea. (Ls of other workers.

Mineral Hill - Carbonatized Volc.

Low-ang G. Faulting post-dates Artillery Fm, so is younger than Miocene. Youngest basalts (10 my) are post-faults.

See U.S. Bur Mines RI 3982 (Planet) - Fairweather - 1 CDH hor. Gold Assay - Trace only.

See U.S. Geol Survey Bull 451 p 60-67

Howland Bancroft: Ore deposits in N. Ariz Bar Mines Min F.6 June Co 1911

Nobs - JEK July 1982

Swansea Mine Planet (Santa Maria) District

Yuma Co Ariz

Clara Consolidated Gold & Copper Mining Co

Something Hanover Dist

News Clipping

2/22/19 100 employed at Swansea here Mine shipping to Humbolt Smelter. (shipping point Planet siding)

2/1/19 280-ton flotation plant about to be completed

6/21/29 Orn organized 1905
Optioned by U.V. in 1918 but followed to lapse soon.

Letter to Roy Driver Fresno Calif 3/15/58 from E D Wilson

Driver identified as owner (recent) asking for information. E. Wilson Replied, enclosing note data compiled by J B Tenney in 1929. Also the following production data from Mineral Yearbooks.

1941 - Old Mill clean up 55 tons: 8800 # Cu
52 Oz Ag
3 Oz Au

42 - 293 tons Ore
52 Oz Ag 1 Oz Au 47200 # Cu

43 - 334 tons ore
45 Oz Ag 33000 # Cu

44 - 1072 tons Ore
76 Oz Ag 113,400 # Cu
Lease cancelled at end of June 44

Tenney - After Completion of RR (Parker Cutoff) in 1908 the Clara Consol Gold & Cu was financed largely in France, spent most of the Money building a 21 Mile Rail R to property and erecting 750 ton Smelter of the Mitchell, Waterjacket type and Chevron dolly, plus shallow shafts and tunnels totaling ± 6000 ft. Smelter torn down and Rebuilt. Operated intermittently June May 1910 to end 1911. Clara Cons went into Bankruptcy in 1912 (Jan)

Swansea lease to W. A. Clark of Bisbee given in May 1917, for ten years. Flotation plant completed Sept 1919. Runs on ? Of Ore 1924

1929 new 250 ton flotation plant was erected by A S & R Operated 3 Mo in 1930.

"Swansea Consolidated Co file - Many News clippings — Swansea ②

letter from GM Butler 2/24/25

Mines Handbook 1922 Swansea lease p 406
Heads ave 3.97% Cu and Rec is 97%
Concentrate ave .45 Oz Ag 23% Cu
300 tpd flotation plant.

Ouston Weeds Co Handbook for 1925 The Swansea is a high cost producer and can no more than break even on (15%) Copper. [redacted]

this may be typing error [redacted]
JEK - check 1925 - 15¢ (cent) Cu.

Colvocoresses Report 1/18/43

Gives history and a summary of ore and geology.

Approximate production

Clara Swansea Co	1911-14	40,000 # Cu
Thomas lease and Sandler operation	1915-17	160,000
Swansea lease (Clark)	1917-20	100,000
Swansea lease (Consol Ariz & South	— —	200,000
Clara Swansea	27-28	10,000
AS&R	1930	20,000
"	1937	20,000
		550,000

Ave Grade of ore was close to 4% Cu.
AS&R about 3.5%.

Colvocoresses was part of operations in 1920's.

1923 estimate in open workings above 400 level
"80 000 tons "little below 3½% Cu."
because of limited ... " some of this was prob mined by AS&R."
is poor for direct smelting.
flotation Recovery good 96% conc 25-28% Cu.
Milling cost was 1.00/ton.

M.J. Elsing Report for UVX - good history, mining costs and ore estimates. July 1929, with plan map.

— Note - No mention of gold by anyone except vague reference in News clipping or by Bancroft who says of early surficial workings that ~~flakey~~ leaf gold reported but he did not see any. Or in a report by J. Mitchell-Roberts on various properties in the Santa Maria and Ellsworth District. 1907
Roberts may have been some kind of ore buyer for the Clara Gold & C Co, and some memos reported on ore owned by them.
Reports give 9oz at Swansea, but working is unmentioned

Swansea Mine
(3)
Planet Dist —
Yuma Co

Mineral Resources
or Mineral Yearbooks

1909 Smelter Erected

1913 Treated 8643 tons Ore and 754 tons tails = 9397
Yielded 585 305 lb Cu, 343 oz Au 4134 oz Ag
by division = ~~6.18~~ 3.39 % Cu ~~0.04~~ oz Au 0.477 oz Ag
3.11 % Cu 0.036 oz Au 0.44 oz Ag

Rebuilt? - JEK → Milled ore in 1930 see other Ref.

