

R E P O R T
ON THE
TUNGSTEN MOUNTAIN MINING PROPERTY
Churchill County, Nevada

Arthur Lakes
January 30, 1962

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This report concerns Tungsten Mountain ore developments and ore extension possibilities at its Hilltop Mine. Details regards Mill and Equipment are referred to Inventory and to Mill Reports too voluminous for this document.

SUMMARY Tungsten Mountain Mining Co. owns approximately 550-acres of mineral locations and one millsite on which property is located Hilltop mine and "New Show" prospect. The property is equipped with modern 100-tons per diem gravity-flotation mill powered by two 100-kw deisel-electric generators and is supplied with water electrically pumped from company well. The Mine is equipped with two 315-cfm portable deisel compressors, drills, cars, mucking machines, and accessory machinery for full production and development requirement.

The mill is located in Clan Alpine valley 92-miles by highway and County road from supply center at Fallon, Nevada. The mine is 2½-miles up mountain road from the mill. Camp is at rented Byers ranch 5-miles from the mill but will be moved to new site adjacent to the mill.

Tungsten Mountain ore showings are opened at two localities: (1) Hilltop Mine on which all underground work has been done and from which all production came. (2) "New Show" bulldozered prospect on indicated 1100-foot NW extension of Hilltop's ore-favorable limey formation. It discloses scattered scheelite ore too low grade for present WO3 market.

Hilltop Mine is opened 300-feet deep by four tunnels and connecting upraises that total 2924-feet of workings. No. 5 tunnel is projected to extend into horizon 220-feet below No. 4 tunnel to total mine depth of 550-feet. This tunnel has been driven 206-feet and has over 1000-feet to go as detailed in the body of this report.

Hilltop workings disclose and partly develop two ore types: (1) Fissure-replacement ore explored a maximum 250-foot length occurs in lenticular and banded form replacing one or both sides of two narrow northerly coursing limey beds some distance removed from granodiorite-sedimentary contact that extends southerly approximately 2000-feet through north part of the property. (2) Contact ore^{which} was first discovered at No. 4 tunnel where it is presently disclosed for about 300-feet before tunnel turns away toward its original objective in the downward extension of the fissure-replacement ore developed in upper levels. This No. 4^{conifer} exposure provided bodies of high grade ore that extend strongly downward toward the deeper horizon to be opened by No. 5 tunnel. No. 5 tunnel has not yet progressed far enough to enter ore-favorable contact zone but shceelite occurs at its face.

The much greater contact length (in excess of 1200-feet at No. 5 with its proved occurrence of high grade ore, coupled with preponderant evidence that original tungsten deposits are related to igneous intrusives, strongly suggest that Tungsten Mountain's future development into contact ore zones will provide ore possibilities greatly in excess.

of those presently disclosed in the more limited fissure-replacement zones.

Hilltop mine produced 7270-tons of ore in two stages: (1) Development ore from No. 1 Tunnel area shipped to various custom mills in 1954-55 when U. S. Government paid \$63 per WO₃ unit (20%) and (2) Mine ore including 1000-tons of diluted 0.3-0.35% WO₃ dump ore into company mill in 1960-61 when Nevada Scheelite M. Co. paid an average \$21.08 per unit as follows:

	Mine tons	Saved units	Saving Indicated	Contained units	Ore grade	Returns dollars	@ \$ per unit
(1)	958.29	1204.76	77.9%	1543.63	1.61%	\$51,170.00	\$63
(2)	6310.00	3084.85	50.0% *	6169.70	0.976	63,852.00	\$21.08
	7268.29	4289.61	57.0%	7713.33	1.06%	\$115,022.00	

Eliminating 1000-tons of diluted dump ore containing estimated 350-units WO₃ (175-units saved) the indicated ore grade of remaining 6268-tons is 1.17% WO₃. The lenticular and banded nature of the ore is ideal for pre-mill sorting. It is estimated that sorting can bring millhead averages better than 1½% WO₃.

The low saving by company mill is due to (1) 55% recovery during tuning in period, later brought to 82½%. However losses estimated at least 30% of original WO₃ contents were derived by "dusting" losses of concentrate fines caught in updraft of roasting furnace prior to magnetic treatment. This loss can be eliminated by floating out iron sulphides from concentrates prior to roasting thereby bringing mill recovery up to better than 82% as detailed in the body of this report.

The above ore production came from 8220-square feet of open stopes that contain about 1/3 supporting ore pillars still remaining to be removed when conditions permit. This indicates an average 6½ feet ore width.

Technically speaking Tungsten Mountain has no blocked out ore. The 1960 "Probable and Possible Ore" estimate indicated 26,452-tons containing 37,522 WO₃ units. This has since been reduced by structural interruption that cut off ore 25-feet above No. 3 tunnel's NW extension. Recent work at south end of No. 3 tunnel has followed good ore up more than 65-feet indicating that the NW interruption will shortly be solved and tonnage estimate reestablished. On the other hand stope production from only part contained in area between No. 3 and No. 4 Levels returned more than the whole estimate of that section.

Ore showings in vicinity of No. 1-3-Intermediate and No. 4 Levels should materially increase by core drilling and tunnel exploration into the indicated hangingwall and footwall ore potentialities described in the body of this report.

Probably the mine's strongest and most favorable ore potentiality is in the long contact area presently undisclosed at No. 4 and No. 5 Levels as described in the body of this report.

Mine conditions obviously require work to prove up the ore occurrences but indications point to possibility that proposed development should provide in the order of 100,000 WO3 units for profitable mining and milling. Some contact ore, and most of disclosed fissure-replacement ore should be made immediately available for production.

To accomplish the above will require about 1600-feet of core drilling and 2500-feet of tunnelling at estimated \$90,000 cost as detailed in the body of this report. The mill will require about \$17,000 expenditure for additions and replacements. Total \$107,000.

CONCLUSIONS The occurrence of ore bearing limey beds disclosed in Hilltop workings and five presently unexplored surface bed together with important more extensive contact zone provide encouragement for development of important ore bodies. There is sufficient ore exposed to provide production to the mill pending considerable ore addition by completion of recommended short developments in the established Levels.

I am confident that Tungsten Mountain property is capable of yielding substantial amounts of high grade tungsten ore that can be profitably produced by recommended mine work and mill improvement.

The outlook, in view of the findings and indications here reported, justifies expenditure of \$110,000 in the proposed exploration and development program and mill improvement.

Details of this report are appended.

Reno, Nevada.
January 30, 1962

Arthur Lakes
Consulting Engineer

PROPERTY Tungsten Mountain property comprises a compact group of 19-mineral claims, 2-placer locations, 1-millsite, and State of Nevada Water permit #17930 developed by 10-inch well 200-feet deep as shown on Map "B". The claims total about 340-acres, Jim Crowe placer location 50-acres, Big 8 placer location 150-acres, mill-site 5-acres and water site 5-acres, the whole 550-acres. Salient mineral claims presently are Hilltop and Porter No. 1.

The claims are unpatented, wholly owned by Tungsten Mountain Mining Co., a Nevada corporation. They are held subject to annual assessment work @ \$100 per claim. All assessment obligations have been complied with to September 1, 1962. The mining claims all adjoin in a group hence assessment work on Hilltop and Porter No. 1 claims applied for the entire group. Placer locations require separate assessment work. Mill and water sites require no assessment work.

The camp at Byers Ranch is rented from Thos. Ormanchea of Fallon, Nevada. A site has been prepared adjacent to the water well near the mill.

LOCATION & ACCESS The properties are located in Sections 21-22 and Maps A-B unsurveyed Section 16 of T 21-N; R 38-E of Mt. Diablo Mer. The property is in Clan Alpine Mining District, Churchill County, Nevada about 60-airmiles NE from Fallon, the County seat and chief supply point of the region. Fallon is 62-miles from Reno, Nevada.

The mineral claims occupy south part of steep rugged Tungsten Mountain which extends 2000-feet above the Clan Alpine valley. The claims range from 5500-feet to 7200-feet above sealevel. The mill is at foot of the mountain at 5250-feet elevation, about 300-feet above the valley floor.

Climate is semi-arid. Work and transportation can continue without interruption throughout the year. Mine workings are dry to the bottom No. 5 Level. Water for drilling and other mine purposes has to be hauled to tanks at the various tunnel portals.

Access (Map "A") The property is reached via the following route: From Fallon 59-miles easterly over paved U. S. Highway No. 50 to Eastgate, thence 28-miles northerly over County road to camp at Byers ranch, thence 5-miles northerly over dirt road across Clan Alpine valley to the mill, thence 2 1/2-miles up Stoney Gulch and switch-back mountain road to portal of No. 4 Tunnel and prospect cuts on Porter No. 1 claim. (Map "B") No. 4 Tunnel is connected by switch-back road and Upraise to No. 3 Tunnel which is connected by road to No. 1 Tunnel and surface cut. The new campsite laid out adjacent to the water well will reduce distance from camp to mine by 5-miles.

Water There is no running water in the region. The Byers camp is supplied from running artesian wells said to be over 75-years old. The mill is supplied with water pumped by 15-HP electric Rada pump, submerged at 200-feet down 10-inch well, thence 3300-feet of 3-inch pipe to reservoir 245-vertical feet higher than well collar and 50-feet above upper part of the mill (Map "B")

Power There is no commercial electric power in the region. Power for the mill is supplied by two 100-KVA Caterpillar diesel-electric generators. The mine is equipped by two 315-cfm diesel portable compressors. A 105-cfm gas portable compressor completes this equipment. Byers camp is equipped with small diesel-electric generator for lighting and refrigeration.

Timber Timber and lumber for camp and mining purposes has to be purchased at Fallon @ from \$90 to \$105 per thousand B. M.

Communication Tungsten Mountain is not connected by phone to any communication center. Investigation has been made re possibility of a radio-phone in conjunction with Forest Service but nothing concrete has resulted. The mine tunnels are connected to the mill by phone.

HISTORICAL Clan Alpine District had been prospected for gold-silver in the 60-70s and small gold-silver prospects were opened in the 1900s at Stoney Gulch about 1-mile north from Tungsten Mountain workings.

In the spring of 1953 two Nevada prospectors, Staggs & Quilici, filed on Hilltop and six Garnet claims and Jim Crowe Placer, shown on Map "B". They submitted same to Arthur Lakes who submitted to Bennett W. Porter of Seattle who bought out the prospectors for cash and November 30, 1953 incorporated Tungsten Mountain Mining Company under Nevada laws. The few prospect holes on Hilltop claim were expanded into No. 1 tunnel which was advanced 215-feet to maximum 60-feet below surface. This tunnel with small underhand stope at portal and 2-upraises provided 958-tons of ore containing 1543-units of WO₃ varying from 0.4% to 4.78% and averaging 1.61% WO₃ per ton (Assay Map "F").

Success of No. 1 tunnel inaugurated No. 3 Tunnel, 77-vertical feet lower where a 105-foot crosscut penetrated strong ore, varying from 4 to 9-feet width for 220-feet drift length.

The showings of No. 1 and No. 3 Tunnels brought about a Defense Minerals Exploration loan to drive No. 4 Adit tunnel, 147-vertical feet (176-feet slope) below No. 3 Tunnel. This started December 1, 1957 and continued to January 31, 1959 at \$31,218.50 authorized expenditure of which 75% was supplied by DMEA as follows: Drift & Crosscut tunnelling 900-feet @ \$32, totalled \$28,800, 600-feet of long hole drilling @ \$1.5 \$900, timbering @ \$7 per foot \$1,326.50, 48-assays @ \$4 \$192.00. Total \$31,218.50. The work disclosed (1) contact ore, adjacent to or in close proximity of sedimentary-granodiorite contact for first 350-feet from tunnel portal, 150-feet length of "vein ore", 150-feet barren broken area (showing no limestone) and 80-feet ore length in downward extension of No. 3 Tunnel's fissure-replacement ore disclosure. It also showed existence of a fault that displaced the southerly vein extension, to date not explored.

Tungsten Mountain then drove a few crosscuts into ore indications at No. 4 Tunnel, drove 176-foot 2-compartment raise connecting No. 4 to No. 3 tunnel, established 120-foot length Intermediate drift midway No. 4 and No. 3 tunnels, and mined about 6300-tons of ore from No. 3, Intermediate, and No. 4 tunnels as shown on Longitudinal Section

In 1958 the Securities Exchange Commission engineer informed Porter that a 100-tons gravity concentration mill could be procured at bargain price from Mesquite, Nevada. This was purchased and moved to the property and in latter part of 1959 mill construction was started, the mill being completed in latter part of 1960 with addition of ball-mill and flotation equipment also bought at bargain price.

In the meantime Water permit #17930 was obtained and a 10-inch well drill 200-feet depth, reaching water at 125-feet and equipped with submerged automatically controlled electric pump.

Productive History comprises two stages. (1) 1954-55 ore shipments directly from No. 1 Tunnel area to custom mills at Gabbs, Nevada and Bishop, California when W03 was \$63 per unit (20%) on U. S. Government purchase. (2) 1960-61 production from ore's downward extension in No. 3 tunnel into and below Intermediate midway between No. 3 and No. 4 tunnels when W03 was \$22.50 per unit sold to Nevada Scheelite Co.

Stage 1 @ \$63 per unit The production comprises development ore taken from 215-feet of No. 1 Tunnel, 2-upraises 45-feet high to surface, and an underhand stope 25-feet long by 20-feet deep at No. 1 tunnel portal. The ore varied from 0.4% to 4.78%.

Returns from 1954-55 Production (Shipped Crude Ore)

	Mine Tons	Dry Tons	Content units	Ore grade	Saved units	Return Dollars	Dollars per ton
(1)	341.06	327.10	628.48	1.91%	628.48	\$23,882.29	\$73.00
(2)	111.03	106.21	263.95	2.47%	170.14	10,509.54	90.00
(3)	233.80	229.60	430.65	2.02%	229.30	8,766.37	38.18
(4)	272.40	257.10	220.55	0.81%	176.84	8,011.80	31.16
	958.29	920.01	1543.63	1.61%	1204.76	\$51,170.00	\$56.13

Of the above (1) 327.10 dry tons containing 628.4 units W03 was bought by Vanadium Cpn. Bishop, Calif. on basis of 100% of contained W03 @ \$38.20 per unit. (2) 107.21 dry tons containing 263.95 units was milled by Inca mill, Gabbs, Nevada returning 170.14 units @ 61.5% recovery, concentrates sold to U. S. Government less \$209.28 charges. (3) 229.6 dry tons wash shipped to El Diablo, Bishop, Calif. (plus a 10-tons test) containing 430.65 units W03 returning 229.3 units @ 53% recovery, sold to U. S. Government @ \$41.25 per ton after deduction charges. (4) 257.10-dry tons of high grade and mill and dump ore shipped to Yaney flotation mill, Gabbs, Nevada, containing 220.55-units and returning 176.84 units @ 80% recovery, was bought for 100% of W03 contents @ from \$30 to \$38.20 per unit. The low grade contained so much lime that Yaney mill refused further flotation treatment because of cost of excess acid required to process flotation concentrates. Dump ore saving was approximately 35%. The above shipments included 79.5-tons of 4.78% W03, the highest grade mined.

Stage 2 @ \$22.50 per unit comprised 6310-tons into company mill.
 Concentrates were all sold to Nevada Scheelit
 M. Co. processing plant 75-miles from Tungsten Mountain mill.
 Price @ \$22.50 per unit. Returns on concentrates sold as follows.

Returns from 1960-61 Production (Mill concentrates)

Dry tons	% W03	Units W03	Pounds W03	Price per unit	Total paid
44,9638	68.603%	3,084.8487	61,696.974	\$21.08	\$63,852.80

* Penalties on two lots reduced the per unit to \$19.34 and \$20.00 respectively thereby reducing \$22.50 per unit to average \$21.08.

The 3,084.85-units (61,697#) contained in the concentrates are believed to represent less than 50% of the W03 content of the mined ore delivered to the mill due to (1) early recovery was @ 55% which was brought to 82% at later stage of milling but, more importantly, was (2) excessive loss by "dusting" of concentrate fines driven by rotary furnace updraft through smokestack because the concentrate fines were subjected to excessive heat required to desulphurize heavy Iron sulphide content and to render the remaining iron, garnet, etc. magnetic for final processing removing iron, etc. through Starns magnetic separator prior to shipment product. It is estimated that the "dusting" loss was at least 30% of the original W03 content.

It is recommended that the W03-FeS concentrates be put through a Gallagher flotation machine to remove most of the FeS with its sulphur content so that subsequent roasting be limited to sufficient heat only to dry concentrates and desulphurize the small remaining FeS left after float extraction. Addition of Gallagher flotation machine is recommended by mill superintendent.

The 6310-tons milled represents (1) 1000-tons of low grade dump ore from No. 3 and No. 4 Tunnels' stockpile dumps diluted by at least equivalent amount of waste dumped upon the ore. It is doubtful that this dump ore contained as much as 0.35% average W03.

On the above 50% recovery basis the 6310-tons would contain 6,169.7 units from which 350 units dump ore would leave 5,819.7 units (1.09% W03 average which is about what assays showed) in 5310-ore ton that came from stopes as follows:

	Length	Height	Square feet
(1) No. 3 Level stope above level	70-ft	15-ft	1050
" " Upraise south end	8-ft	65-ft	520
			1570
(2) Intermediate Stope up to No. 3	80-ft	40-ft	3200
" " "	40-ft	30-ft	1200
Below Intermediate Level	40-ft	30-ft	1200
			5600
(3) Stope in "Contact ore, No. 4 Level	35-ft	30-ft	1050
			1050
			8220

Figuring scheelite ore @ 10-cu. ft. per ton:

5310 x 10 53,100-cu. ft. 53,100 is 6.46-ft. (6½-ft) ore width
8220

The intermediate stopes, due to financial exigencies, were open stopes with supporting pillars of good ore left for safety. It is estimated that about 1/3 of the stoped area includes those pillars to be removed when stoping has been completed above No. 3 Level.

GEOLOGY Maps B-C-E

Regional Geology: The area surrounding Tungsten Mountain property consists of a fault block about 1½-mile square, bounded on the south by Glen Alpine valley and on the other sides by volcanic flow rocks that form most of the mountain range. Some faulting is younger than the flow rocks but the block is probably high point of older faulting. Present top of fault block is at least 2000-feet higher than the valley.

The rock formations consist of folded, faulted, and crushed "mudstones" subdivided into argillite, limy argillite, shale, slate, and hornfels, interbedded by narrow limestone beds, the whole invaded by granodiorite whose surface exposure measures about 5000-feet E-W by 2500-4000-feet N-S and dikes out to the north and west as shown on Maps D-E.

Rock types change without noticeable boundaries. No bedding can be observed in massive hornfels and elsewhere rock attitude determinations are few except along narrow limestone beds that occur in more or less lenticular form, suggesting that they originally were formed by accumulation of calcareous material in undulating mud floor. This results in rapid pinching and swelling of the limestone beds augmented by crushing, strike faulting, stretching and compression and folding to which the structure has been subjected making it difficult to trace the individual beds both laterally and vertically.

Local Geology Tungsten Mountain ore showings comprise (1) Tungsten Mountain or Hilltop ore disclosures on Hilltop claim explored and developed by the tunnels and upraises constituting Tungsten Mountain Mine from which all production has come to date. (2) "New Show" surface prospect 600-900 feet westerly in hillside across steep draw from No. 4 Tunnel portal. The scheelite occurs in limestone and limy argillite indicating 100-foot northerly extension of the limy beds opened at Hilltop mine surface. The scheelite showings of "New Show" have proven too low grade and scattered for commercial consideration at present W03 prices.