1936 & 37 ASARCO Mill Completed 250 T
19111 Tons Milled 1 3/4 8 Months of 1937
48 oz Au 1607 oz Ag (for Dist total - 4 producers)
Closed 1937,

1928 - 1000 Tons worked by Clara Swansea Mine
Smelter Shipments (Also: May have been owned then by Southwest Metals - operated the Shelton Mine, Yavapai Co, and Humboldt Smelter)

1923 - Swansea lease (worked the Signal property -- which is the 400 Tpd Mill Swansea Mine
(flotation)

1910 - Clara Consolidated Gold & Copper Mining Co

1912 - Tobelaved or entered Bankruptcy, reorganized as
Swansea Consolidated Gold & Copper Mining Co.

REPORT OF THE

Preliminary Examination of the

Clara Swansea Mining Company,

Swansea, Yuma Co., Ariz.

July, 1929

H. J. Elsing, E.M.

REPORT OF THE
Preliminary Examination of the
Clara Swansea Mining Company,
Swansea, Yuma Co., Ariz.
July, 1929

M. J. Elsing, E. M.

My conclusions after a two day examination of this property lead me to believe that it is highly desirable for the United Verde Extension Mining Company to enter into negotiations with the owners of the property, the Clara Swansea Mining Company, and the lessee, Ernest C. Lane. Mr. C. H. Scudder of Los Angeles is President of the Company and trustee and has the controlling issue of stock and is in a position to negotiate. Mr. Lane is the holder of a ten-year lease, dated May 11, 1929. He, also, is willing to enter into some agreement which will protect his investment, which to date has been about $7000, and he also wants a fair return for the risks he has taken. Mr. Lane seems to be a very reasonable man and is anxious to negotiate with the U. V. E., but would not at present state his terms and conditions for the surrender of his lease. He asked that he be given a little more time to consider the proposition.

The present is the psychological time to negotiate a deal. The A. S. & R., after an examination by Julius Kruttschnitt, Jr. who recommended the property, turned down the proposition. These negotiations have just terminated. I believe that naturally, Mr. Scudder is

disappointed and he will enter into negotiations with the U. V. X. on yet more favorable terms. Mr. Lane claims that he has two other parties who want his lease. One of these parties are oil people in Texas and the other are business men in California. Mr. Lane is sufficiently shrewd to attempt to use these facts as indications that there are competitors for the property. On the other hand I believe that Mr. Sexton is sufficiently wise to favor a less favorable deal from the U. V. X. than from these other parties because he must realize that with the U. V. X. he has a much better chance to make a deal that will return him some of the money that has been lost.

Another favorable factor is the fact that there are practically no other smelters that are competitors for the ore. This makes the chance of drawing a favorable contract much better.

An outline of a proposed deal is submitted later on in this report. Every eventuality should be figured now and provided for and from my understanding of the situation, although the deal includes several parties and is complicated, nevertheless, by the proper amount of study and consideration now, it should be possible to protect the rights of the company in the event that the property turns out to be a large and profitable one.

Character and value of ore shipped to the U. V. X. In recent months Lane has shipped to the U. V. X. smelter some 2,000 tons of ore. The average grade of this tonnage is 3.86% copper, 9% insoluble, 63.4% iron with traces of gold and silver.

The total gain by smelting this ore over lime rock according to

Mr. Prince is $2.50 treatment cost and a gain of $1.39 which includes differences of freight marketing and refining and gains in metals not paid for.

Quoting from Mr. Prince's letter of May 20th, 1929, we find the following conditions: "Recoveries figured on ten year basis considering one ton Swansea Ore to replace one ton Limerock costing $1.39 at Clarkdale with unloading, handling smelting costs the same. The total saving would be $5.23 per ton of lime used or about $20,000 per month. We just smelted bed 58 on which we used Swansea in place of Limerock and the furnaces smelted faster than on previous bed which contained 18% of lime in place of the 2.7% on bed 59."

Under these conditions alone Swansea ore is highly desirable and on this basis alone the property is one which the company should acquire if possible or at least control for a number of years so that there may be an uninterrupted source for this ore.

Ore in sight. This property has produced a total of 1,000,000 tons of ore. The grade of this tonnage I have been unable to learn definitely. However, I have seen enough figures of assays to believe that it was nearly 4% copper. For example the Swansea Lease milled 153,250 tons that averaged 4.17%. During the latter part of the operations of the company Lane shipped 20,000 tons of ore that ran about 6%. On the other hand present shipments are running 3.5%. I am confident that the grade of the ore can be maintained at 3.5 copper and possibly a little better.

The tonnage being shipped is coming from a stope 100 ft. long

and 17 ft. wide. The work done indicates that the ore is 35 ft. thick. Unless something unforeseen happens this stope should produce about 8,000 tons of ore, of which some 2500 tons have been mined.

This stope has been laid out lengthwise with the ore body. Every set on both sides of the stope and both ends indicate a solid face of ore. Lane has sufficient information to state that the ore body here is 70 ft. wide. Reducing this to 50 ft. wide and assuming one similar stope on each side of the present stope there will be some 20,000 tons for 100 ft. in length of the ore body. Lane claims that this ore body is 1000 ft. long and that he has proved ore along the same at a half dozen intervals.

Ore in the Swansea mine has been stoped along a narrow zone for some 2000 ft. in length from the 500 level to the surface. Only a part of this zone has been explored. There are numerous places where ore has been cut and unexplored. Lane has been connected with the operation of this property for 15 years and he knows more about the property than any one else. With the knowledge he has of the ore bodies he has seen fit to acquire a lease and invest his own money in the development of the ore bodies which he knows are still intact in the mine. He has made a map of the mine and laid out a plan of prospecting and development of the other known ore bodies. This plan will later be discussed. Suffice it to say here that in a comparatively short time he has opened up a large tonnage and thus justified his belief that there is a considerable tonnage of ore left at the one point most easily accessible to the workings now open. Should

one-half of the other places which he wishes to explore turn out well there would be vastly more tonnage than the U. V. X. could smelt as a flux.

As indicating ore possibilities it is worth mentioning that in Churn Drill Hole No. 4 there is 40 ft. of 4% ore which has never been developed. The nearest drift to this point is 500 ft. away. Drifting was discontinued during one of the numerous shut downs and therefore nothing is known about this ore. The significant thing about the occurrence of this ore is the fact that it is about 1000 ft. west of the nearest known ore.

Churn Drill Hole No. 11, much near the mine workings but yet undeveloped, showed 35 ft. of ore (averaging 4.7% copper) beginning at a depth of 320 ft. from the collar of the hole.

It is impossible to say definitely that there is any given tonnage of ore in sight, but simply guessing from conditions in the stope now opened there should be enough ore to supply the U. V. X. with 100 tons per day for more than a year. This assumes that the ore goes not over 20 ft. on each side of the present stope and that endways or along the strike there is only half again as much tonnage.

As regards probable ore it is not unreasonable to assume that a comparatively small amount of development work will open up enough ore to supply a 200-ton mill as Lane thinks can easily be done.

As to the ultimate possibilities of the property one can only guess. There are certain geological possibilities which may indicate a downward extension to the ore body. In other words, it might be that the present ore body is the upward extension of something very much larger and better grade at slightly greater depth. This possi-

bility will be discussed at greater length under the heading A Geological Possibility.

History of Property.

The following brief history of this property was given by E. C. Lane. The Clara Consolidated Gold and Copper Mining Company was formed in July, 1900, being financed by French capital. This company built a 700-ton smelter in which was smelted about 50,000 tons of ore. Operations continued until 1912 when the company became bankrupt and went into the hands of a receiver. About six months later a French Syndicate, known as the Swansea Consolidated Gold and Copper Mining Company, was formed. During this period Lane became connected with the company as general foreman. Operations continued for about fourteen months when the syndicate became bankrupt and again went into the hands of a receiver. A man by the name of Thomas shortly after this receivership acquired a two-year lease in which Lane became a partner. This lease expired in 1916 and Lane continued working as manager for the receivership for the following nine months or until Jan. 1,1917. It was during these last two periods that operations were very successful. Some $300,000 debts of the receivership were cleared up; Lane made $30,000 as his share of the lease and the Thomas estate also made a big profit.

In March or April, 1917, Charles W. Clark and associates formed the Swansea Lease and acquired a 10-year lease on the property. Lane

was put in as general superintendent of this lease and worked nine months and on Jan. 1, 1918 severed his connection with this leasing company. The Swanson Lease operated the property for about two years after which they turned over their lease to the Southwest Metals Co., the latter company working the property until some time in 1923.

A bond issue was outstanding on the property and the bond holders foreclosed with the result that the Hellman Bank of Los Angeles secured the property in 1925. In June, 1935, the Clara Swanson Mining Company was formed and Lane was put in charge as manager. He unwatered the shaft, did considerable development work, shipped 20,000 tons of 6% ore and after fourteen months operations were suspended with the idea of raising additional capital to install a mill. This was not done and on May 11, 1929, Lane secured a 10-year lease.

Outline of Lane's Lease

The most important points in Lane's lease agreement with the Clara Swanson Mining Company are as follows:

The lease is dated May 11, 1929 and is to run for 10 years.

Article (8) - Provides that after six months from the starting of the lease at least 25 men shall constantly be employed.

Article (10) - Royalty is 10% of the net smelter returns.

Article (11) - Within six months from the starting of the lease the lessee must enter into a contract with some engineering concern for the erection of a 200-ton mill and power plant.

Article (13) - Lessee agrees to pay all taxes which now amount to about $1,700 per year.

Lessee agrees to do the assessment work on all claims.

Lessee may discontinue mining and milling operations when copper is less than 16¢ per pound, E. & M. J. quotation, but he must keep the mine unwatered during shutdowns.

The other provisions include the customary clauses regarding labor liens, indemnity, etc. none of which are objectionable.