Hilltop Showings The rocks containing Hilltop showings form a syncline with steep northerly pitch. The west arm strikes N 1 25° W, dipping 50-75° east and the east arm strikes S 70-85° E, dipping 70-80° northerly as shown on Maps C-E. The southern extensions of the formations are partly engulfed in a "bay" of granodiorite occurring to east and south as shown on Maps C-E. The granodiorite dikes out westerly and northerly into the sedimentaries as shown on Map "C".

The rocks surrounding and containing Hilltop showings have been extensively metamorphosed, particularly in southern extensions toward granodiorite. The rocks at northern extension, inclusive of sedimentaries and granodiorite are less altered.

The above mentioned rock contortion, crushing, and offsetting by minor faulting make it difficult to trace the narrow ore-favorable beds laterally and into lower levels. Limestones, in numerous places, have lost their calcareous content into tactite. A flat thrust fault "A" occurring just below No. 1 tunnel has offset downward vein, extent presently undetermined, and has shattered overlying rocks so that overhead stoping is impossible hence the good near-surface ore has to be mined by open cut. The rocks below the fault are generally firmer and can be mined by shrinkage stoping.

Preponderant evidence is that scheelite deposits are related to acidic igneous intrusions, the deposits mostly occurring in contacted sedimentaries though some commercial showings occur in granitic rock (one at Gabbe, Nevada). At Tungsten Mountain scheelite occurs sprinkled in non-commercial amount in the granodiorite at No. 4 Level, considerably increasing in No. 5 Tunnel though still non-commercial.

The Tungsten Mountain mineralization is high temperature tungsten scheelite (CaWO_3) occurring in two deposit types: (1) veins replacing limestone and associated limey argillite beds dipping towards main granitic mass which is from 150-300 feet away from them. (2) "contact ore" comprising disseminations and bands in tactite zones of metamorphosed limestone at, or in close proximity to, the intrusive acidic granodiorite. The fissure-limestone replacement ore (1) occurs from surface down through Hilltop's No. 1, No. 2, No. 3, Intermediate, and south area of No. 4 tunnel. It also occurs in presently non-commercial amount at "New Show" at 1100-feet northerly extension of Hilltop's ore-favorable limey beds. The Contact ore disclosures occur only where presently explored for 300-feet in from No. 4 tunnel portal and indicated coming in at face of No. 5 tunnel as shown on Map "C".

The tungsten ore formed under "pneumatolytic" conditions wherein the tungsten that forms the orebodies was expelled under pressure (as a chloride) in vapor form from deep-seated molten magma as the magma was cooled towards solidification forcing release of the gases held in magmatic solution. These tungsten vapors, accompanied by other gases, escaped upward along any path that could be utilized and were deposited (under favorable temperature and pressure conditions) by reaction with accompanying gases and reaction with wall rock. In case of Tungsten Mountain deposits the most ore-favorable rocks were limestones and lime argillites described.

Ore deposits can be expected as long as the ore-favorable rocks extend laterally and in depth. Their downward limits would cease where the ore-favorable rocks might truncate at underlying granodiorite floor which is indicated to be at considerable depth at Tungsten Mountain. Hilltop being nearer to the granitic intrusion provides best ore presently disclosed. Exploration along Hilltop's contact zone is expected to provide important ore disclosures similar to the high grade found. "New Show" disclosures being more remote from granodiorite (which dikes out in its vicinity) contain scattered scheelite presently too low grade for commercial consideration. There is possibility that depth might here improve scheelite content in possible zone nearer to underlying igneous

Ore The ore comprises scheelite accompanied by iron sulphides, minor lead, zinc, copper, phosphorus, etc. as listed on attached Spectrographic Analysis. These minerals were introduced subsequently to

scheelite mineralization and vary from point to point. The iron sulphide content generally exceeds scheelite content of the ore, complicating milling process as outlined in this report. Gangue includes altered country rock, quartz (heavily present in highest grade ore), tactite with high temperature silicates garnet, diopside, etc. Gangue is hard and tough in contrast to chalky, friable scheelite. This tends to "salt" samples cut across the ore hence Tungsten Mountain's most reliable sample is the 958-tons shipped from No. 1 tunnel area returning values varying from 0.45% to 4.78% WO₃, averaging 1.61%.

Both fissure-replacement ore (1) and contact ore (2) form in rich bands and lenses averaging up to 6-6½-feet width with from a few inches to several feet interval of low grade ore barren material. This makes it difficult to keep up required mill grade by mass mining but is ideal for hand sorting at the mine. Establishment of sorting house at portal of main transportation tunnel should bring mill feed up to 1½% or better WO₃ at estimated 25% waste discard thereby reducing hauling and milling costs 25% or more for production of same amount of WO₃ in concentrates from the mill.

DEVELOPMENT Most Tungsten Mountain development is in fissure-replacement ore zone, the contact ore disclosures confined to about 300-feet along No. 4 tunnel to where it passes out into east wall as shown on Maps C-D. Hilltop ore is presently opened by 4-adits and 1-Intermediate as shown below. Completion of No. 5 adit tunnel will open into downward extension of ore zones from 150 to 220-slope depth below No. 4 adit tunnel.

Hilltop Mine Development

Level	Elevation	Drift in ore	Drift off ore	Crosscuts	Raises	Total
Open cut	6900-6980-ft	110-ft	30-ft	40-ft	135-ft	140-ft
No. 1 Tunnel	6900-ft	215-ft		10-ft		390-ft
No. 2 Tunnel	6874-ft	45-ft				55-ft
No. 3 Tunnel	6823-ft	225-ft		230-ft	280-ft	735-ft
Intermediate	6749-ft	65-ft	45-ft	30-ft		140-ft
No. 4 Tunnel	6670-ft	521-ft	193-ft	200-ft	447-ft	1461-ft
No. 5 Tunnel	6488-ft	5-ft		201-ft		206-ft
		1186-ft	268-ft	811-ft	862-ft	3127-ft

No. 5 Tunnel is planned to be driven 1000-feet along downward extension of contact ore possibilities (explored 300-feet at No. 4) and drive out at point of expected ore diversion of the fissure-replacement ore into its downward locality below No. 4 Level.

In its progress No. 5 Tunnel will explore (1) about 180-feet ahead from present face to a point under No. 4 tunnel portal, thence (2) about 110-feet farther should enter into indicated downward extension of rich contact ore opened from 100 to 235-feet in from No. 4 portal and thence (3) should explore about 500-feet length along downward extension of presently unprospected contact at No. 4 tunnel which it is recommended to be tested by a series of southeasterly core drill holes extended from area between No. 4 tunnel's 446-449 stations (Map D).

"Contact ore" is expected where ore favorable limey rocks contact SE coursing granodiorite (Map "C"). Strata attitudes show that these ore-favorable contacts will not be continuous and that there will be barren gaps between ore zones. However, in view of rich contact ore already disclosed at No. 4 Level, the probability that they will provide important additions to fissure-replacement ore possibilities warrants the venture.

Map "C" shows limited surface exposure of 7-limestone beds downhill to north of No. 1 and No. 3 tunnel faces. Three of these, inclusive of beds opened in respective tunnels, showed ore but economics demanded early underground production which, coupled with overburden depth, prevented their further exploration. Surface exploration will require D-8 bulldozer and underground exploration of these beds should be performed by core drill and tunnel crosscuts at No. 3, Intermediate, and No. 4 Levels outlined herein.

ORE SHOWINGS Surface Cut started at No. 1 Tunnel portal and extended 140-feet westerly into mountain to 45-feet above tunnel. The cut follows from 4 to 7 feet width of high grade ore formed along west striking, 80° southerly dipping shearage zone in limestone bed, thence mineralized limestone courses 50-feet NE dipping 50-70° easterly to collar of 2-upraises from No. 1 Tunnel, thence the limestone courses 65-feet N 15-20° W with 50-65° east dip to road above sta. 109 of No. 1 Tunnel whence it is followed no farther. The ore along the westerly striking shear zone is high grade similar to its production of from 1½% to 4.7% WO₃ in No. 1 Tunnel. This shear zone continues west past the limestone into hornfels (barren of ore) and should be prospected into southerly extensions of limestone beds disclosed to west of No. 1 Tunnel (Map "C"). The ore coursing NE-NW from the turn provides lenses and bands of replacement ore occurring on both sides of the limestone bed. This ore is indicated by lamping to run from about ½% to 1% and is represented by 310-tons averaging 0.71% WO₃ produced from its downward continuation, in NW drift of No. 1 Tunnel.

An important high grade ore showing courses S 25° E (with 35-50° easterly dip) off from south side of the westerly coursing shearage zone at 55-feet inside Cut portal (old No. 1 tunnel portal). Its SE extension turns easterly forming a syncline like fold. Its downward extension may be strong rich ore extending along fault crossing 43-feet inside No. 1 Tunnel. Its farther downward extension is indicated to be good ore opened 65-feet high (@ 65° east dip) in No. 3 Tunnel's "South raise" which is in upward extension of the important ore mined from No. 3 down through Intermediate and into No. 4 Tunnel.

These showings prove (1) that the ore mined along No. 1 Tunnel's NW extension is not the ore mined from No. 3 Tunnel down. (2) That the Cut's SE showing is either a hangingwall bed untouched below No. 1 Tunnel or (3) might be SE extension of No. 1 Tunnel's NW bed faulted 75-feet easterly by the rich mineralized shear zone. Present indications are No. 1 Tunnel's NW extension is on an ore bed not yet encountered or mined below that Level, and that the important ore bed mined from No. 4 up through Intermediate into No. 3 may yet continue unexplored and unmined in hangingwall country between No. 3, No. 1 and surface.

If the above proves true (1) the ore showings of No. 1 Tunnel provide virgin ore yet to be encountered and mined in downward continuation into No. 3, Intermediate, and No. 4 Levels and (2) the ore showings so far mined from No. 4 up through Intermediate into No. 3 Level are yet virgin above No. 3 to surface.

No. 1 Tunnel (El 6900)

Map D

No. 1 Tunnel is driven 78-feet N 65° W along strong shearage zone dipping 80-85° S along limestone bed indicated to have same attitude. This structure produced from 4 to 9-feet of ore varying from 1½% to 4.78% WO₃ representing more than half 648-tons shipped at average 2.04% WO₃ as shown on Assay Map "F". The tunnel then turns an average N 15° W along limestone bed dipping 45-50° easterly and mineralized on each side by ore lenses and bands with intervening low grade, the ore values from 0.4% to 2% WO₃. Locality of strike divergence from westerly to NW course provided 9-foot width of high grade ore by compressive widening along structure bend. The higher grade ore extended NW about 40-feet, giving way to lower grade representing the 0.71% WO₃ production from No. 1 Level.

At 42-feet in from portal a NW fault dips 35° easterly across the tunnel. Its NW extension out from the tunnel contains 2 to 3-feet of high grade ore, not explored due to unstable ground.

Conditions at No. 3 Level's "South Raise" and the surface both indicate that the above ore may be the unworked upward extension of the important ore mined from No. 4 up through Intermediate to No. 3 Level and that, on the other hand, the downward extension of ore disclosed at No. 1 NW drift may be virgin down from No. 1 Level to and below No. 4.

No. 2 Tunnel (El 6874)

Map D

No. 2 Tunnel is a westerly crosscut 10-feet to NW flat fault "A" which underlies good ore that extends 45-feet along tunnel roof. No ore shown at tunnel floor due to thrust offset of the ore bed. The tunnel top provided 4-foot thickness of ore averaging 4.78% WO₃ for 79.8-dry tons mined from stope 25-feet long by 20-feet high to No. 1 portal. Fault "A" strikes N 27° W and dips 15° easterly. It is believed to be a thrust with the two ore beds disclosed at Surface and No. 1 Tunnel above it and presently disclosed ore showings in No. 3 and below beneath it.

No. 3 Tunnel (El. 6823)

Map D

No. 3 Tunnel is a westerly crosscut 120-feet from portal to fissure-replacement structure striking generally N 15-20° W and dipping 50-65° easterly. This is followed 215-feet to a series of NE crossing faults dipping 60-70° southerly into a wide zone of NE-SW faulting near Sta. 448 at No. 4 Level (Map D). At 190-200-feet the ore structure is cut across by a granodiorite dike dipping 50° S, thence the tunnel is off the vein in barren limestone to face 250-feet from ore structure start. A strong NE fault with 80° south dip crosses the face in barren limestone that dips 70° easterly. The probable ore continuation is east in surface limestone about 30-feet ahead of tunnel face.

The first 120-feet of the ore structure is cut by a series of westerly coursing, 75-80° southerly dipping shears where occurs the higher grade ore, lampping similarly to No. 1 Level's best ore with 70-foot length out sampling an average 6-feet @ 2½% WO₃. Thence the NW

continuation forms a series of ore lenses and bands with intervening low grade. Cut sampling indicated 4-ft. @ 0.95% WOs. As previously noted, the cut samples are believed to assay higher than the actual ore although ores mined up from Intermediate to No. 3 (See Map E) provided 2% and better WOs, the mined ore in some cases being considerably diluted by inclusions from soft gougy footwall.

A crosscut driven SW at 95-feet in from portal cut a thin low grade ore streak enclosed in hornfels but the true SE extension of the ore structure has not yet been encountered at this level.

"South raise", 10-feet NW from ore start, extends up 65-feet in 4-5-feet of good ore dipping 65° easterly into downward continuation of the very good ore stoped up from Intermediate Level (Map E). This raise showing is indicated to be downward continuation of the previously described unexplored ore 43-feet in from No. 1 tunnel portal.

Three raises up 25-feet into 40-foot long sublevel shown good ore to the NW but upraises farther NW driven 15-feet high ran out of ore. Similar conditions occurred at farthest NW ore exposure where DMEA had gotten 2.23% WOs assay. These upward ore cessations are believed due to structural interruptions to be solved. Ore was found at surface above this area.

No. 4 Tunnel (El 6670)

Map D

The ore showings on which No. 4 Tunnel was started were disclosed by road-cut. They comprise (from west to east) "A" 5-feet width in argillite, thence 40-feet to 2-streaks totalling 6-feet width at "B" in hornfels and argillite, thence 65-feet to "C" about 10-inches low grade WOs at hornfels contact with granodiorite whence it is granodiorite to the east as shown on Maps D-C.

It was decided to start the tunnel in "B" 15-feet below road-cut. The tunnel progresses southerly 100-feet along bunchy low grade ore to Sta. 441 where "A" structure junctures in from the west, thereafter dominating strike and widening and enriching the ore structure. At 52-feet farther in a crosscut was driven 50-feet NW to test DMEA long hole drilling showings. No commercial ore widths were found but at 15-feet granodiorite was encountered and followed to face. Enriched ore followed along this contact for 85-feet to east dipping granodiorite cross dike 20-feet thick barren of ore, thence contact ore was followed 25-feet to where it goes out in east wall at sta. 445 as projected on Maps C-D. A crosscut driven 60-feet SW to test DMEA longhole encountered southerly extension of this dike. The long hole indications were not encountered by this crosscut indicative of uncertainties of this exploratory method regards scheelite deposits.

The tunnel progresses southerly from 445, away from the contact's SE extension. It follows scattered mineralization for 150-feet. Better WOs ore was found by short crosscuts to the west as shown on Map D. This interval is crossed by southerly dipping faults that individually offset ore structure short distances west (Map D).

The next 140-feet of tunnel passes through 50-feet of crushed hornfels crossed by six NE striking, S dipping faults, thence soft, crushed hornfels to where downward continuation of the fissure-replace-

ment ore is encountered at Sta. 449. This structure strikes nearly due south, dipping 60-65° easterly enclosed in tactite cut into bunches by numerous minor faults. At 85-feet the structure is cut off by strong SE striking, NE dipping fault that has offset the ore structure and enclosing rocks out of the tunnel which then follows massive and crushed hornfels to the face. On the premise that the fault is normal the ore structure extension south of the fault would be shifted east beyond present workings. Sampled from 0.3 to 2.0% indicating 4-ft. @ 1.36% WO₃.

Two DMEA longholes were drilled NE out from the barren southside of the fault. They showed 0.3% to 0.5% WO₃ but their indicated extension provided only thin sprinklings of WO₃ in unfavorable hornfels. It is noted that the holes test area on same upper side of the fault as occupied by present ore developments.

No. 4 Tunnel is connected by 2-upraises to Intermediate and No. 3 Tunnels as shown on Maps D-E. The Main 2-compartment Raise was driven about 40-feet along ore structure, then purposely swung into harder hangingwall rock to No. 3 Tunnel, 176-slope feet above No. 4. This because of very soft footwall which would unduly dilute ore bypassed down the untimbered chuteway. The second raise was put up in ore for 60-feet then diverged on an ore streak leading into hangingwall country and finally ended over Intermediate roof. It was then rerun from divergent point and followed up strong high grade ore along the main ore structure to Intermediate Level.

Intermediate, (El. 6749)

Map D

The Intermediate Level was run about midway No. 3 and No. 4 Levels. It comprises a 20-foot west crosscut from Main raise chuteway to strong vein that strikes an average N 25° W and dips 50-60° easterly. It is drifted 10-feet NW where it goes out in footwall country and SE for 55-feet in very good ore from 4 to 8-feet thick. It then turns nearly due south for 20-feet in bunchy ore. The ore provided some of the mine's best grade and was open stoped up to No. 3 and halfway down to No. 4 as previously detailed. Drift exploration is warranted both NW and SE and core drilling into both walls is recommended.

No. 5 Tunnel (El. 6488)

Map D

No. 5 Tunnel portal is near steep gulch that courses NE down the mountain to Stoney Creek. The tunnel objective is to disclose and develop scheelite ore possibilities along contact zone and open downward extensions of the fissure-replacement ore opened above as outlined in this report.

The tunnel crosses irregular hornfels-granodiorite contact for 93-feet in from portal, then diverts into granodiorite curving 87-feet back toward contact which is indicated to be immediately ahead of the face by a wedge shaped body of hornfels liberally sprinkled with WO₃ on south drift side but merging into granite on the north side. The ore showing is presently noncommercial occurring in hornfels which elsewhere in the mine are barren or meagrely mineralized by WO₃. The showing is encouraging for good ore occurrence at this horizon when ore-favorable limey rocks are encountered. The WO₃ occurrence in granodiorite is much stronger than shown at No. 4 Level. Flat vein-lets of quartz liberally mineralized by WO₃ occur in the granodiorite and in hornfels near surface.

ORE POSSIBILITIES
Map "E"

The lensing and banding characteristics of Tungsten Mountain ore occurrences make difficult an estimate of tonnage possibilities.

Technically speaking, Tungsten Mountain has no blocked out ore (i.e. opened on 3-sides close together). A 1960 Ore estimate was varied by structural interruption that cut off ore continuation 25-feet above No. 3 Tunnel's NW extension. However recent work at No. 3 South Raise followed up good ore for 65-feet which indicates that the NW interruption will be satisfactorily solved and reestablish the 1960 ore estimate for that area. On the other hand the stope production from only part of the estimated area between No. 3 and No. 4 Levels exceeded estimate for the whole.

The previously estimated fissure-replacement ore possibilities should be materially increased by results of development by short drillhole and tunnel exploration into hangingwall and footwall areas of No. 1-3-Intermediate and No. 4 Levels.

One of the strongest and most favorable ore potentialities comprises the presently undisclosed area along granodiorite-ore favorable sedimentary contact that extends southerly out from No. 4 Tunnel and is to be fully explored by projected No. 5 Tunnel. Heretofore Tungsten Mountain's No. 1-3-Intermediate and No. 4 workings were driven away from contact locality into known points where ore existed at surface and very little work has been done on the contact though high grade ore has been exposed where the contact zone has been opened at No. 4 Level.