The lease is signed by:

C. M. Soulen, Pres., Clara Swanson Mining Company and
F. J. Lovering, Secretary, " " " "

The lease was authorized by the Board of Directors, May 7, 1929.

Former Reports on Property.

Lane had at the mine several reports on the property among which were the following:

Report of Alvin B. Carpenter, dated Jan. 1917.

" " B. R. Hatcher for the A. S. & R. dated May, 1929.

" " J. Bruttschnitt, Jr. for the A. S. & R., dated June, 1929.

" " Schlumberger on Electrical Prospecting dated Aug. 1929.

The following notes from these reports are herewith presented:

Carpenter estimates that sufficient ore running at least 3% copper, 50% iron, 10% insoluble, and 2-4% sulphur can be developed to operate a mill with a 200-ton daily capacity.

He estimates the cost of mining upon actual former operations at $3.51 per ton which includes all expenses.

In regard to the geology Carpenter says that the ore occurs in a broken, folded and shattered area of limestone lying between two contacts of granitic gneiss. The width of this area is 900 ft. and it is a mile long. Intruded into the area and the source of the mineralization is a ferro-magnesian intrusive rock. The original limestone is dolomitized and gneiss altered to amphibole schist. Ore forms as replacement of the schist and of the limestone and schist near the contact of the dolomite. The mineral specularite is associated with the ore, the copper values being in the form of chalcopyrite.

The ore bodies are tabular and occur as inclined chimneys, oval in cross-section, dipping at an angle of 45°. The ore bodies are from 6-40 ft. wide and as much as 80 ft. thick. Six of these tabular ore bodies are indicated. There are several separate intrusives each of which carry an ore body. The ore is usually very soft.

Mr. Hatcher in his report for the A. S. & R. states that 1,000,000 tons of ore has been mined and from present indications he is willing to accept Lane's statement that 150,000 tons of 3% ore can very easily be developed.

From his own sampling he states that the new ore body will run 4% and that it is in virgin ground. At 15¢ copper Hatcher estimates a profit of $2.50 per ton can be made on 4% ore and $1.00 per ton on 3% ore when milling at the rate of 200 tons daily.

He states "I recommend that a more thorough examination be made, with a view of spending $20,000 to $25,000 in determining the amount and grade of the ore available."

As regards costs Hatcher states that - (1) Detailed costs of the Swansea Lease under Colvocoresses showed mining and development at $3.60 per ton.

(2) Thomas Lease and Bankruptcy court under Lane mined 360,000 tons at $3.40 per ton.

Hatchers estimated total cost of mining is $3.50 per ton.

Krattschnitt says - "I am pretty well convinced that the work outlined by Mr. Lane will indicate, if not actually, develop a very substantial tonnage of ore with a grade better than 3% copper."

He thinks that a cost of mining of $3.50 per ton can be attained.

Lane's Proposition

Lane's proposal to the A. S. & R. was that they invest in his lease $175,000. Of this sum $125,000 was to be used in the construction of a 200-ton mill and power plant, $25,000 for mine development, and $25,000 for emergency.

Lane agreed that 80% of the net profit should go to the company as the return of their capital and 20% to himself. After the $175,000 had been repaid to the company, that the A. S. & R would receive 60% of the net profits and Lane 40%. In his report Hatcher says - "I believe that Lane would consider a 75-25% split and possibly a 80-20%."

Conditions of Present Operations.

The present working conditions are very bad. To reach the new ore body it is necessary to go down to the 400 level in the no. 7 shaft which is the new vertical three compartment shaft. This shaft is well timbered and in pretty good condition. The timbers have taken no great weight and with the possible exception of a few rotten lagging it will need no repairs for some time. The 400 level station is heavy and in rather bad ground. The station consists of a double track drift with posts between tracks. For preliminary operations it will require no work but with any large tonnage considerable enlargement will have to be made.

The ore body is reached by climbing a 100 ft. raise to the 300 level and then going out on the 300 level to a cross-cut from which a raise goes up 32 ft. to an intermediate level upon which the new stopes have been opened up. The 300 level is connected with inclined shaft No. 2 through which timbers are lowered. The ventilation is good on this level but the ventilation in the stopes is bad. The only thing that makes working possible is a small fan blowing air from the 300-level into the stope.

Stoping is being done by 8" square sets with posts 4 ft. center to center. The most serious thing is the fact that no provision has been made to get gob into the stope. The stope is laid out 26 sets long and 4 sets wide. The probabilities are that the ore will be 55 ft. thick. With ore on both sides of this stope as well as at the

ends gobbing of this stope becomes absolutely necessary.

To get ore to the railroad bins at the collar of the No. 7 shaft it is necessary to handle it on the intermediate level to the 300 level raise, from the 300 level raise it goes to the 400 level raise and from there it goes to the shaft.