The contact zone provided a most ready path for accessibility of WO₃ gases expelled from deep seated magma thereby making the ore-favorable contacts highly vulnerable for rich ore deposition as has been proven by rich upper parts of contact bodies in No. 4 Level whose downward continuation is strongly toward No. 5 Level, which also has provided indication of ore occurrence at that deeper horizon.

Whilst it will require more work to prove tonnage, the indications point strongly that presently exposed ore showings and the reasonably expected ore developments should provide in order of 100,000 or more units accessible for profitable mining and milling.

DEVELOPMENT PROGRAM
Map D

The above conditions recommend core drilling, crosscutting and drifting both hangingwall and footwall areas of fissure-replacement zone preparatory to ore production. Development elsewhere in the mine includes core drilling and tunnelling the contact zone at both No. 4 and No. 5 Levels plus exploration for displaced fissure-replacement segment south of No. 4 tunnel's #52-Fault (sta. 452).

First sequence comprises 16-horizontal drillholes averaging 40-50-feet, eight holes into hangingwall and eight holes into footwall of No. 3-Intermediate, and No. 4 Levels. Total drilling about 800-feet. Ore-favorable showings by drilling to be followed by crosscut-drift development into them preparatory to ore production. Total tunnelling about 260-feet crosscut, 700-feet drift.

Second sequence comprises five drill holes drilled northeasterly from 30 to 180-feet at 50-foot intervals between No. 4 Tunnel's sta. 446-449. Drilling total about 500-feet. Two westerly drill holes 40-60-feet from No. 4 tunnel's sta. 452 in search of ore segment and enclosing tactite displaced by #52 Fault. In case of negative results drill two holes at S 50° E and S 45° E in chance that faulting was in opposite direction. Each hole should extend about 125-150 feet from sta. 454, total drilling 300-feet. In event of ore disclosure drive crosscut-drift tunnels preparatory to ore production. Distance presently undeterminable.

Third sequence comprises about 500-feet drift out along contact zone at No. 4 Tunnel according to drillhole indications.

Fourth sequence comprises about 800-feet southerly extension of No. 5 Tunnel along contact zone and crosscut eastwardly into downward extension of fissure-replacement ore projected down from disclosure at No. 4 tunnel. Crosscut-drifting estimated 150-300-feet.

Estimated Cost on basis of \$6 per drill foot if contracted, \$3 per foot if Tungsten Mountain purchases drill. Tunnelling cost estimated at \$32 per foot.

<u>Drilling</u>	<u>Location</u>	<u>Footage</u>	<u>Cost</u>
(1)	Walls 3-Int-No. 4 Levels	800	\$4,800
(2)	Into contact No. 4 Level	500	4,000
(3)	For south ore segment #4	300	1,800
		1600	\$9,600 **

**Cost be about \$4,800 if company owned drill.

<u>Tunnelling</u>	<u>Location</u>	<u>Footage</u>	<u>Cost</u>
(1)	Into walls 3-Int.-4 Levels and drift development	900	\$28,800
(2)	No. 4 Tunnel contact	500	16,000
(3)	No. 5 Tunnel contact zone	800	25,600
"	into downward extension fissure-replacement ore	300	9,600
		2500	\$80,000

MILL Reference is suggested to the following for mill description, milling problems, repairs and alteration data which are too voluminous for this report:

- (1) Report on Scheelite Concentrator, Tungsten Mountain Mining Co. by Albert Silver, Metallurgist, Reno, Nevada
- (2) Reports by K. W. Dunham, Tungsten Mountain Mining Co Mill & General Superintendent dated December 9, 1960, January 14, 1961, September 2-3, 1961 which latter lists \$6,450 requirements for Gallagher flotation cells and other additions to bring mill up to proper saving capacity.

The mill's secondary (Cone) crusher went out of commission in such disrepair that the manufacturer's agent advised against attempting its over haul and repair. He estimated that Tungsten Mountain M. Co. would be economically ahead by purchase of a new crusher at about \$10,000.

On basis of above it is indicated that it will require \$16,450 to put the mill into high saving efficiency as outlined here under "Productive History".

METALLURGICAL LABORATORIES, INC.

CHEMISTS • ASSAYERS • SPECTROGRAPHERS

1142 HOWARD STREET

SAN FRANCISCO, CALIFORNIA 94103

AREA CODE 415 863-8575

REPORT OF ANALYSIS

Submitted by Mr. David Le Count Evans
1700 Royal Drive
Reno, Nevada 89503

Date October 31, 1974

Sample of Minerals

P. O. No.

Lab. No. 7858

SAMPLE MARK	PERCENTAGES
	<u>Tungstic Oxide</u>
#1	0.01
2	0.29
3	1.07
4	0.46
5	0.11
6	0.45
7	0.77

METALLURGICAL LABORATORIES, INC.

By 

METALLURGICAL LABORATORIES, INC.

CHEMISTS • ASSAYERS • SPECTROGRAPHERS

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Reno, Nevada 89503

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Minerals

P. O. No.

Lab. No.

7858

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PERCENTAGES

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1.07

4

0.46

5

0.11

6

0.45

7

0.77

Tungstic Oxide

METALLURGICAL LABORATORIES, INC.

By

Robert C. Dumas

METALLURGICAL LABORATORIES, INC.

CHEMISTS • ASSAYERS • SPECTROGRAPHERS

1142 HOWARD STREET

SAN FRANCISCO, CALIFORNIA 94103

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0.46

5

0.11

6

0.45

7

0.77

METALLURGICAL LABORATORIES, INC.

By

Robert D. Dunt

RECOMMENDATIONS

It is recommended that-

(1) CURRENT PLANS TO RE-EVALUATE & IMPROVE THE MILL FLOW-SHEET - THEN RE-BUILD MILL - AND REFINED PROCESS - DEVELOPED - RESERVE - BE ABANDONED

(2) THE COMPANY CONCENTRATE - ON DEVELOPMENT - ESPECIALLY - IN THE NO. 4 & NO. 3 TUNNELS, & RAISING BETWEEN LEVELS AS NEW ~~MINERALIZATION~~ MINERALIZATION IS ENCOUNTERED -

(3) PROCEED WITH - EXPLORATION AND DEVELOPMENT FROM TUNNEL 5.

(4) DEVELOPMENT & EXPLORATION BE PROCEEDED AND/OR ACCOMPANIED BY DETAILED GEOLOGICAL MAPPING, ASSISTED BY A COMPLETE SAMPLING PROGRAM - FOR ALL LEVELS.

(5) MINERALIZATION FROM DEVELOPMENT HEADINGS - BE STOCKPILED AT MILL SITE. EXPECTATION WOULD BE 14 TONS PER 5' ROUND PER HEADING, IF 12 ORE.

(6) ASSUMING THAT DEVELOPMENT PROVIDES POSITIVE RESULTS - ~~REVIEW~~ PROCEED WITH METALLURGICAL STUDIES.

AFTER 12 MONTHS
(7) THE COMPANY - REVIEW - SIZE OF RESERVE - CURRENT FUTURE INDICATED ECONOMICS COST OF ~~THE~~ REBUILDING MILL, ET, CETERA. WITHOUT ~~A~~ YEARS SUPPLY ~~AT PRESENT~~ ~~TO~~ A ONE YEAR SUPPLY OF ORE (IN PLACE STOCKPILES) TO PROCEED WITH MILL - ~~WORTH~~ ~~IT~~ WOULD NOT BE RECOMMENDED

- 7. CONTINUE WITH EXPLORATION & DEVELOPMENT.

5x4x7

1440

28
300
8400

365
100
36,500

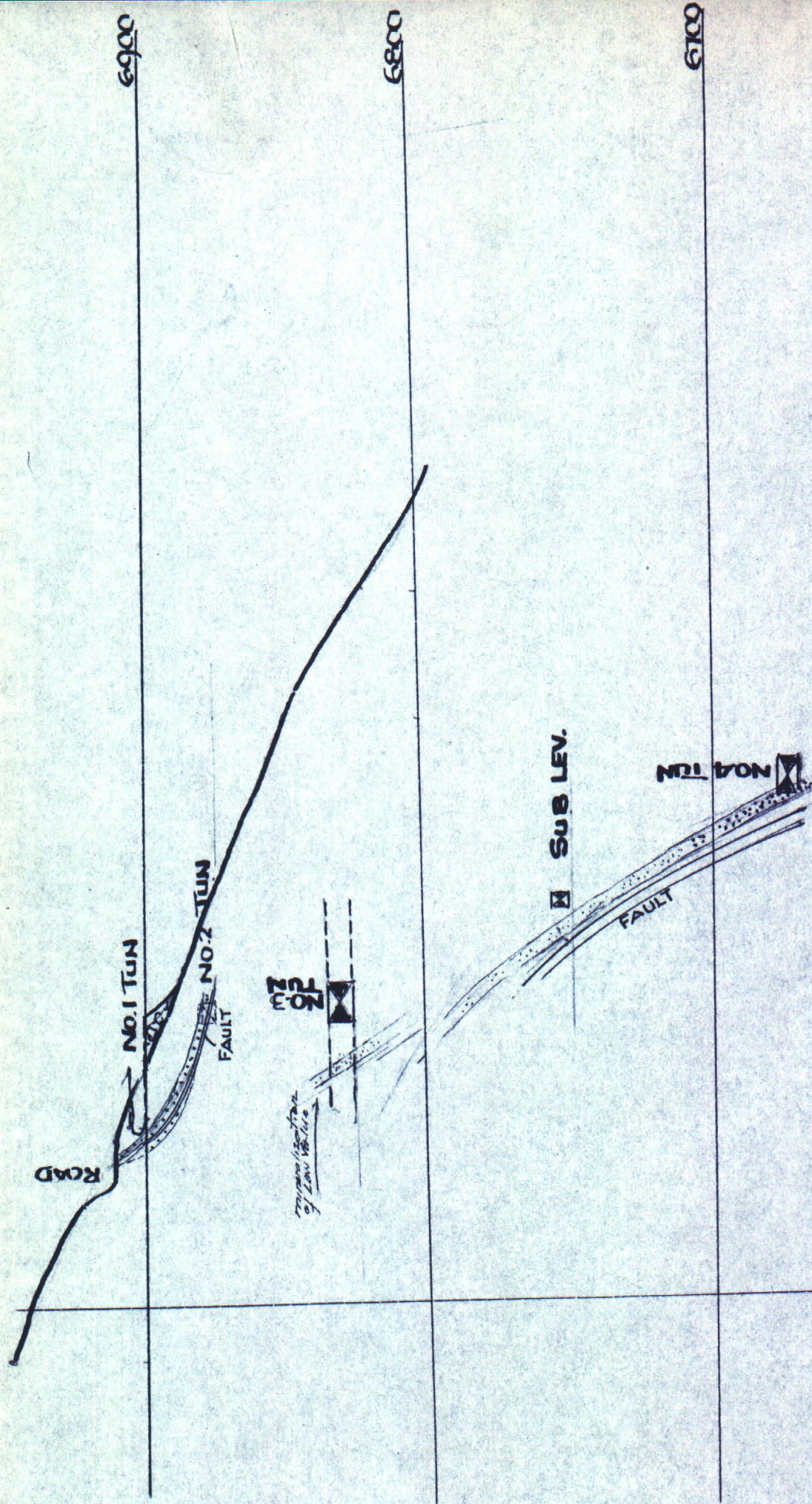
- 1700
365
365
1700

365
50
17,250

TEST-2 - LAKES - ESTIMATE of 1.09%
AS - GRADE FROM STOPS

15 -
ALEs - $\frac{0.77}{2.00} \times 2.36$ (GRADE FROM
LEVEL STAMP)

- or 0.9% -



WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

SECTION - A

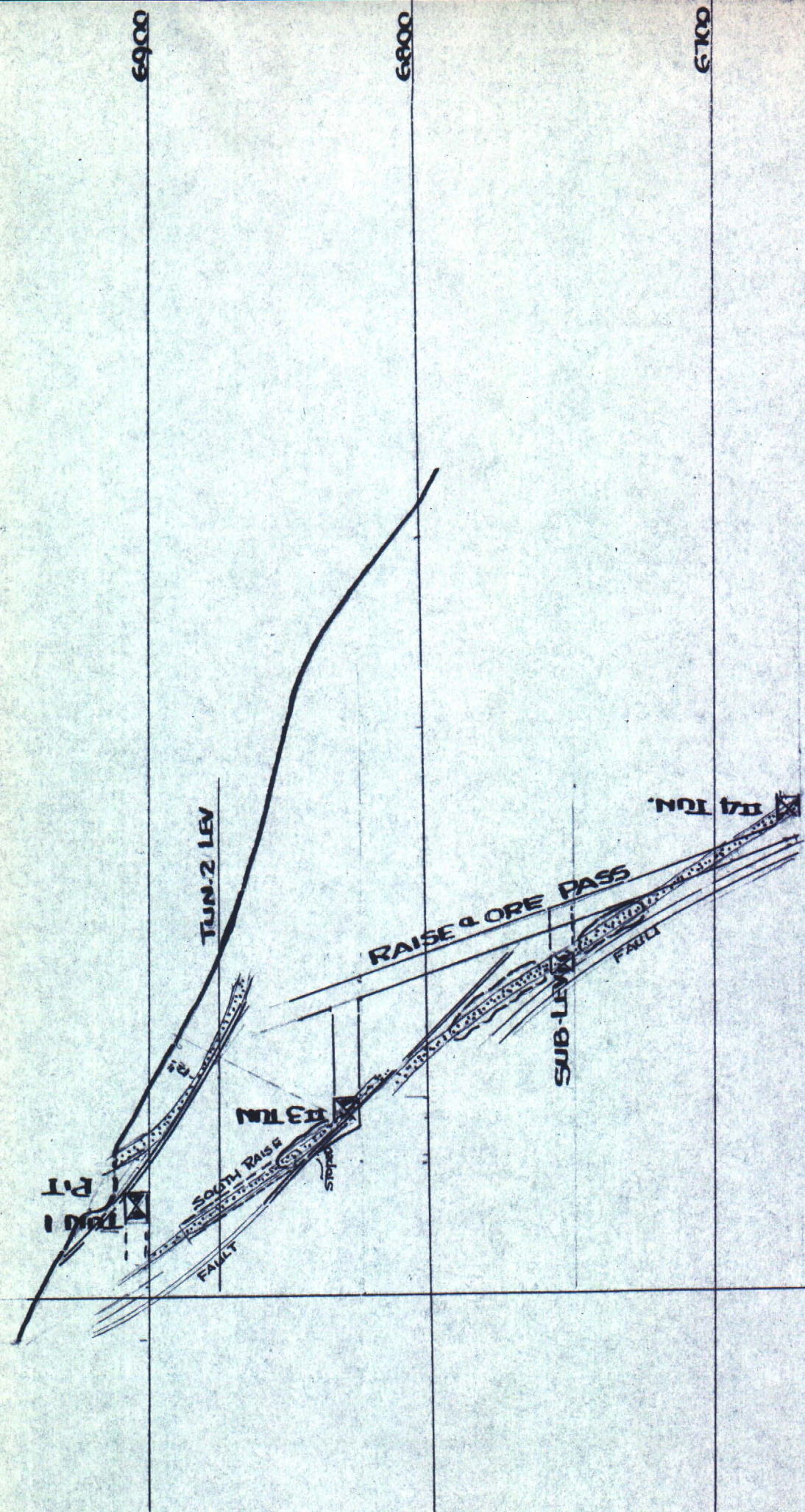
RECONNAISSANCE

1"=50'

BEHRE DOLBEAR & CO.
DAVID LEICHT EVANS
GEOLOGIST

OCT. 31, 1974

A



WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

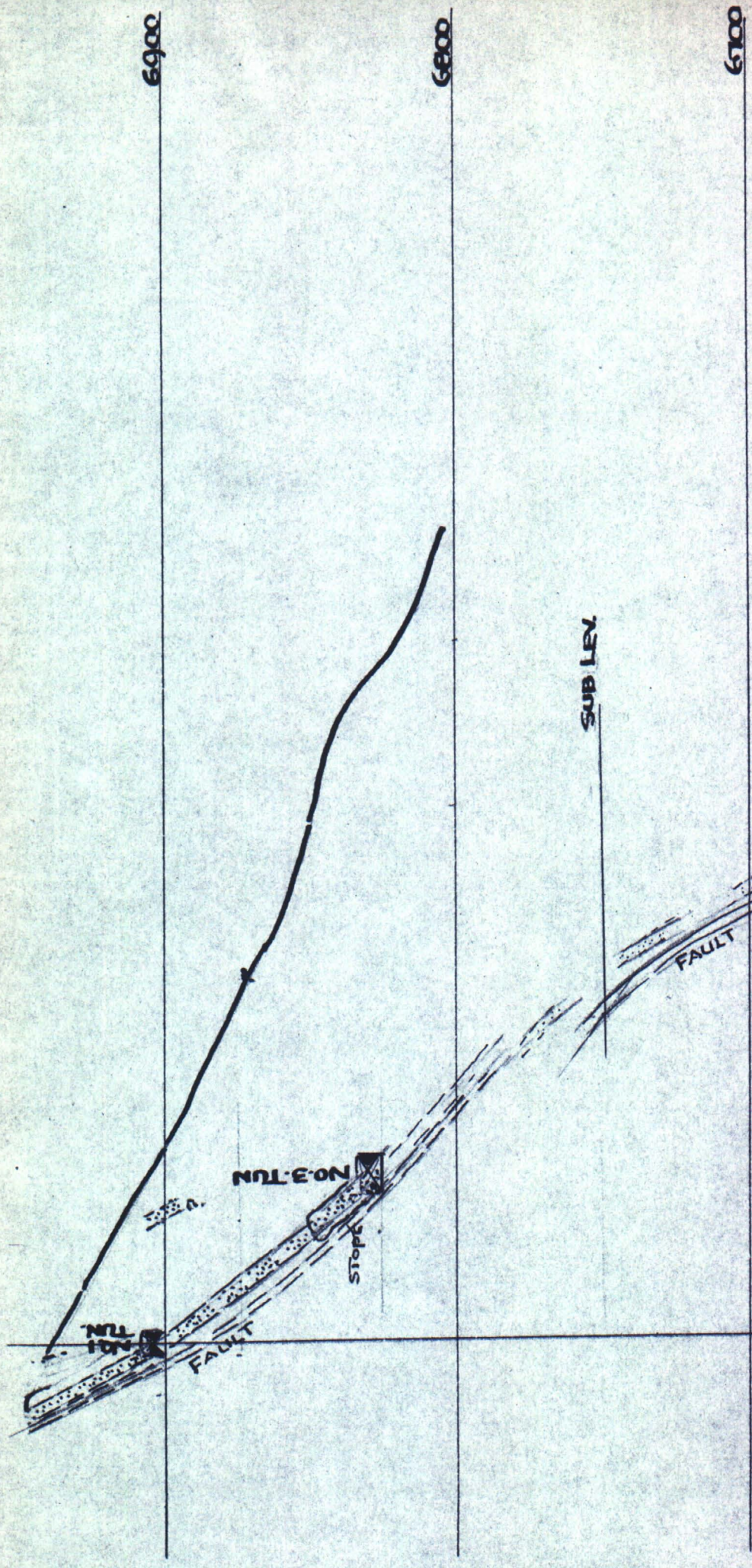
SECTION-B
RECONNAISSANCE

1"=50'

BEHRE DOLBEAR & CO.

DAVID LEACONT EVANS
GEOLOGIST

OCT. 31, 1974



WESTERN HEMISPHERE
PRODUCTION CORP.