Ground Conditions

It has been generally reported that Swanson has very heavy ground. From my examination of the workings now open I find that there are numerous drifts away from the ore body that are untimbered. There are also numerous drifts that are timbered and have stood open for years. When drifts approach ore bodies they are usually caved. This caving is caused to a large extent by the method of mining. When the present stope is opened to its full extent there will be 400 square sets on the sill floor. When it is considered that this stope is being carried up with no provision for gob it will be no wonder that the stope will eventually take weight and finally cave in.

The ore is soft and since it carries almost 90% specularite, it is heavy. The ground in general close to ore must be considered heavy but I do not believe excessively so. There is no question in my mind that a large part of the difficulties caused by heavy ground can be eliminated by the proper planning and laying out of stopes and that by proper precautions there is no need to experience serious diffi-

culties in extracting all of the ore. In former times even caving of ore pillars had to be resorted to rather than a complete and systematic extraction of the ore.

Mining Costs

Carpenter, Hatcher, Kruttschnitt, and Lane maintain that the total mining cost will not exceed $3.50 per ton. Lane claims that he mined 40,000 tons under the Thomas lease at this figure. Colvocoresses' mining cost was $5.61 per ton.

This latter cost is excessive but I do not believe that a cost as low as $3.50 can be attained. I think that $4.60 would be a conservative figure for the cost of mining.

Schlumberger Electrical Prospecting

An engineer representing the Schlumberger Company made an electrical survey of the ore possibilities at the property in August, 1928. The results of the examination are very conservatively stated. A map accompanies the report and shows six separate areas which are supposed to have ore possibilities. Two of these are quite near the mine workings. A small amount of drifting towards these two areas has been done with negative results. The work, however, is far from being complete. I do not give much importance to the results of the

electrical survey but from geological reasons it looks as if the two areas mentioned are worthy of additional work.

Miscellaneous Costs

Railroad freight from Bouse to Clarkdale is $2.10 per ton. Lane has asked for a 30¢ reduction which he seems confident he will get.

Railroad freight from Swansea to Bouse is 90¢ on ore running less than $10 per ton.

Wages for miners are $6.00 per day; for mucker and trammers $5.00. Mostly white men are employed underground.

On shipments to the U. V. X. smelter the returns have given Lane an average of $7.20 per ton. After Swansea-Bouse freight is deducted his net smelter returns are $6.30. The per ton royalty is 63¢ which leaves Lane $5.67 to cover mining and profit.

For each 1¢ drop in the market price of copper the above return would be reduced by about 63¢ per ton.

Milling costs have been estimated as being $1.25 per ton on this ore. The ore, being composed almost entirely of micaceous specularite containing chalcopyrite and a little pyrite, would grind very easily and this part of the total milling cost would be low and a cost of $1.25 per ton is quite safe to figure on. Colvocoresses milled 123,000 tons at $1.40 and with a more modern power plant this cost could be reduced to the first mentioned figure.

Lane's Prospecting Plan

Lane has prepared a map of the mine workings upon which he has laid out a number of prospect drifts and raises. The cost of this work he has estimated to be for $20,000 to $25,000. It is quite an extensive campaign and I doubt that it can be done at the estimated cost. However, for $5,000 or $6,000 the extent of the present new ore body can be very quickly determined. A few short cross-cuts and raises might very quickly show that the ore body continues as large and as good grade as where it is now opened. This work could easily open up 50,000 to 60,000 tons of ore in a very short time.

The completion of the entire campaign might easily open up several hundred thousand tons of ore.

A Geological Possibility

Howland Bancroft in his U. S. Geological Survey Bulletin on Ore Deposits in Northern Nunn County published in 1911 mentions the association of ore with diabase dikes at the Swansea mine. Carpenter and Schlumberger's geologist also mentions this fact. However, none of them particularly emphasize it. Most ore bodies are usually closely connected with some igneous intrusive rock and from all the evidence it seems reasonable to assume that the Swansea ore is definitely associated with the diabase. The largest diabase intrusion in the district

lies about 1500 feet to the west of the Swanson ore zone. The larger part of the surface between this diabase and the ore zone is covered with gravel float but there is exposed in different creek bottoms evidence that there are diabase fingers extending from the main diabase mass into the mineralized area. Mineralization of this character is supposed to be deep seated and represents high temperatures and pressures. It is primary in character and there is no reason why it should not extend to much greater depths than thus far explored. Several of the engineers already mentioned claim that the grade of the copper is increasing slightly with depth. I saw no direct proof of this but it might easily be the case. I do think there is the possibility that the ore zone may be very much larger in depth. The footwall gneiss dips directly toward the largest area of diabase and it is a geological possibility that the main ore bodies may be in the basin thus formed, the present surface and upper shallow ore bodies being but the fingers of something much larger and richer in depth.

Summary of Possibilities.