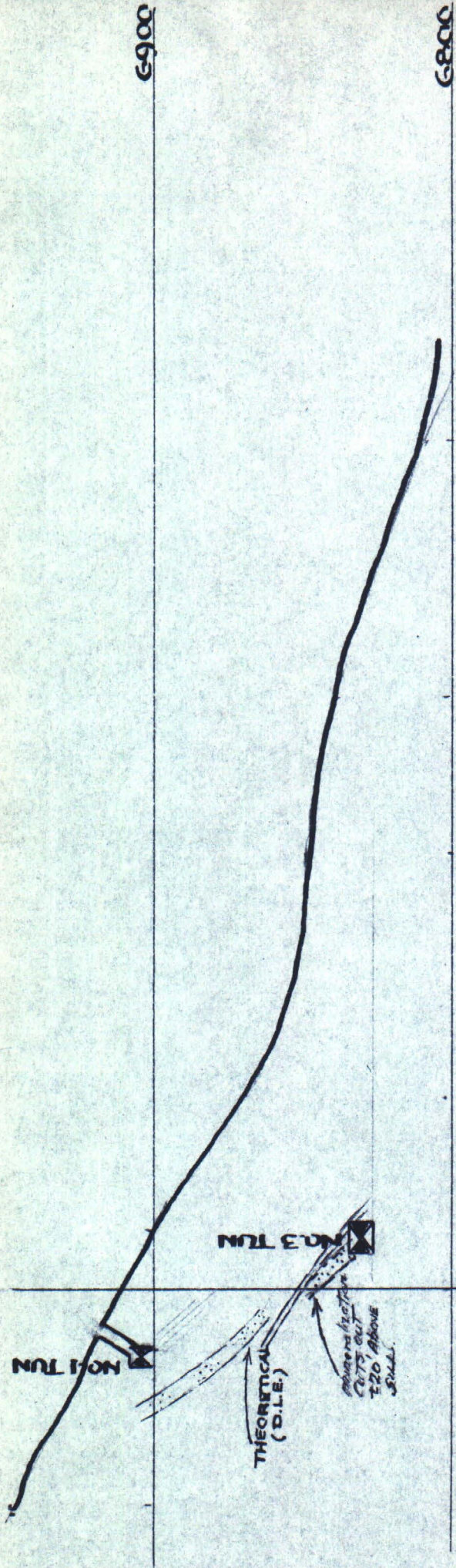
TUNGSTEN MIN. MINE
CHURCHILL CO., NEVADA

SECTION ~C

RECONNAISSANCE
1"=50'

BEHRE DOLBEAR & CO.
DAVID LECOUNT EVANS
GEOLOGIST

OCT. 31, 1974



SUB LEV.

FAULTING

WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN MINE
CHURCHILL CO., NEVADA

SECTION-D

RECONNAISSANCE

1"=50'

BEHRE DOLBEAR & CO.
DAVID LECOUNT EVANS
GEOLOGIST

OCT. 31, 1974

6900

6800

6700

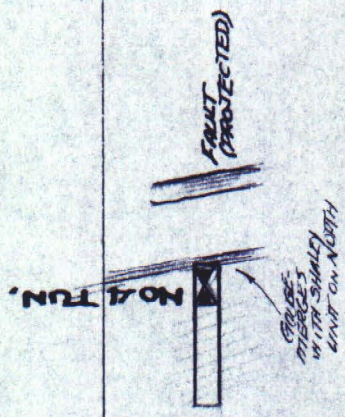
6600

SUB-LEV.

LAKES REPORTS
ORE AT SURFACE

ORE
CUTS
OUT

2.03% CuO₃
AT LEVEL
(LAKES)



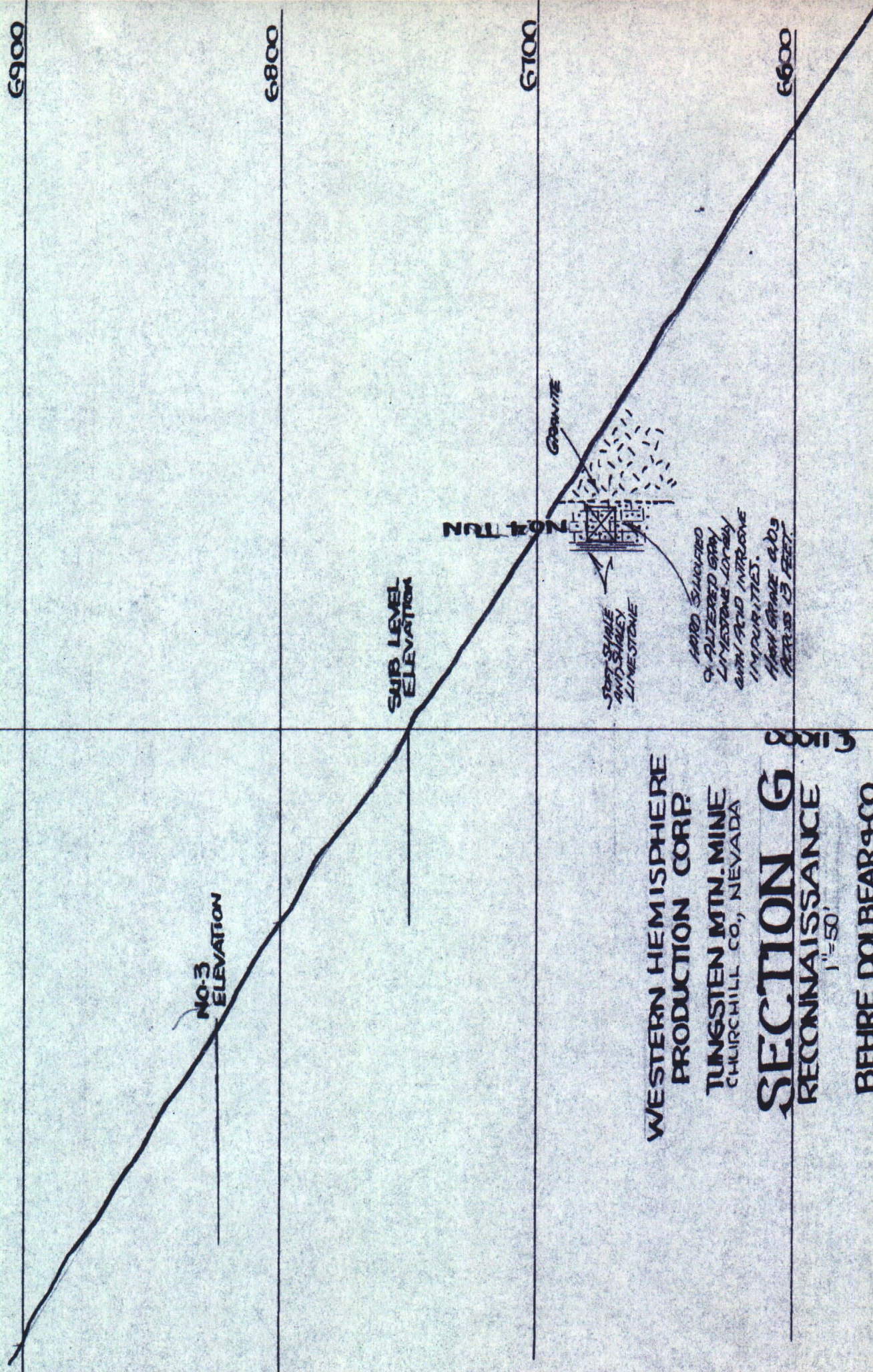
WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

SECTION - E
RECONNAISSANCE
1" = 50'

BEHRE DOLBEAR & CO.
DAVID LEIGHTON EVANS

GEOLOGIST
OCT. 31, 1974



WESTERN HEMISPHERE
PRODUCTION CORP.

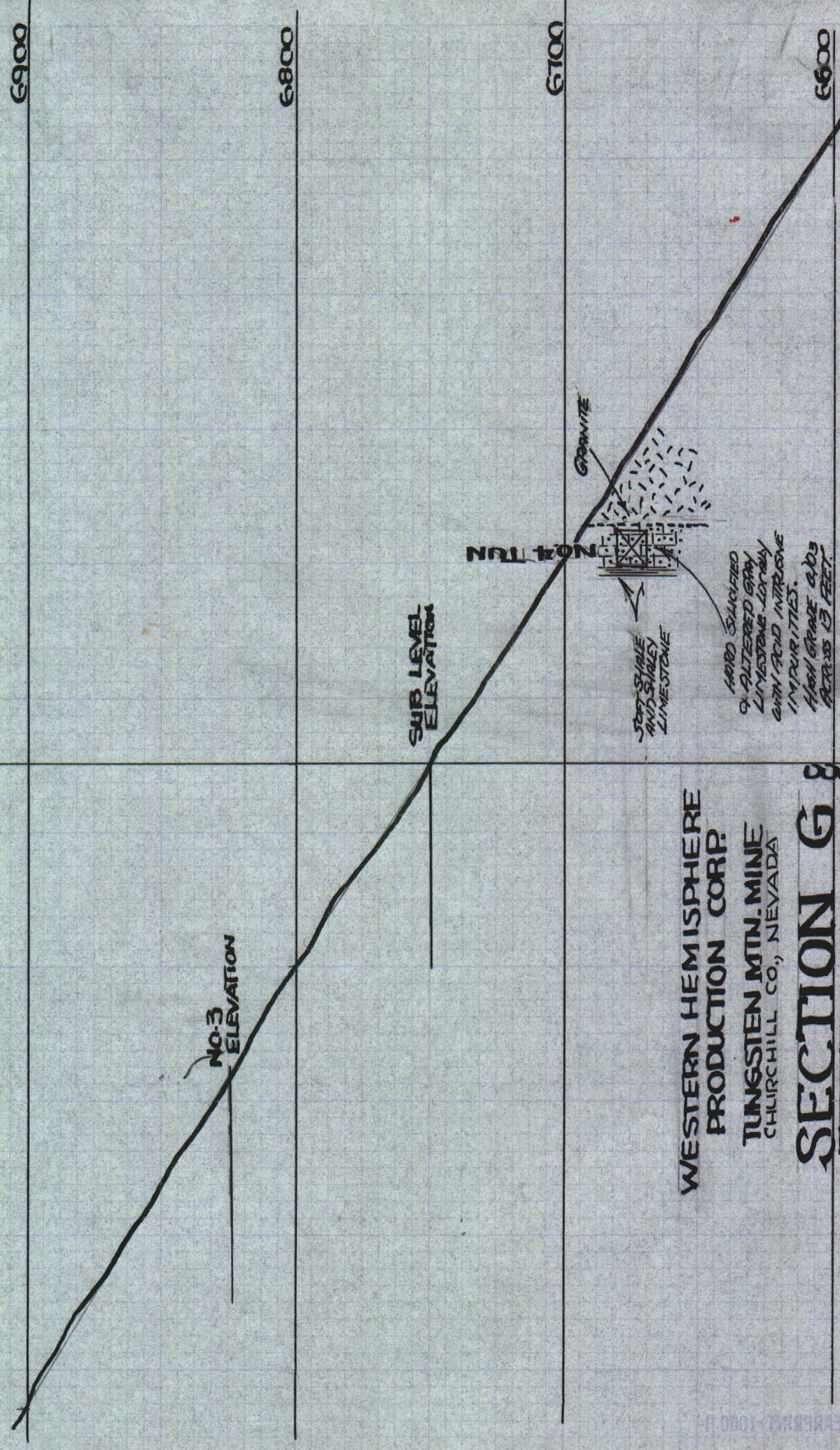
TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

SECTION G
RECONNAISSANCE
1"=50'

BEHRE DOLBEAR & CO.
DAVID LECOUNT EVANS
GEOLOGIST

OCT. 31, 1974

Q



WESTERN HEMISPHERE
PRODUCTION CORP.
TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

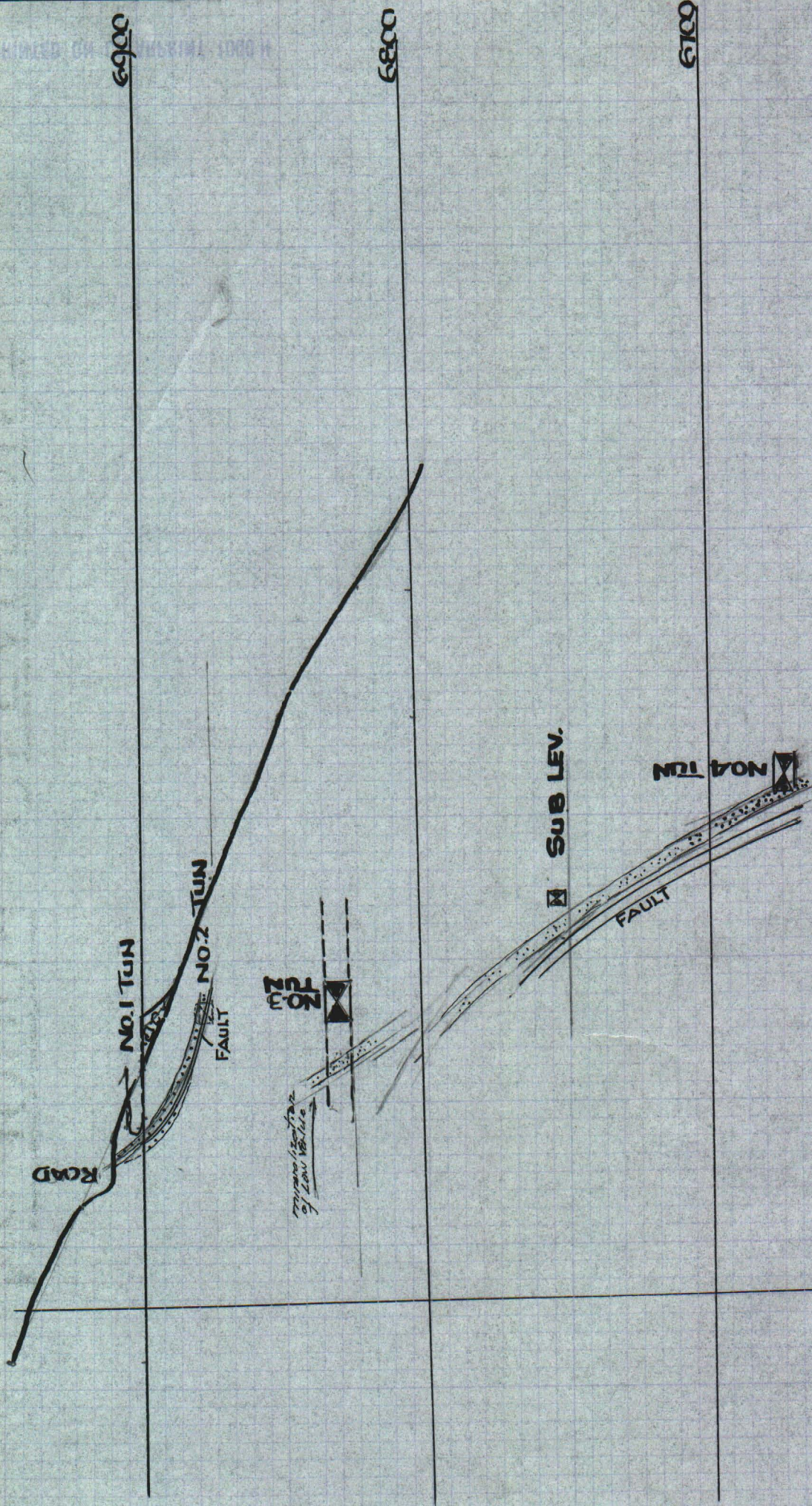
SECTION G
RECONNAISSANCE
1"=50'

BEHRE DOLBEAR & CO.
DAVID LEICOUNT EVANS
GEOLOGIST

OCT. 31, 1974

Q

PRINTED ON CLEARPRINT 1000 H



WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

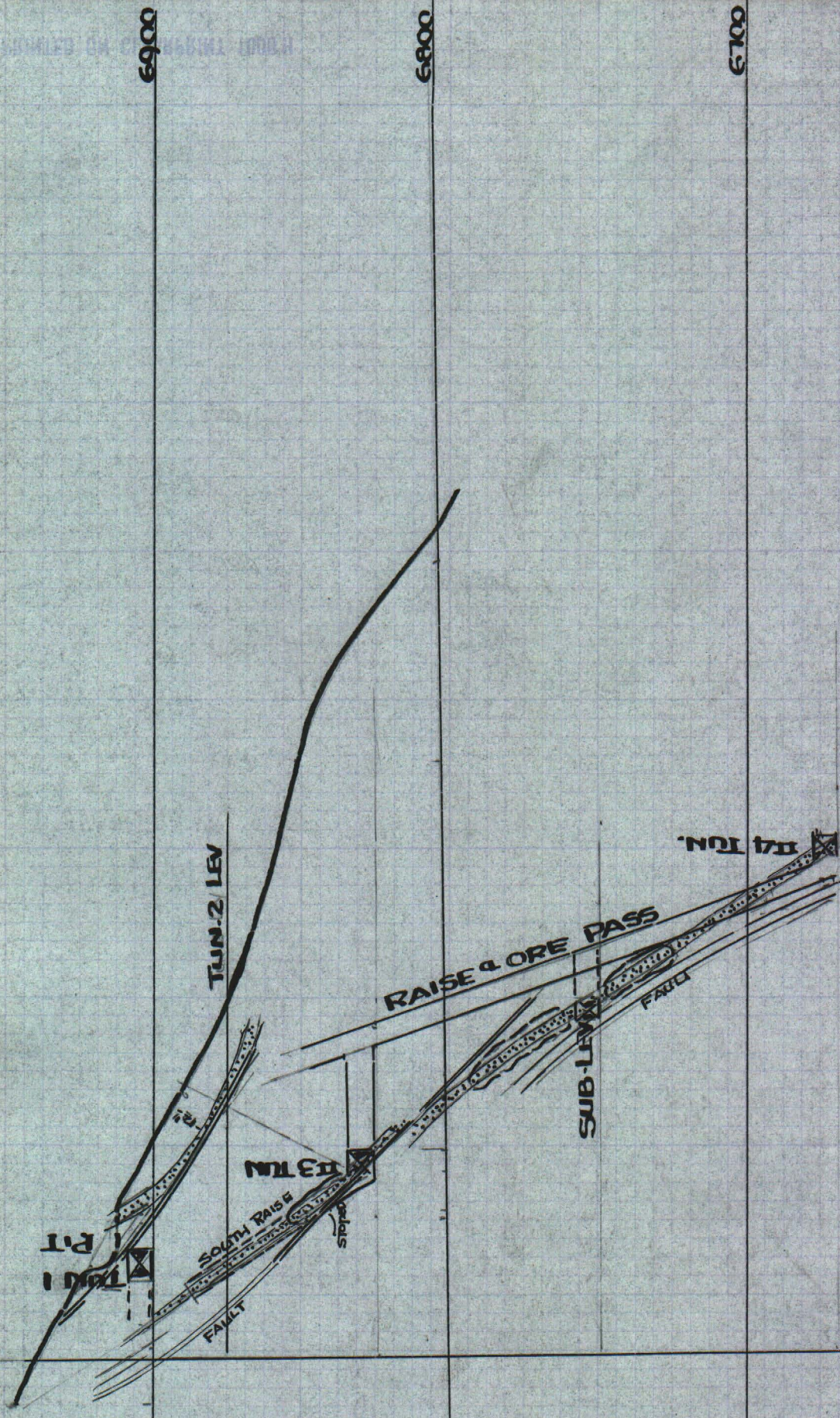
SECTION-A

RECONNAISSANCE
1"=50'

BEHRE DOLBEAR & CO.
DAVID LACOUNT EVANS
GEOLOGIST

OCT. 31, 1974

A



WESTERN HEMISPHERE
PRODUCTION CORP.
TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