The future possibilities of the Swanson mine production might be divided into three classes:

1. Flux Ore Possibilities.
2. Mill Ore Possibilities.
3. Greater Tonnage Possibilities.

1. I do not think that there is much doubt that $5,000 or $6,000 spent in development of the present ore body would indicate a reserve of flux ore of the grade and character now being shipped. I believe that additional development work to this would open up sufficient tonnage to supply 100 tons per day for the next two or three years.

2. By carrying out Lane's complete program sufficient tonnage might be developed to warrant a mill.

3. If development turned out as favorably as expected the greater possibilities at additional depth could then be tried. A campaign of churn drilling could be carried on at no great expense. Two of the areas recommended by the Schlumberger electrical survey could be developed by churn drill holes, 400-600 ft. deep, and later on some deeper holes could be put down in the trough between the main ore zone and the large diabase intrusion to the west.

By following some such scheme the property might be made to pay for itself almost from the start of operations. The first step would be to develop and explore the extensions of the present ore body. After these materialized the next step would be to provide more easy access to the ore body and better ventilation as well as a gob level above the ore body so that there would be some way to get fill into the stopes. There is no need to enter into an extensive and costly development campaign. The satisfactory development of this known ore would then warrant reaching out into new areas.

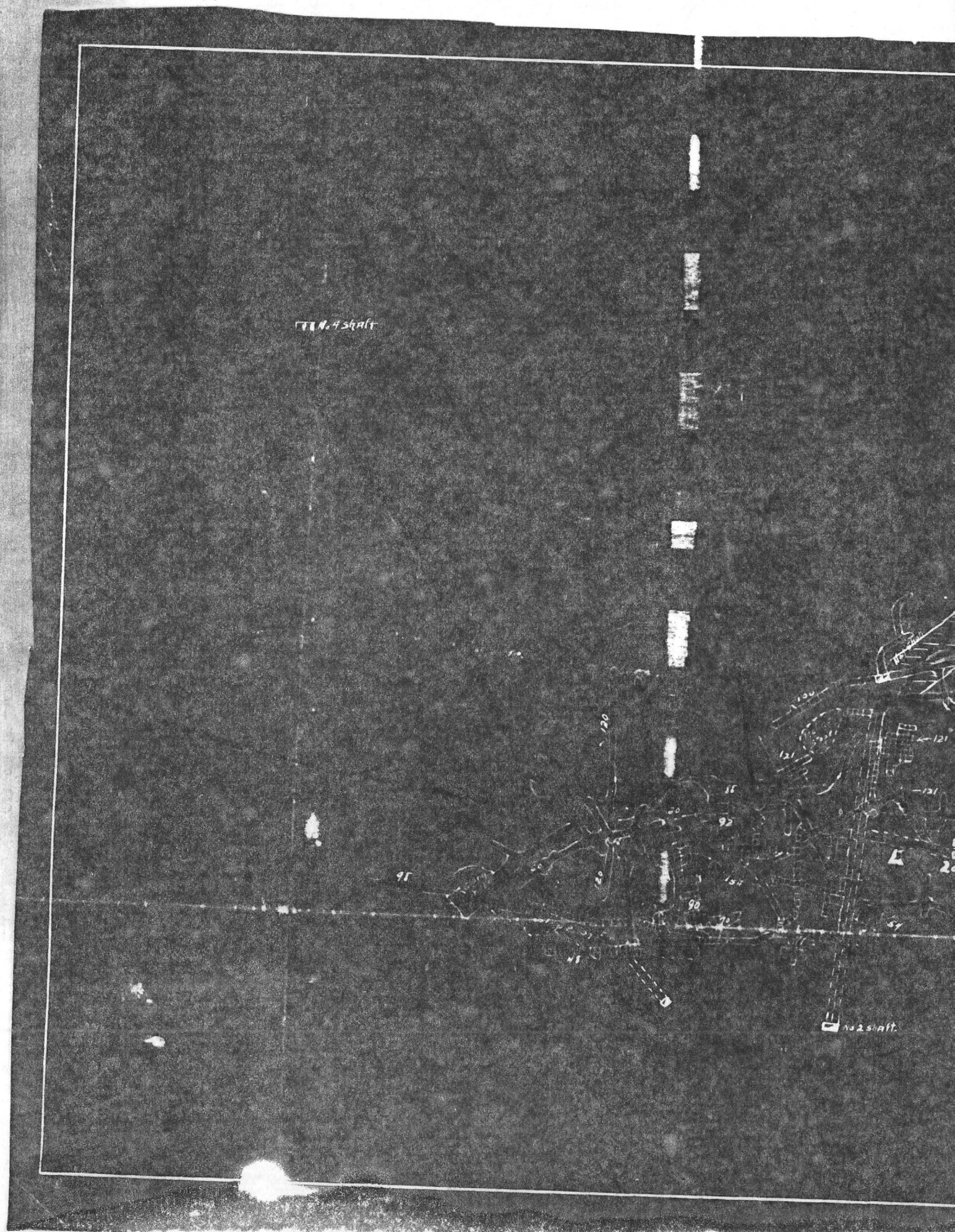
Lane advised that Mr. Souden was willing to negotiate for the sale of the property on reasonable terms but he could not suggest what these terms might be. He stated positively that a fifteen-year lease could be

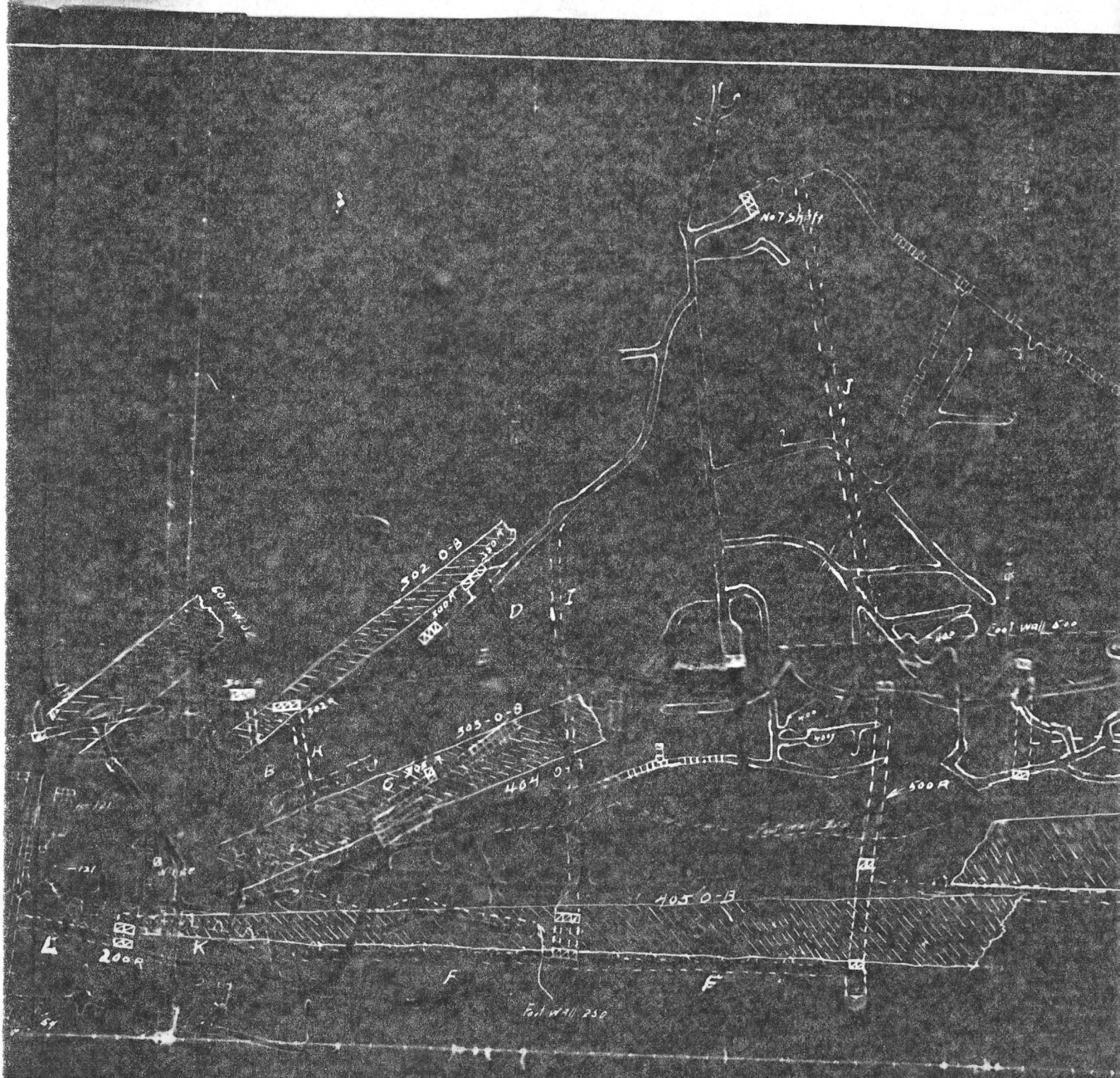
secured in place of the present ten year lease. He has already discussed this matter with Mr. Souden. The erection of a mill could be eliminated from the contract provided in its place there would be incorporated into the lease an agreement to ship a definite tonnage of fluxing ore. In other words the lease might be drawn with an option to buy the mine, and if this could not be done on favorable terms the lease could be drawn for 15 years with no agreement to build a mill but in its place an agreement to produce flux ore at a rate of, say, 2500 tons per month. Such a contract would be much more favorable than the present one. Since the U. V. K. needs this flux ore and since there is no obligation to produce when copper is below 16¢ per pound, there would be no serious obligations that would be assumed in entering into this kind of a contract.