SECTION-B

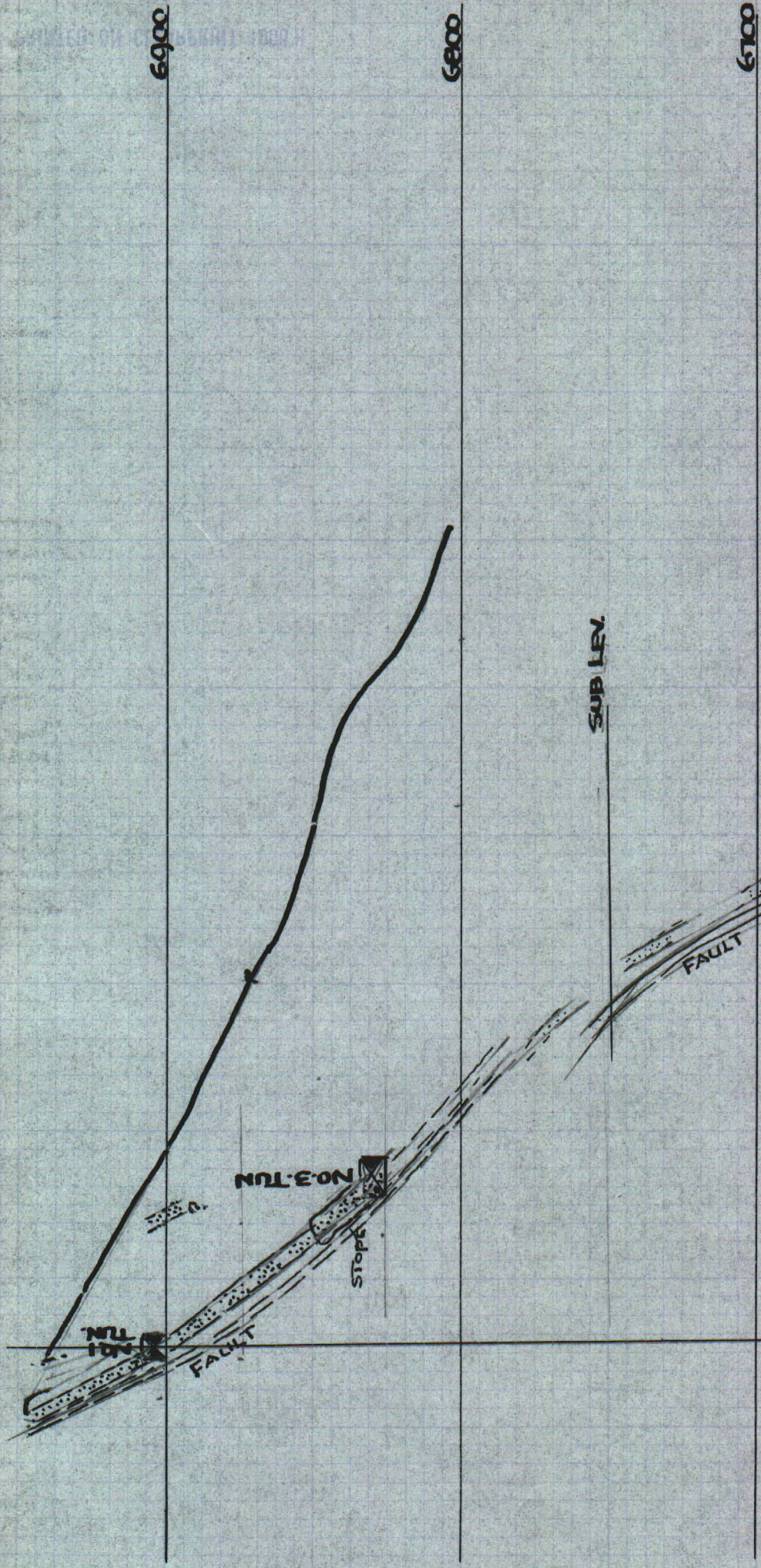
RECONNAISSANCE

1"=50'

BEHRE DOLBEAR & CO.
DAVID LeCOURT EVANS
GEOLOGIST

OCT. 31, 1974

B



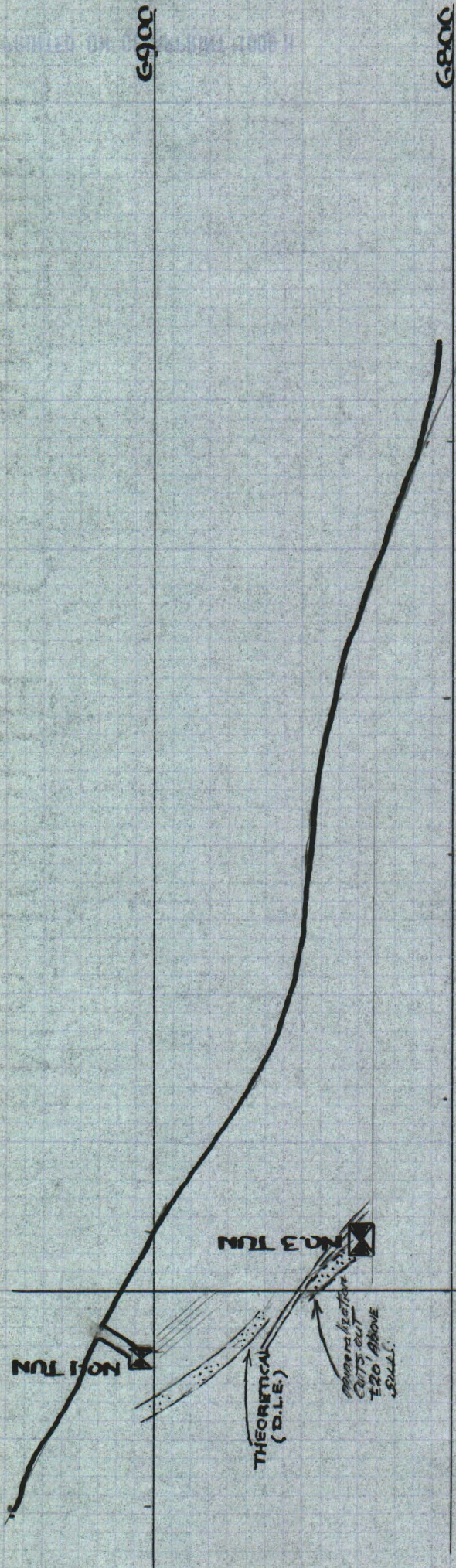
WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MIN. MINE
CHURCHILL CO., NEVADA

SECTION ~C
RECONNAISSANCE
1"=50'

BEHRE DOLBEAR & CO.
DAVID LECOUNT EVANS
GEOLOGIST

OCT. 31, 1974



SUB. LEV.

FAULTING

WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

SECTION-D
RECONNAISSANCE

1" = 50'

BEHRE DOLBEAR & CO.
DAVID LEICHTMAN
GEOLOGIST

OCT. 31, 1974

D

6900

6800

6700

6600

E

SUB. LEV.

LAKES REPORTS
ORE AT SURFACE

NO. 3 TUN.

ORE
CUTS
OUT

2.03% Au AT LEVEL
(LAKES)

RAISE

NO. 4 TUN.

FAULT
(PROTECTED)

WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MIN. MINE
CHURCHILL CO., NEVADA

SECTION - E
RECONNAISSANCE

1" = 50'

BEHRE DOLBEAR & CO.
DAVID LEQUINT EVANS

GEOLOGIST

OCT. 31, 1974

10100

10000

WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

SURFACE
RECONNAISSANCE
1"=50'

9900

BEYRE DOLBEAR & CO.
DAVID LEICHT EVANS
GEOLOGIST

OCT. 31, 1974

9800

9700

9600

6800

6850

6900

6950

No. 1 TUN.
6900'

No. 2 TUN.
6874'

No. 3 TUN.
6823'

11000

11100

11200

RCA

C

B

A

OPEN
PAT.
CLAIM

PRINTED ON CLEARPRINT 1000

10100

10000

9900

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9600

WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

NO. 1 TUNNEL RECONNAISSANCE

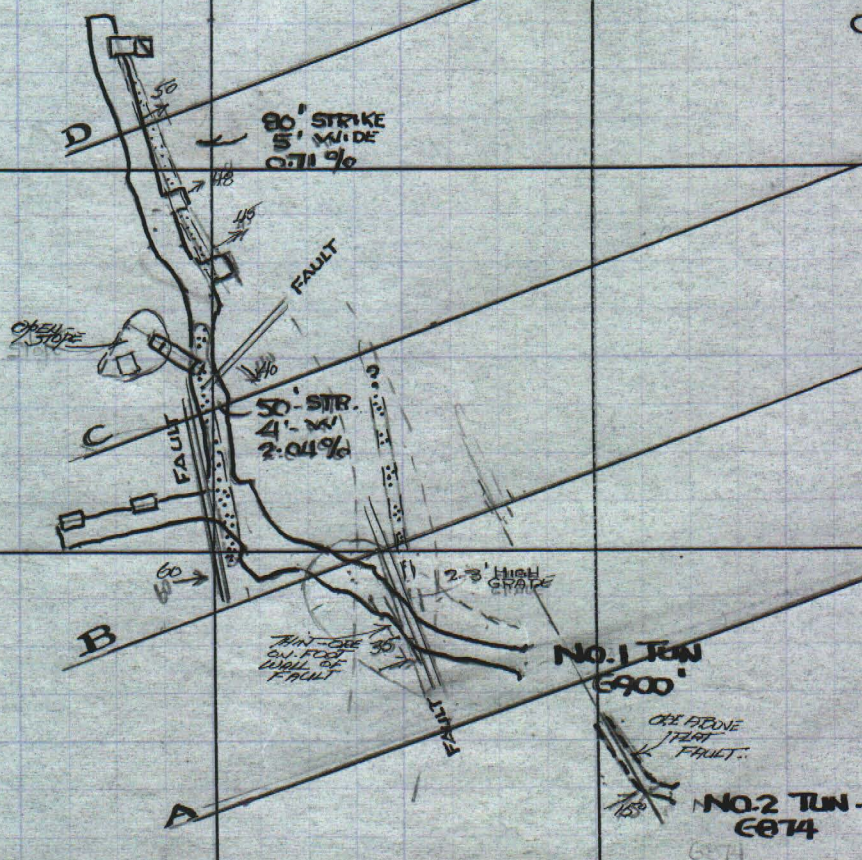
1" = 50'

BEHRE DUBEAR & CO.

DAVID LeCOURT EVANS

GEOLOGIST

OCT. 31, 1974



11200

11100

11000

10900

PRINTED ON CLEARPAPER 1000H

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WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

NO. 3 TUNNEL RECONNAISSANCE

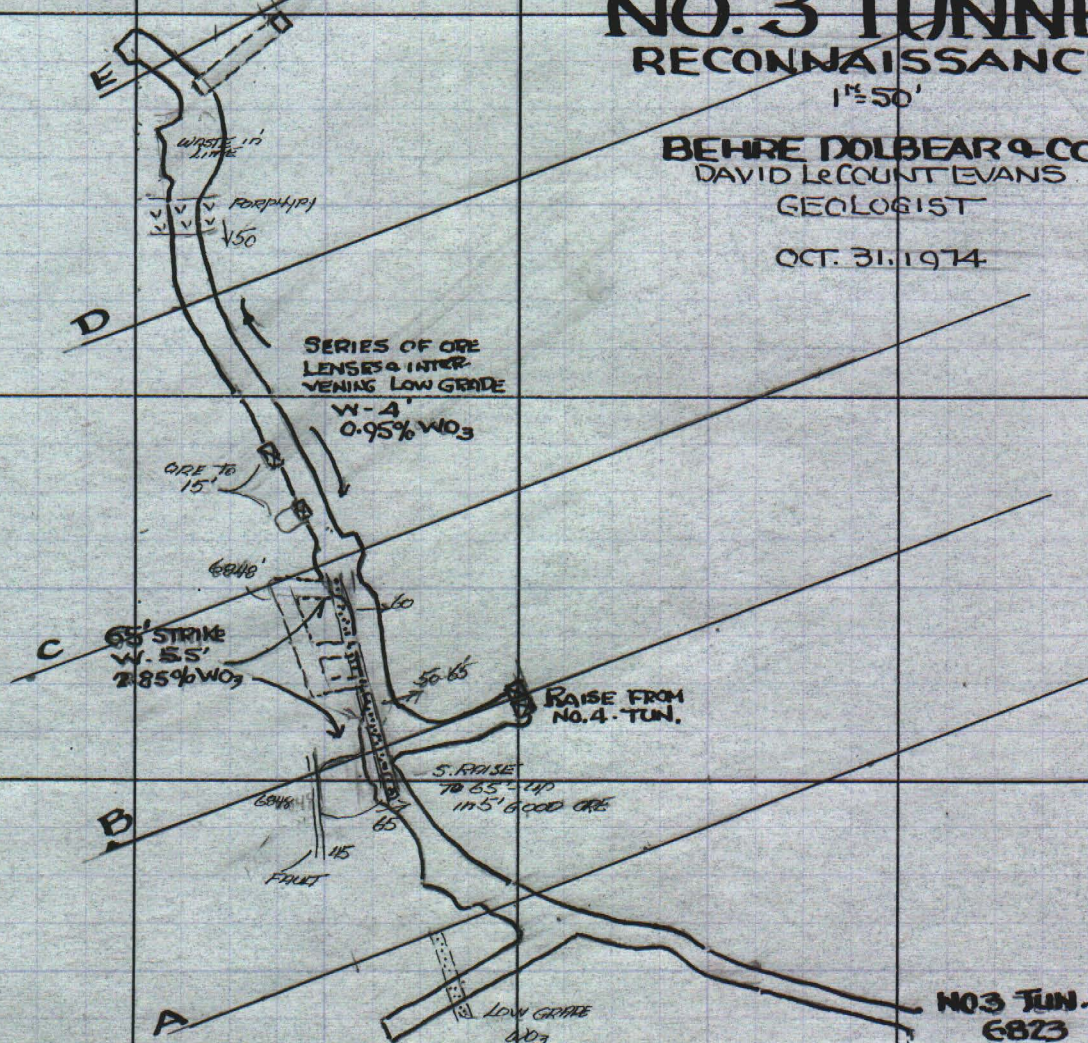
1" = 50'

BEHRE DOLBEAR & CO.

DAVID LeCOURT EVANS

GEOLOGIST

OCT. 31, 1974



PRINTED ON CLEARPRINT 100011

10100

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Handwritten:
Hwy 7
1 mi
5 mi
1"=50'

WESTERN HEMISPHERE
PRODUCTION CORP.

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

**SUB LEVEL
RECONNAISSANCE**

1"=50'

BEHRE DOLBEAR & CO.
DAVID LeCOURT EVANS
GEOLOGIST

OCT. 31, 1974

G

E

D

C

B

A

STOPPED
UP TO
#3-TUN

ORE GRADE
2.25%
WO3

45

FACE

SUB-LEVEL
6T49

STOPPED DOWN
1/2 way to #4

BUNCH
ORE

11000

11100

11200

PRINTED ON CLEARPRINT 1000

Called @ 9:30
 Start @ 9:35 - ONE OF PARTIES
 NOT AVAILABLE!

TELEPHONE CONFERENCE

NOV - 27, 1974 -

PARTICIPANTS:

1. HEINZ HEINZ - IN - LOS Angeles
2. BOB SPRINKLE & ARMSTRONG - SACRAMENTO
3. JIM WREN - Reno
4. BILL RAGIO & DAVID J. GUINAW - Reno ATTY -
5. D. L. EVANS - Reno

EVANS - WORK ON -

1. ORE RESERVES AND - FACT THAT WREN (4 LAKES) FIGURE REPRESENTS - INDICATED (POSSIBLE) & NOT PROVED
2. Surface - cut to 2nd level.
 @ if - on principle vein - waste to ore is 19/1 - $\frac{5}{13}$ ft. to $\frac{5}{13}$
 @ But - No indication that drift will be on ore; - From face to ore is $\pm 25'$ -
 cut has - ore 25' Back y Face which is a parallel structure - going off to Right.
 - same ratio different.
3. BE ADAMANT Re:
Reput. conclusions AND EXCELLENCE of
a RESULTS FROM PROCEDURES. FOLLOWED.
4. OTHER PERTINENT QUESTIONS.....
 - @ TO WREN - DEFINITION OF POSITIVE ORE?
 - @ TO WREN - WHAT WAS REPRESENTED? POSITIVE?
 - @ Re: - Composite map - WHAT WAS BLACKED OUT ON TITLE?
 - @ Re: LONG SECTION - was year changed from 1961 to 1969 - ? - WAS THIS THE SECTION - Referred to in Wren's Nov. 9. letter - ?
 - Re: Tapping on Section - was it added -
 Deq Lakes? -
 Tons. on Section - Do not equal tons. on typed notation.

WREN - DID
 NOT SHOW UP!

Nov. 9 LETTER TO BILL RAGIO

Re:
WREN'S
COMMUNICATIONS
of Nov. 9-13

1. - ARTHUR LAKES 1962. REPORT
& LONG SECTION

ARTHUR LAKES -

FROM GOOD SOURCES
A.k.a. NOT TO BE TRUSTED

~~NOT STANFORD~~

JAMES WREN - NOT FROM STANFORD

WREN

"IN 1969 - WHEN I FIRST BECAME
ACQUAINTED WITH MINE. HE (LAKES)
COMPILED A LONGITUDINAL SECTION
OF MINE WORKINGS - & TONNAGE - GRADE
ESTIMATE. THIS COVERED 28,252 UNITS....
..... HE HAD 17000 UNITS IN OTHER
SECTIONS NOT SHOWN ON THE HEREWITH
RESERVES PRINT...."

Questions

1. IS WREN - A
STANFORD
GRADUATE?
IF "YES" -
WHY IS HE
NOT LISTED
IN "STANFORD"
EARTH SCIENTISTS
2. DO MINING
ENGINEERING
CURRICULA - PROVIDE
PH.Ds.
3. HE ADDS PH.D.
TO HIS NAME,
WHERE FROM.
4. DOES HE EVER
HAVE AN A.B.?

LAKES - LONG SECTION - HAS A DATE
ADJUSTED - FROM - 1961 - & 1962 - to "1969"

THE INDICATED TONNAGE - WAS
NOT LETTERED - ON ORIG. SECTION -
IT HAS BEEN TYPED ON. THE TONS (TYPED)
DO NOT EQUAL TONS - ONE CAN
ADD UP FROM SECTION

HE REFERS BROADLY - THROUGHOUT -
& NEVER USES "PROVED" OR
"POSITIVE"

NOTE ARTHUR LAKES DIED
AUG. 1971.

Nov. 15 note to HEINZ

"THIS IS WHAT 500 TONS MEANS
TO ME" 100' X 100' X 5' @ 10 FT³/ST

DE
COMMENT

THE ONLY TRIED area. is WHERE
THEY STOPED —

LENGTH = 100'

Dip LENGTH = $\pm 270'$ (E-MEASUREMENT).

WITH 160' STOPPED = 110'

951374.
I 5.

we get 3900 Tons

• 10. Same Part-part!

He Refers - TO LAKES TOWNOGE
on Section Q 23,252 (Typo on is 28,252)
(my addition show 21,676)

Re: mining - tun. 1 - pit -
the ratio of 19/1 - is against
them!

PERTINENT QUESTIONS

- PERTINENT QUESTIONS**
1. WAS - 50,000 UNITS - PRESENTED TO HEINZ AS POSITIVE ORE
 2. WHAT IS POSITIVE ORE.
 3. WHAT KIND OF ORE DID HEINZ REFER TO IN CONTACTING BILL RAGO.
 4. RE: maps (Composite & Long Section) - DID WREN PREPARE THESE MAPS - IN THEIR ENTIRETY?
 5. - RE: Composite Lake Ditch he Blank out part of TITLE? WAS IT NO HIDE FACT THAT LAKES DID WORK & DATE WAS 1961 - or 1962
 6. RE: Section - HAS THE 1969 - been changed by quarry owner 9 1961
 7. RE: Claim map - HAS THE LAKES - TITLE BEEN cut off - to be replaced by WREN'S name.

November 15, 1974

David Evans

from HDH

21 Nov 74

HEINZ :

This is supplemental to the herewith letter as I opened the envelope to point out the following data as an afterthought of a conversation with David J. Guinan, of last week, when he reported you said there was only about 5,000 tons of reserves in the Tungsten Mountain Mine.

First the accepted weight factor of 10 Cu. Ft. to the ore ton is light. My specific gravity weights show closer to 9 cubic feet than 10 to the short tone.

Second: This is what 5,000 tons of that type ore means to me: $100' \times 100' \times 5'$ at 10 Cu. Ft. to the ST = 1 ST = 5,000 tons

Above the No. 1 Level, Lakes and other when the level was open calculated, as shown on the section 3,146 tons alone there and that is hi-grade. Then between the No. 1 and the No. 3, part of the ore was calculated to run 6,090 tons. The number one and this latter block is not accessible as entries were not opened prior to inspection as I had advised. Just here alone, no one has disputed almost 10,000 tons which should at least gross 12,500 units. This does not even start to count the No. 4 to No. 3 ground. On future presepative as the levels get lower like the No. 5's prospects, across a multiplied hill x-section, there'll be a number of 100×100 foot blocks. Naturally if you can't get into these blocks for measurements now, your evaluators would not count them. The No. 1 could have been accessible, if your recent bulldozer work on the road had opened the raise onoposite side for access.

The ore tonnage indicated on the Lakes' 1969 section alone shows 23,252 tons with 33,902 units shown on the swction alone. Calculate out those units at \$75 each less 25% for the flotation concentrates percentage and tailings loss and you'll see good perspective. With 3,100 feet of development, it is mystifying how anyone could come up with only $100' \times 100' \times 5'$!!!

Before I left Reno Ray Walker had called in and said he had not got his money for October when due on November 1st. Then today when I called Mrs. Wren she told me Walker had relayed word that his money still has not come through. If it has not yet been paid suggest to call Mrs. Edith Ferguson at Hawthorne, Nevada Phone Number 945-3753.

I'm reopening you letter to insert this supplemental data.

JHW

J. H. WREN & COMPANY

Cable Address
WRENCO

Mining Contracting Engineers

Doctorates in Mining Engineering & Geology

Post Office Box 2021
Reno, Nevada 89505
Phone (702) 322-4840

November 9, 1974

Senator Wm. J. Raggio,
Post Office Box No. 3137,
Reno, Nevada 89505.

Dear Bill :

Herewith is a print of a letter received yesterday from David J. Guinan of your office, with regard to a complaint with regard to the calculated ore reserves of the Tungsten Mountain Mine. I spoke with Guinan vis telephone last evening.

Arthur Lakes, who was senior geologic engineer on the property, at active periods from about 1966 to 1962 evaluated the reserves. He saw the exploration and development progress under his consulting alignment during the active period. In 1969, when I first became acquainted with the mine, he compiled a longitudinal section of the mine workings and tonnage-grade estimate. This covered 28,252 units of W O₃ which now have a Fallon, Nevada and Bishop, California gross market value of \$75 per unit. He had 17,000 units in other sections not shown on the herewith reserves print. No reserves depletion was made after 1969, nor had since about 1962 when the product was selling at \$22 per unit 65% W O₃. A year ago it was selling for \$36 per unit to our nearby markets. Now the requirement is only 60% for the \$75 price is 5% lower than formerly. National Treasure Mines Company of Salt Lake City, Utah acquired operating privileges on the Tungsten Mountain Mine from us several years ago when concentrates were selling at \$50 per unit for 65% products but did not go into production as scheelite dropped to \$36 per unit and they gave the mine back after paying a substantial sum. Their geologic staff composed of Louis Cramer and A. M. Buranek gave the reserves full credit and had spent weeks of experienced work before they took the mine. So, I had no fear about the reserves estimate, particularly as the government agency, the DMEA had subscribed some of the money to drive the No. 4 Level and their assays are listed with the others on the level plan. Herewith is a background record of Arthur Lakes who made the estimates and they were a result of his work over a period of years. He did not have any interest in the property during the operation aside from that of a paid geologic engineer, and was connected with all of the exploration and development for several years.

RECD NOV 12 1974

Tungsten was \$55 per unit for 60% products for a couple months prior to May 15, 1974 when it came up to \$75. Heinz and associate had been looking the mine over for about six weeks prior to their taking an option on May 17th. I recommended that they clean the road out and open the No. 1 area, rehabilitate the No. 4 Level and do some surface opening on the "Bay Area" where high grade outcrops indicate some surface production as well as the No. 1 surface production for low cost production. Nothing was done all Summer and in September and October some geologic work was done which probably resulted in their complaint. They did repair the road but did not open access for evaluators into the No. 1, which recovered 1.61% 65% W O₃ concentrates out of 958.17 tons aggregating 1,543.17 units, just from the development drift alone. That ore alone above the No. 1 at Lakes' tabulations is totaled at 3,146 tons @ 1.61% for a gross value @ \$75 of \$377,520 from just the top of the hill as seen in Lakes' reserves of that section, herewith. Ore cannot be reexamined without access to the proven sections. The No. 1 was not opened although it would only take about two hours of bulldozer work to open it. The raise from the No. 3 through ore to below the No. 1 in the old No. 2 level was not accessible. Ground between the No. 3 and the No. 4 was not accessible, so the mine did not get credit for at least 3/4 of the already opened ore. Lakes was in charge of the general engineering but he also had other good men working with him and the present estimates are from his work. He had many years of tungsten experience and no prejudice by means of project operating ownership as he was merely on a salary from 1956 to 1962 when the mine ran. He actually seen personally all of the exploration and development. Therefore, I am confident that his evaluation is accurate. If I had had any doubt I would not have become interested in the property myself. Thirty years ago I was superintendent of the Tungstar Mine near Bishop, California producing 3,000 units per month from only 60 tons per day mined and milled, of 65% concentrates. Then in the early 1950s before the price slide from \$63 per unit to \$20 per unit, I was responsible for the production at: Baltimore-Camas Ely, Nevada a 125 tons per day tungsten project, the Garnet Hill Scheelite Mine, California, the Three Rivers Tungsten Mine out of Fresno, California, the Coolige Meadows Tungsten Mine at Dinky Creek, California as well as others. So, my scheelite production experience is sound.

I advised Heinz and associates that the Tungsten Mountain Mine was not suitable for a major company as it was too small. We already had Union Carbide Corporation as well as Utah International, Inc. examine the mine and knew it was not suitable for them. I believe the inability to turn the property to a large concern, as it was never said to be suitable for, is why he is having trouble with his investors. Nothing has been done at all on the Quail Hill Patented Mine but the California State Division of Mines is familiar with it and have compiled a comprehensive report on the property as it is a major foothill gold, copper and zinc mine. In 1943 it was the highest zinc producer in the whole state of California. I spoke with Heinz yesterday as well as some Texas people who are negotiating with him for it.

Page Three :

I am working a full schedule at this time out of town and trying to beat Winter weather slowdown. There's no way I can be at a meeting this coming Tuesday. It would have been easy this last week as I had a lot of lab work and other business in Reno. I did, however, talk with Heinz on two occasions yesterday and could easily have met him today but he was headed for San Francisco.

As I recall the preproduction mill and mine rehabilitation estimate in June of 1974 was around \$150,000 plus contingency. That will be more now as everything has raised including used equipment that the estimate was based upon. Regardless of what the recent evaluators said about the mill the value represented there is a fact and the building alone would cost more than \$100,000 to replace at existing prices.

In summary they have \$28,000 paid on the property, and even if the evaluators who could not see but a small portion of the total mine had been right that ore would be profitable for a small company, but the mine has not and is not now large enough for any major company. It was a lot of inventory to tie up for \$25,000 down.

Cordially yours,

Jim

James H. Wren, Ph.D.

CONCLUSIONS:

It is concluded as follows:

1. Developed RESERVE AMOUNTS
TO 3900 (ROUND) TONS - CONTAINING
8,840 UNITS of $\text{CuO}_2 \cdot \text{R}$
2. TO CARRY-OPEN CUT TO
TUNNEL 3 - INDICATES
THE MINING OF 24,000 TONS TO
RECOVER 1240 TONS OF "ORE" RATIO,
THEREFORE WOULD BE 19/1. A
ROUGH ESTIMATE INDICATES - A
COST PER TON - OF \$80 - AS CONTRASTED
TO \$13 - LBS. UNDERGROUND STOPPING.
3. EXPLORATION & DEVELOPMENT POSSIBILITIES - ARE EXCEPTIONALLY GOOD -
FOR THE MINE AREA - FROM
TUNNEL 5 THRU TUNNEL 3.
EXPLORATION FOR UNTOUCHED
"MINERALIZATION" - A LONG SEVERAL
THOUSAND FEET OF GRANODIORITE
CONTACT WOULD BE JUSTIFIED
4. THE PROPERTY - HAS SUFFERED FROM
LACK OF UNDERSTANDING - UNDERGROUND
DEVELOPMENT - LOST ORE TRENDS -
WITH MUCH OF ADVANCE THEREFORE,
IN WASTE. LAKES REFERS TO A
RECOVERY OF LESS THAN 50% BY MILL.
~~OUR ESTIMATE WAS 25%~~
COMPARING - VALUE OF ORE IN PLACE -
SHOULD - ONE ASSUME CLEAN MINING -
OVER 4' WITH NO DILUTION - RECOVERY
FROM MINE - TO CONCENTRATE - IS
LESS THAN 30%.

THE USE OF
LONGHOLING WITH
ROCK BITS TO
EXPLORE FOR
LOST ORE - WAS
A DISASTER.

TEST-1 PRODUCES VS. - TO MILLION -
LAKE-LEVEL
ASSAYS

- On basis of DLB's - Sample -
Quartz - Assaying - my Values.
represent 0.222 - a 22.2% of Reported value
a 25.5%

1. - FROM - 6280 TONS - milled -
company was paid for 3,085 units

.. 2. - USING - LAKE-ASSAYS -

6280 TONS - were milled

with 12,810 units

Downgrading
with my

$.255$ factor
that = 3266 units

or USING LAKE
 0.976%
HEAD-VALUE

- 6129 units

a 50%
Recovery

a 94%
Recovery

PLEVANS
& JOE WARREN

MTN-
TUNGSTEN
TRINE
10/18/74

DE 1 TUN. #4 - 36' - NORTH - of
DH-42E - in
3' - of mass. GRy LS
- REPEATING LAKES
S. 3 - 6' @ 0.75%

DE 2 TUN. #41
16' - SOUTH - of
DH-42E - 4' - wide
V. HARD GRy LS
LACED WITH STR.
Carbonate $\text{Fe} \cdot \text{WO}_3$
REPEATS LAKES S. 6.

DE 3 TUN. 4 74' - NORTH of DH 45E
4' - from E AB. in
HARD FRAC'Ls. WITH
LOCING of SiO_2 , CaCO_3
etc & STRONG WO_3 .
 FeS_2 & $\text{FeS}(\text{OH})$ - ABUND.
REPEATS LAKES # S. 7.

DE 4 TUN 4 - SAME Spot AS
#3 - NEXT 4'
IN LINE TO WEST
REPEATS. DIMEA -
Some pieces are
granitic

DE 5 TUN. 4 - STUB TO WEST -
8' - South of DH 45E
Sample from 6 FT²
in BACK. \pm 10' from Q.
MAIN Q. -
This large Area
without Samps. - characteristic.
Co - strong Flat Seams.

DE-6 - . Same Loc as DE-5 - material

off sides - Lower - down.

Diss. CO_2 + Coarse

CO_2 - ~ Strong

min -

NONE OF THIS
AREA - has any
RECORDED VALUES

DE-7 -
T4H.4 -

172 - SOUTH CRE - HOW.

AT BASE OF LADDER

ANY - INCLINED RAISE

$\pm 3^\circ$ of CO_2 Spooling

HARD L ± 190

200'-TO PORTAL

10100

HILETOP
-LINE-
NO. 4
1"=50'

10000

9900

9800

9700

9600

DH 45W

DH 45E

DH 45W

DH 46

DH 47E

DH 47W

DH 48W

DH 48E

6825

DH 51W

DH 51W

DH 51E

DH 53A

DH 53E

10000

11100

11200

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10/13/74

10100

HILETOP
MINE
5. LEV.

1"=50'

10000

9900

9800

9700

$\frac{5.5 \times 80 \times 40 \times 10}{10}$

1760 TONS

SUB-LEVEL
6723

$\frac{40 \times 30 \times 35}{10}$

660 T

1760

2420 @ 2.25

11000

11100

11200

10/13/74

9600

10100

HILTED
1" LINE
NO. 3. TUN-
1" 50'

10000

9900

9800

9700

9600

1960-1961

8 x 5 x 65

10

=

260 T

@ 1.35%

1.35%

70'

3' - 1.00

1960-1961

60' x 5.5 x 15

10

=

500 TONS

@ 2.85%

50'
4 SAMPLES
5.5' - 2.85%

NO 3 TUN.
6873

10/10/74 9600

11000

11100

11200

10/10/84

HILLTOP MINE

A-A

1" = 50'

6600

JUN 4

6700

6800

JUN 3

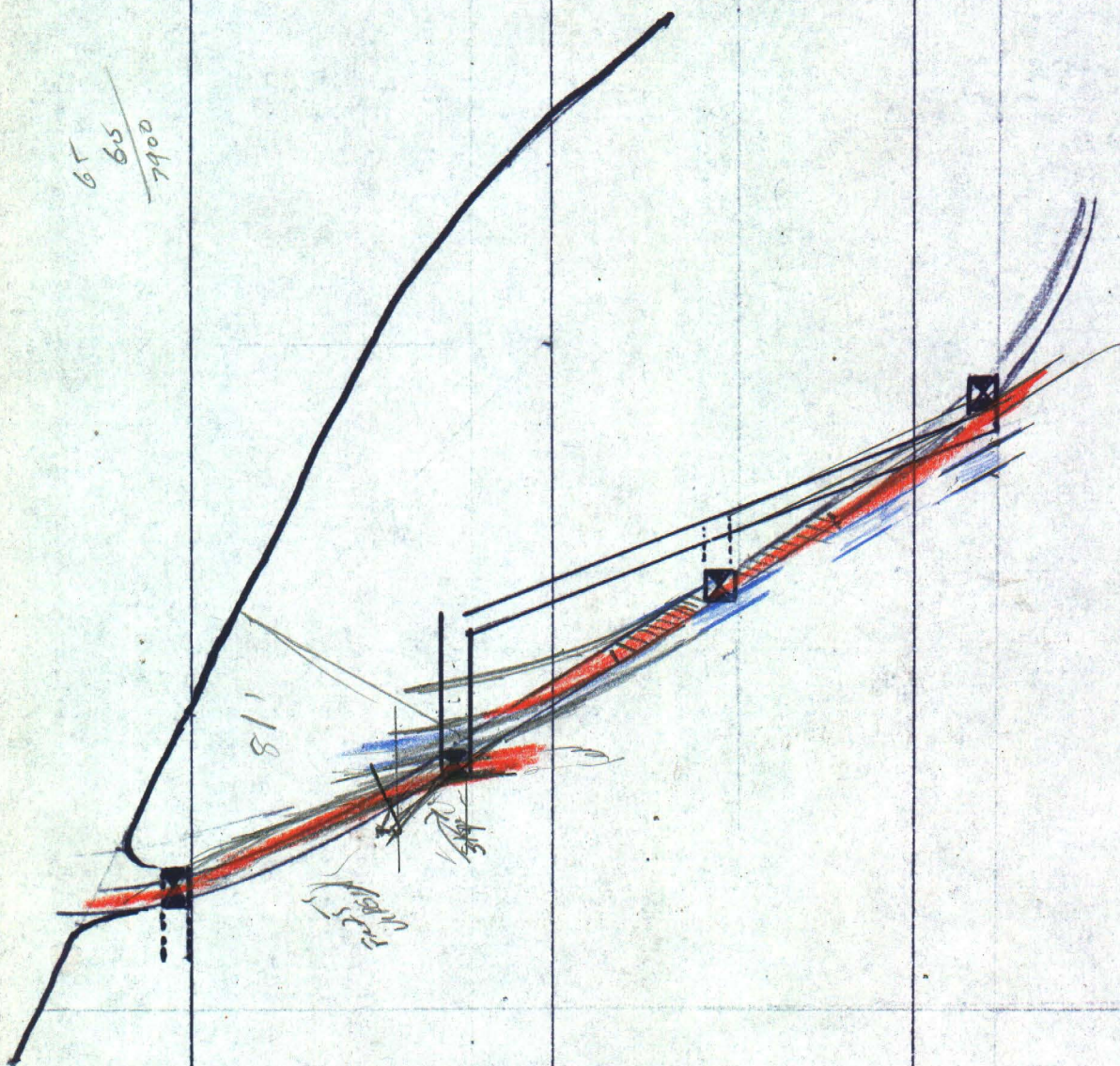
6900

330 13900

115
555

65
65
1900

3900



31100.5

10100

HILLTOP
MINE
SURFACE
1"=50'

10000

9900

9800

9700

9600

6800

6850

6900

6950

4' - 203' Red
UNDEVELOPED

NO. 1 TUN
6900'

NO. 2 TUN.
6874

NO. 3 TUN
6823

10/13/74

11000

11100

11200

10100

HILTOP
MAINE
- NO. 1 TUN
1250'