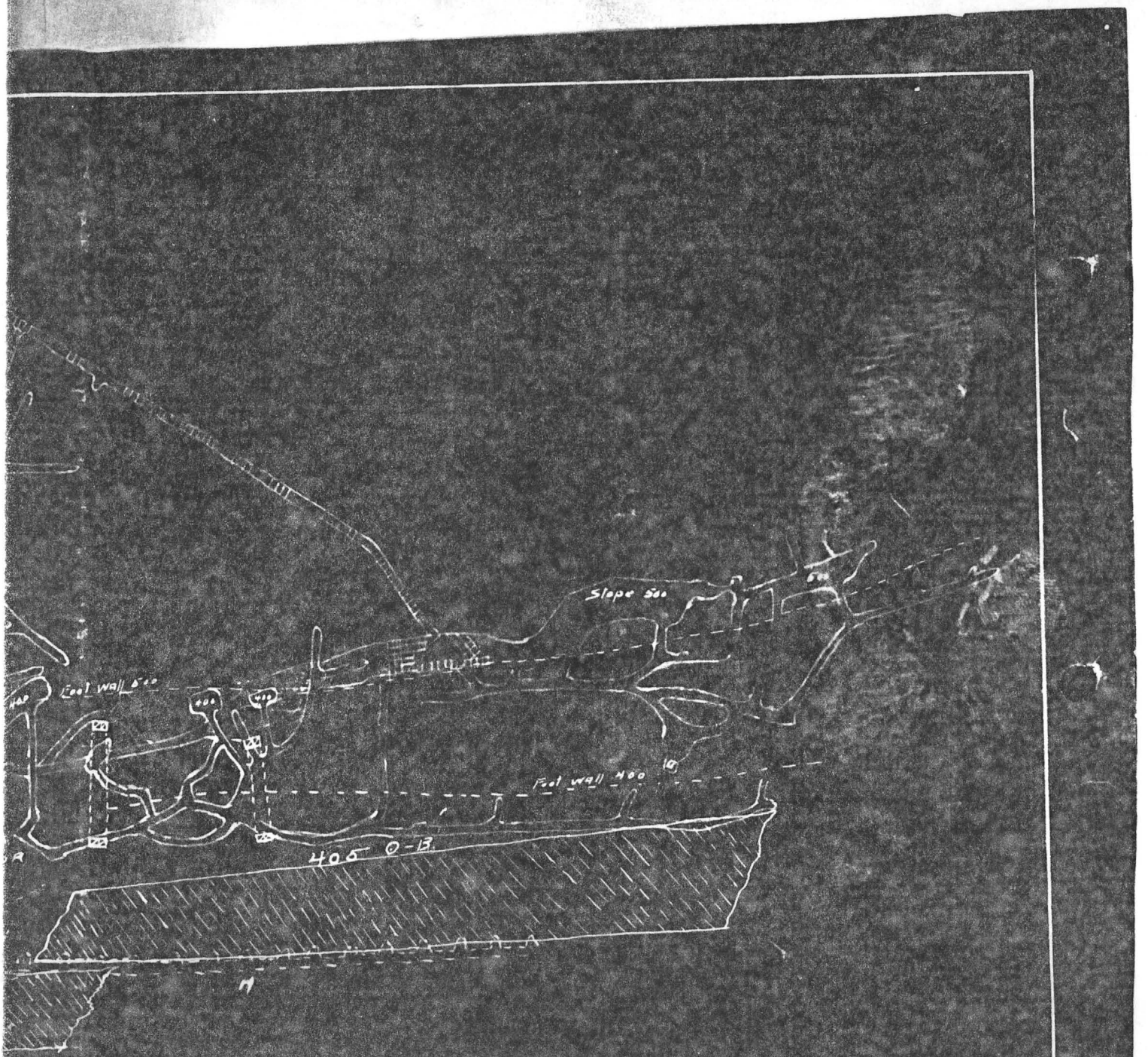
As far as Lane is concerned I believe he will agree to any deal that is fair. He offered the suggestion that he was willing to give an interest in his lease for a sufficient advance to put the undertaking on its feet. Such an advance to be paid back on the basis of 50¢ to $1.00 per ton of ore produced. He is working on a shoe-string and needs immediate help as the undertaking is too large for him to handle alone. I think a satisfactory arrangement mutually beneficial to the three parties concerned can be worked out and it might turn out that a property of real merit can be opened at very little expense for the United Verde Extension.

Respectfully submitted,

July 30, 1929.


No. 4 shaft
No. 2 shaft


No 7 Shaft
302 0-B
303 0-B
404 0-B
405 0-B
Coal Wall 500
Coal Wall 250
500 R
200 R
A
B
C
D
E
F
G
H
I
J
K
L



SWANSEA CONSOLIDATED

PROPOSED WORK

1/4 INCH - 100 FEET.

INTERMED. LEVEL.

200 "

300 "

400 "

500 "

114 1/4' 0' 114 1/4 228 1/2'

1" = 114 1/4