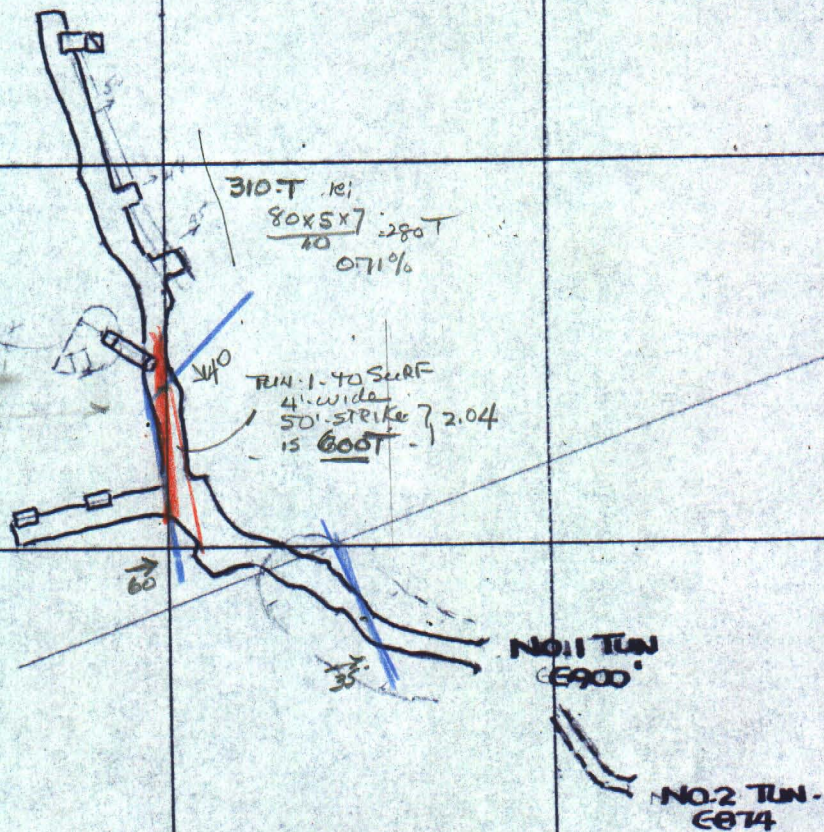
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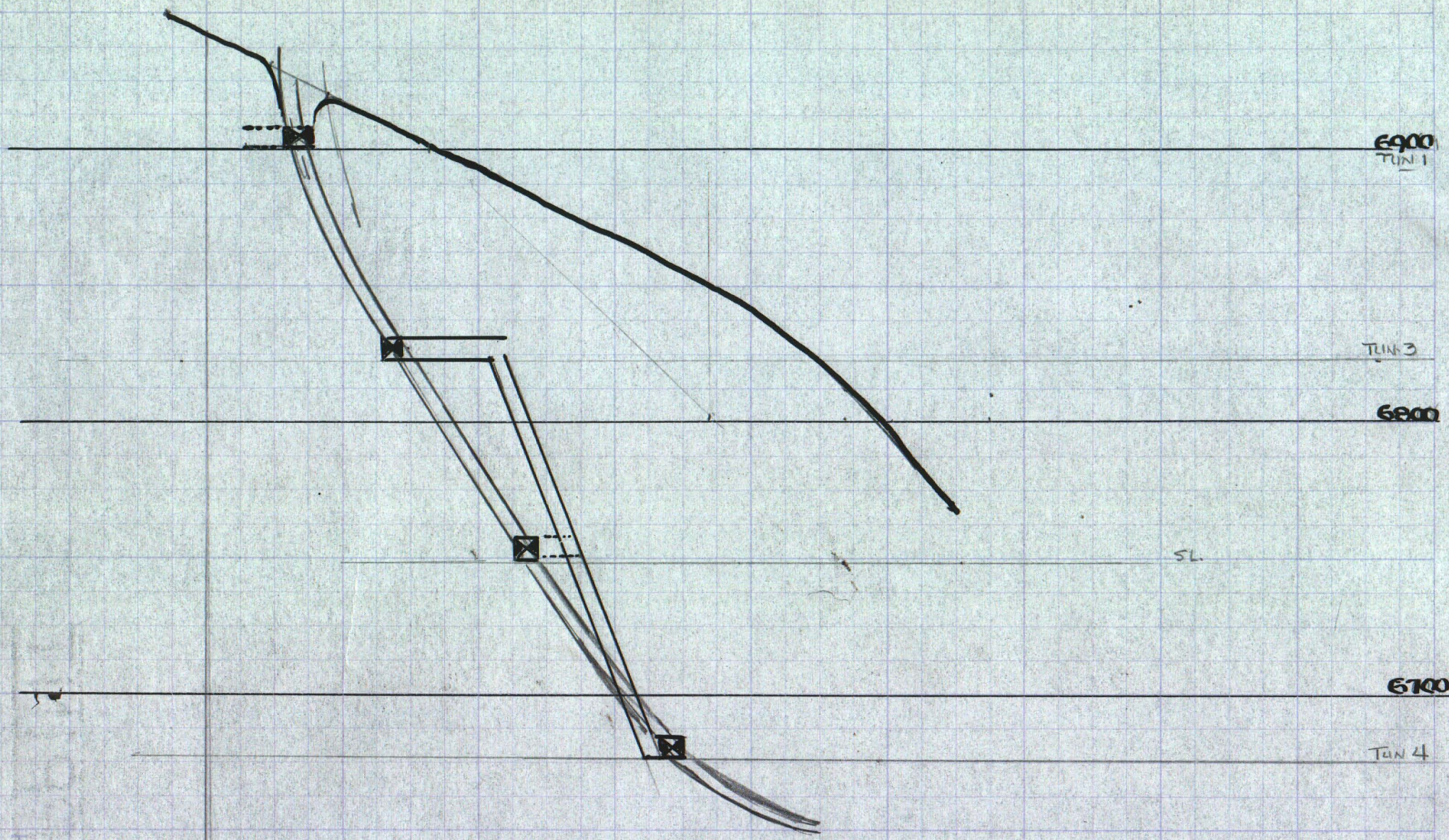
9800

9700

9600



#1 TUN



6900
TUN 1

TUN 3

6800

SL

6700

TUN 4

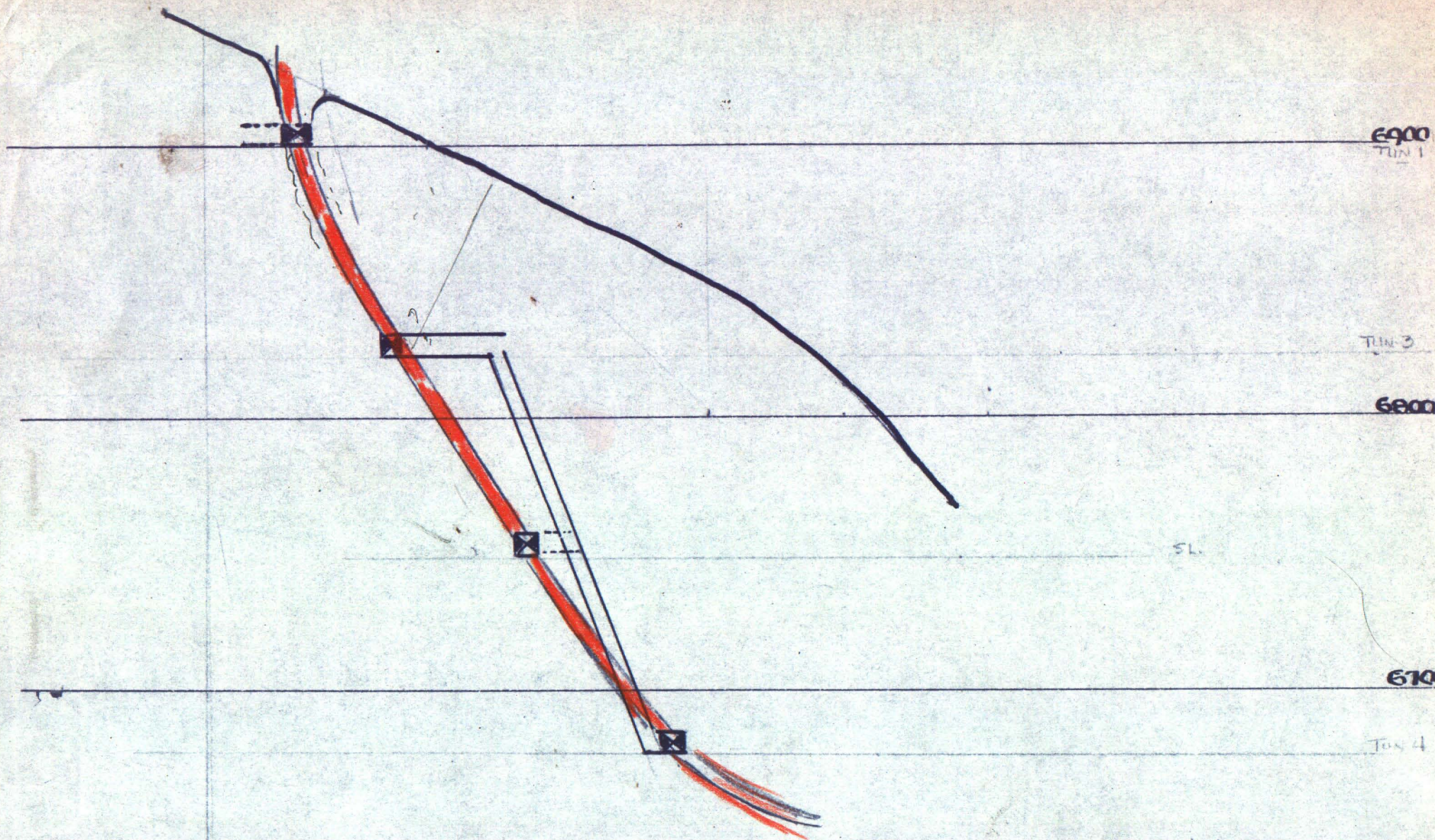
HILLTOP MINE
A-A'
1" = 50'

6600

[Signature]
10/12/44

Q1100.E

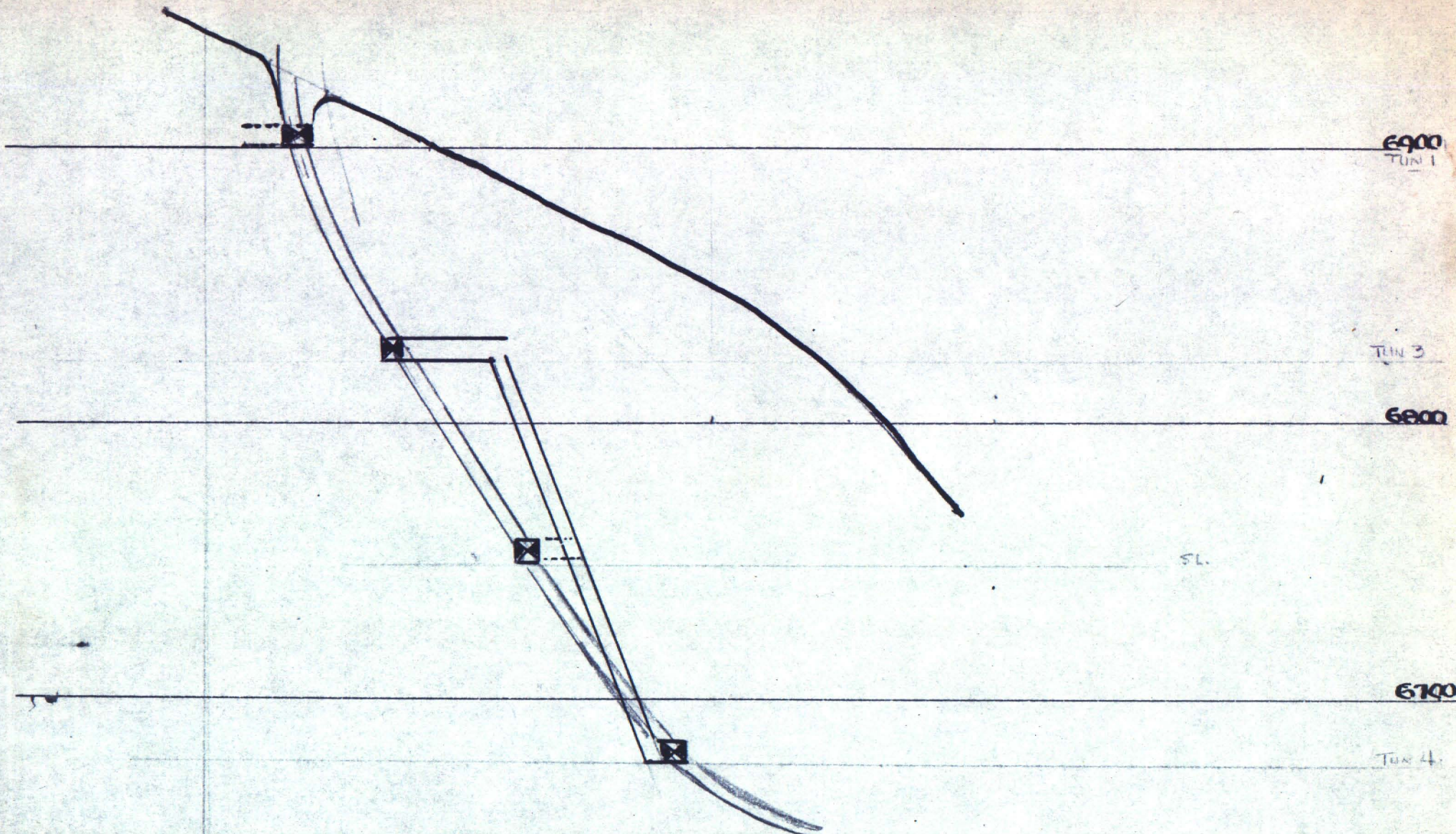
UNIVERSITY OF CALIFORNIA LIBRARY



HILLTOP MINE
A-A'
1" = 50'

6600

D.
10/22/74



6900
TUN 1

TUN 3

6800

SL

6700

TUN 4

HILLTOP MINE
A-A'
1" = 50'

6600

D.
10/12/74

10100

HILLTOP
MINE
SURFACE
1"=50'

10000

9900

9800

9700

9600

6800

6850

6900

ROAD

6950

No. 1 TUN.
6900'

No. 2 TUN.
6874'

No. 3 TUN.
6823'

10/13/74

11000

11100

11200

10100

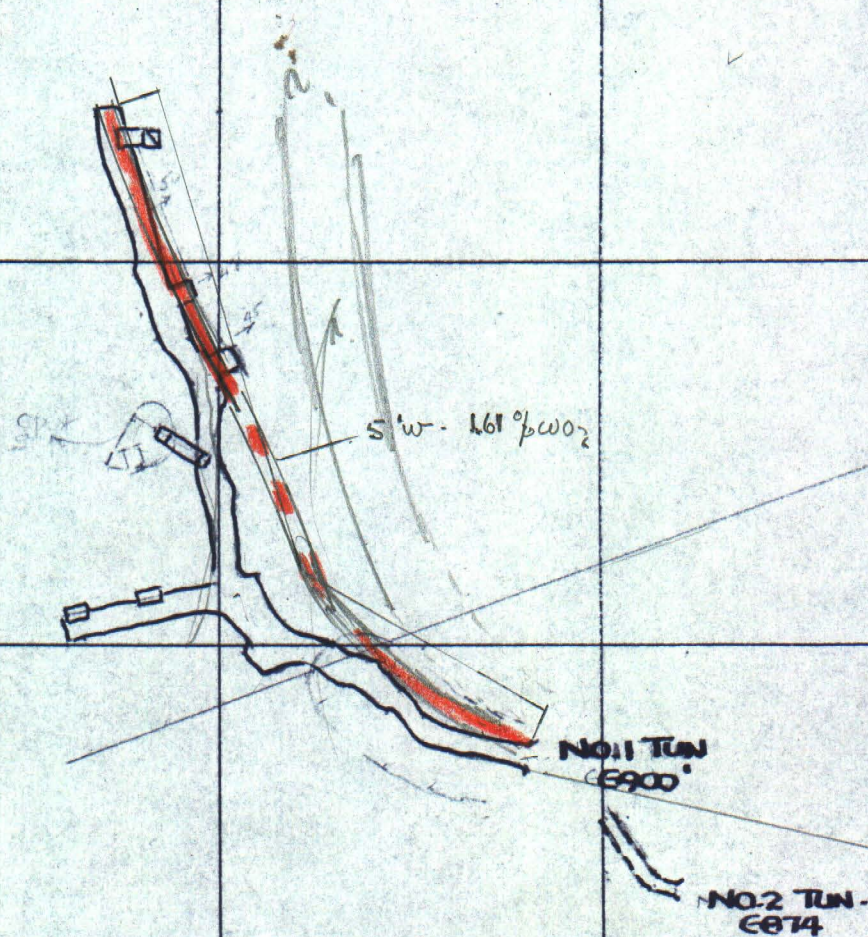
HILTOP
MINE
- NO. 1 TUN
1" 50'

10000

9900

9800

9700



NO. 1 TUN
E900'

NO. 2 TUN
E874'

10/13/74
H. I. TUN

10100

HILETOP
1-4-11
NO. 3. TUN-
1"=50'

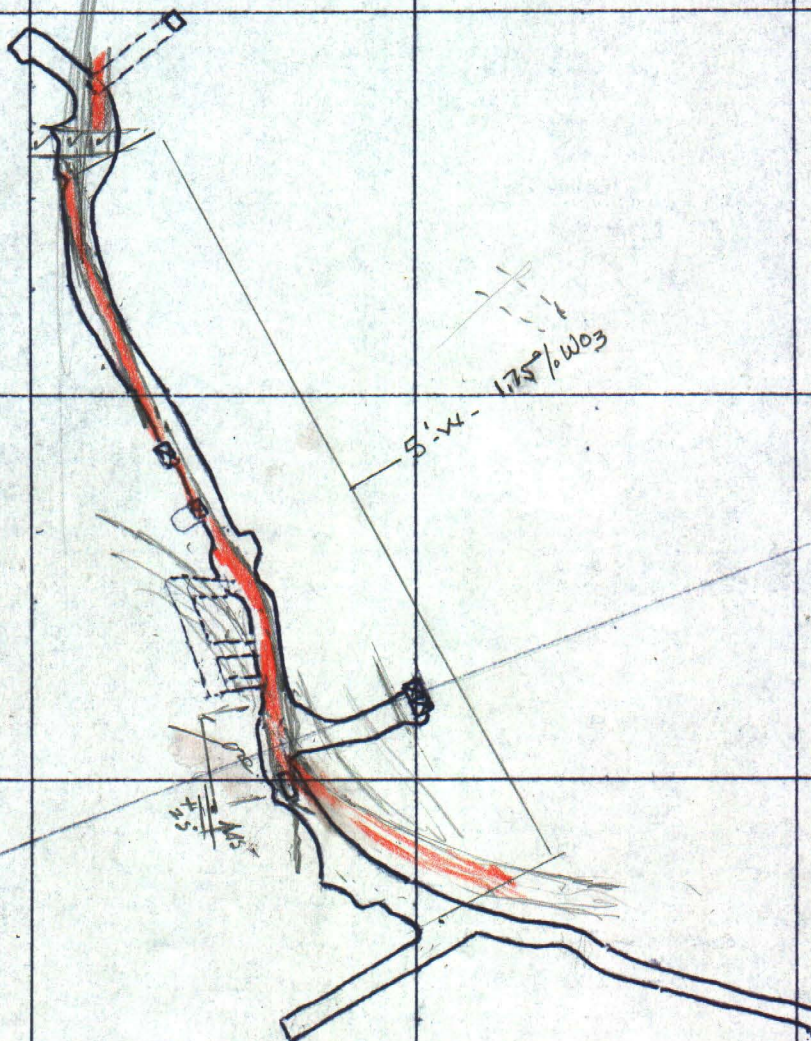
10000

9900

9800

9700

9600



NO3 TUN.
6823

10/13/24

9600

10100

HILETOP
MINE
S. LEV.

1"=50'

10000

9900

9800

9700

9600

11000

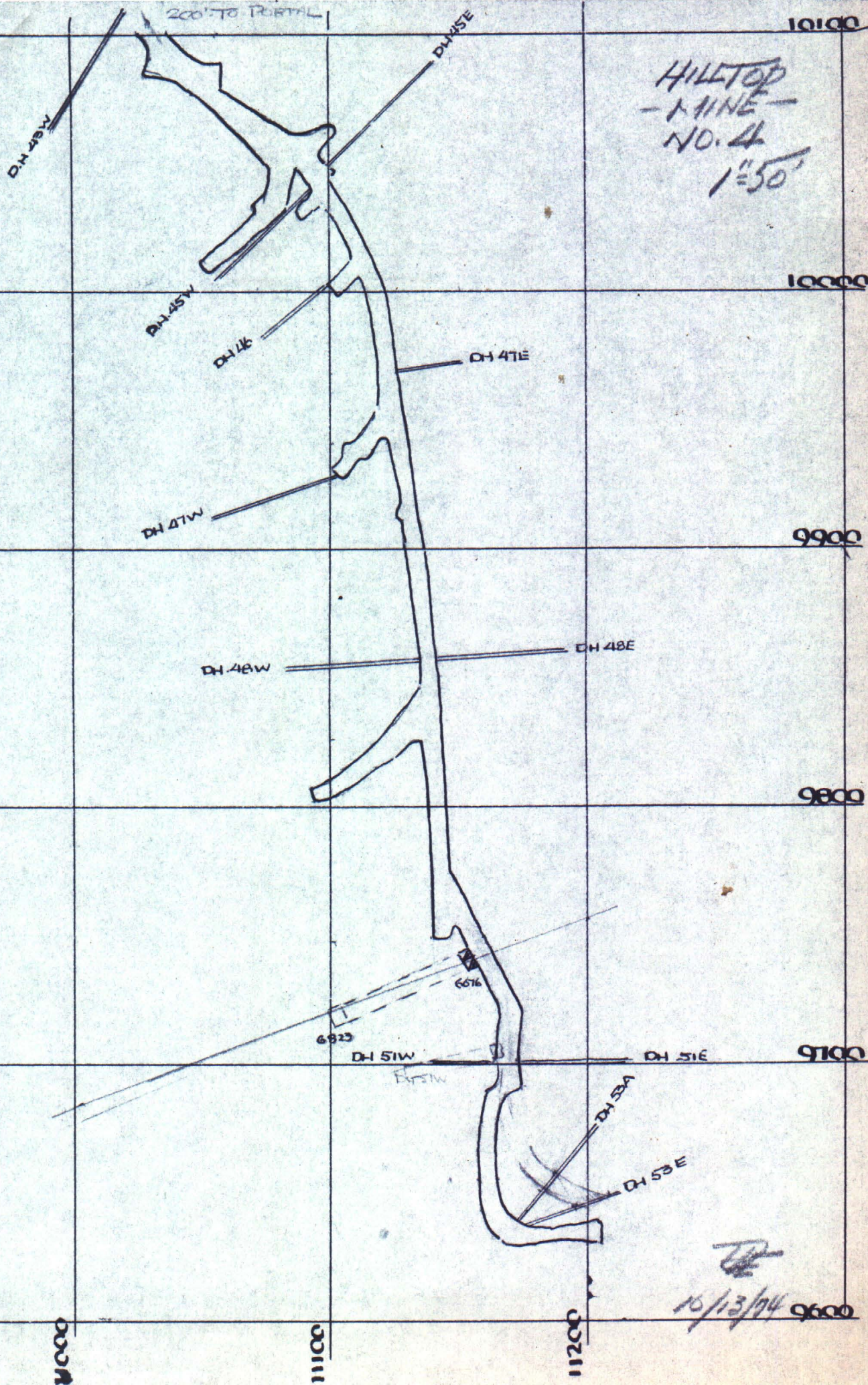
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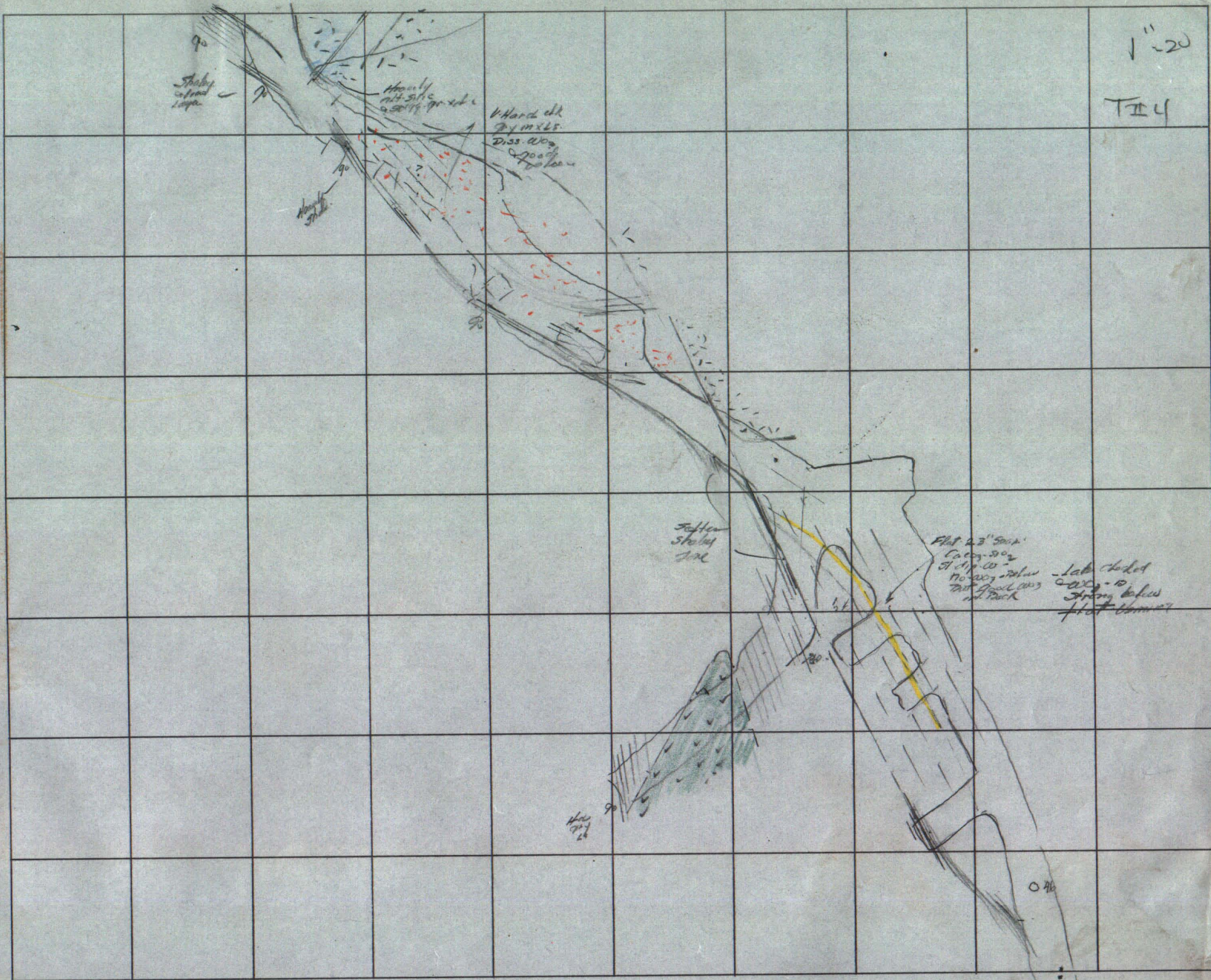
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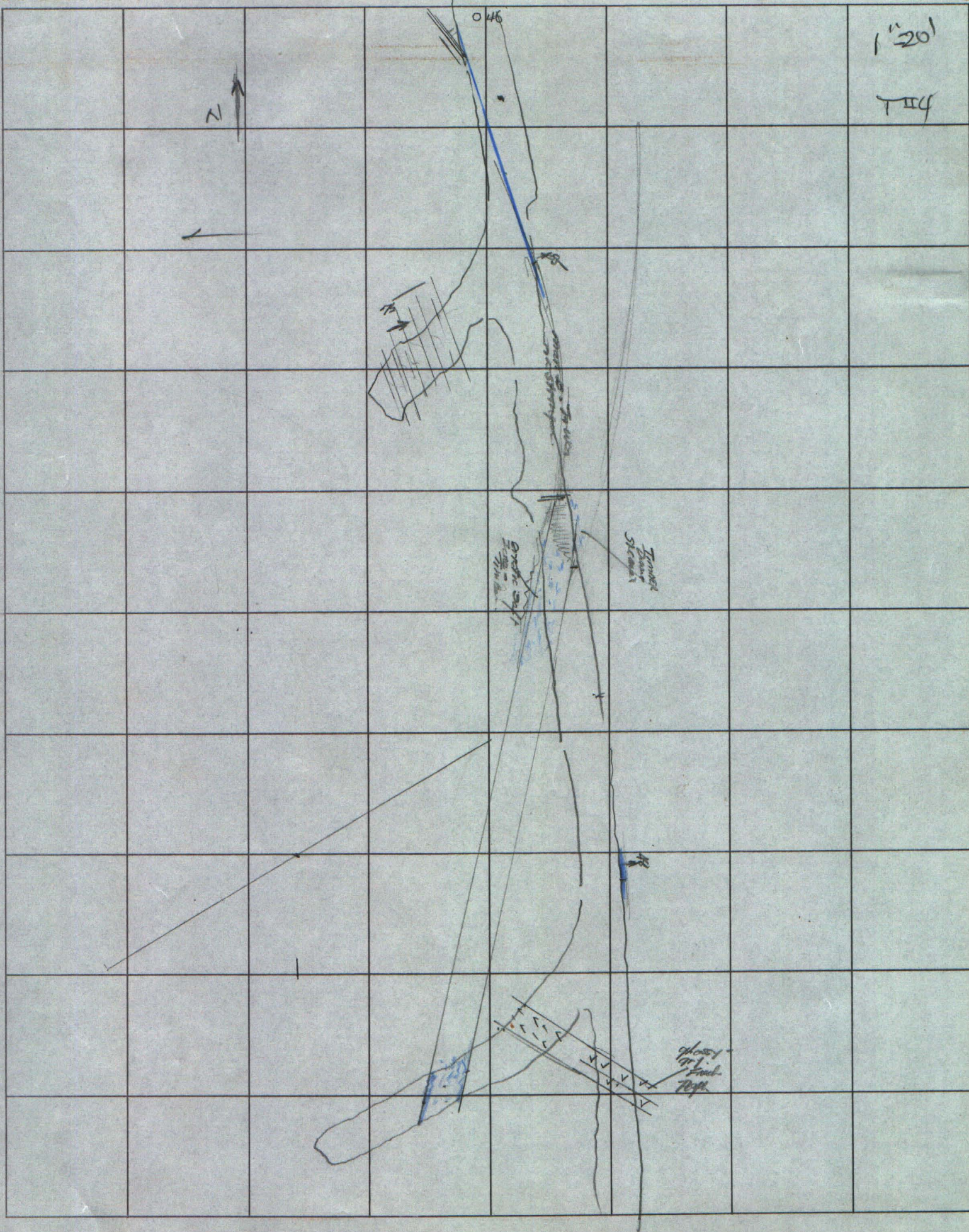


SUB-LEVEL
6723

10/13/74







10100

HILETOP
1-MINE
NO. 3 TUN-
1" 50'

10000

9900

9800

9700

NO 3 TUN.
6823

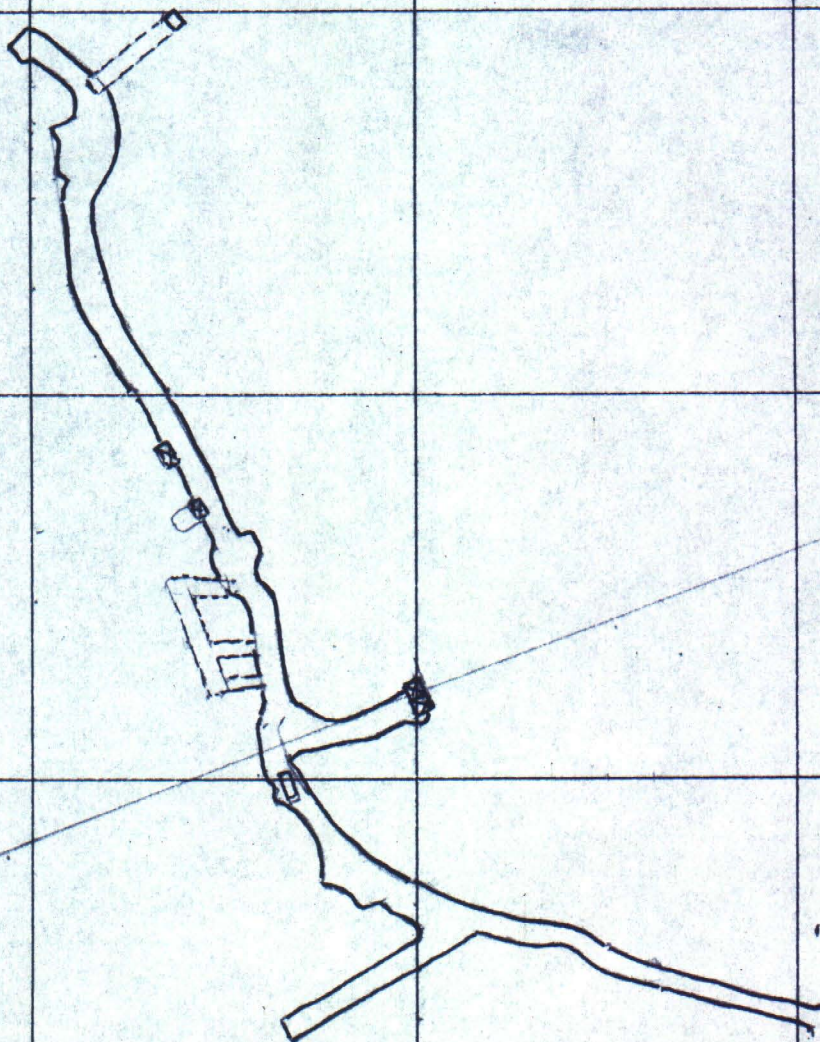
10/13/74

9600

11000

11100

11200



10100

HILETOP
1-11-11
NO. 3. TUN-
1"=50'

10000

9900

9800

9700

NO 3 TUN.
6823

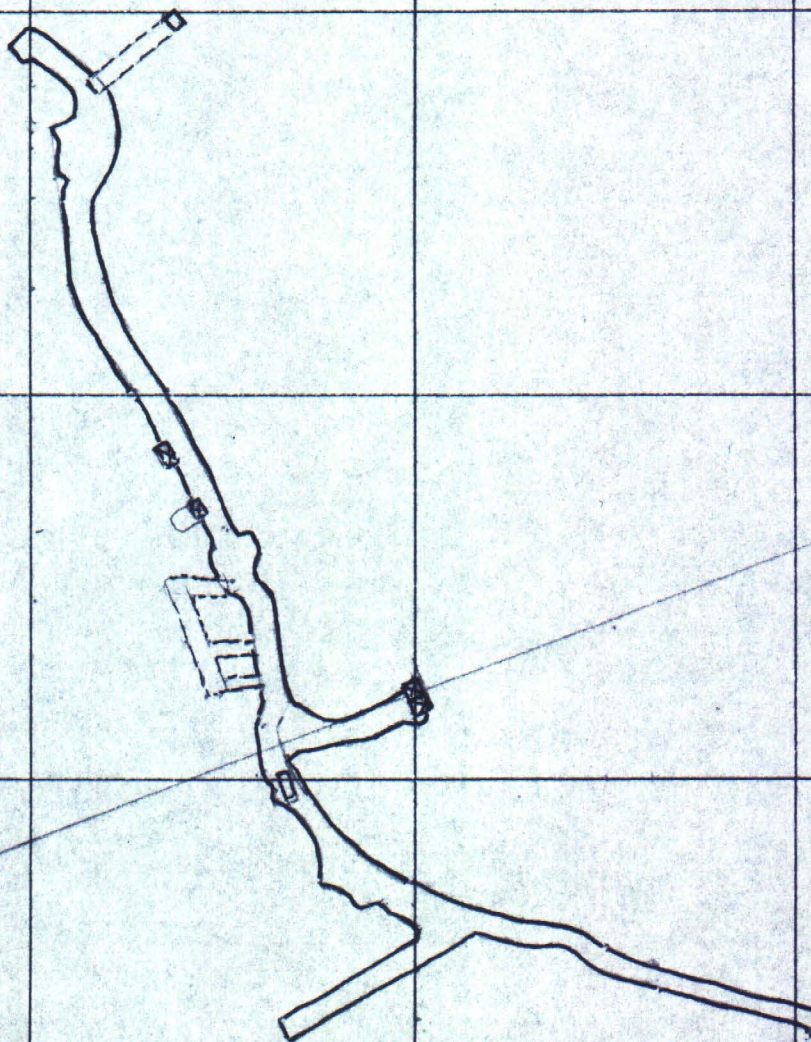
[Signature]
10/13/74

9600

11000

11100

11200



10100

HILETOP
MINE
S. LEV.

1"=50'

10000

9900

9800

9700

11000

11100

11200

SUB-LEVEL
6723

DP
10/13/74

9600

10100

HILETOP
MINE
5. LEV.

1"=50'

10000

9900

9800

9700

9600

11000

11100

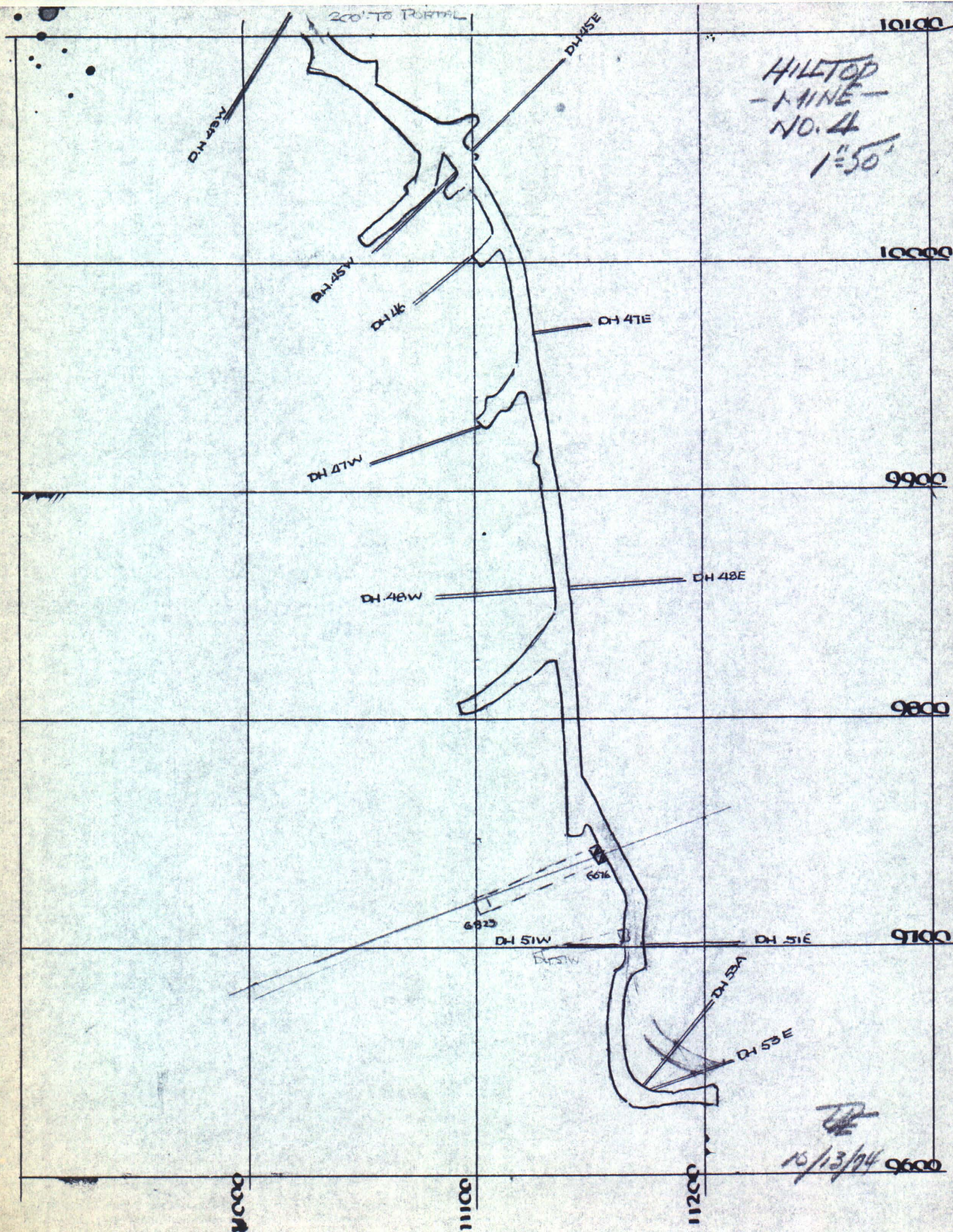
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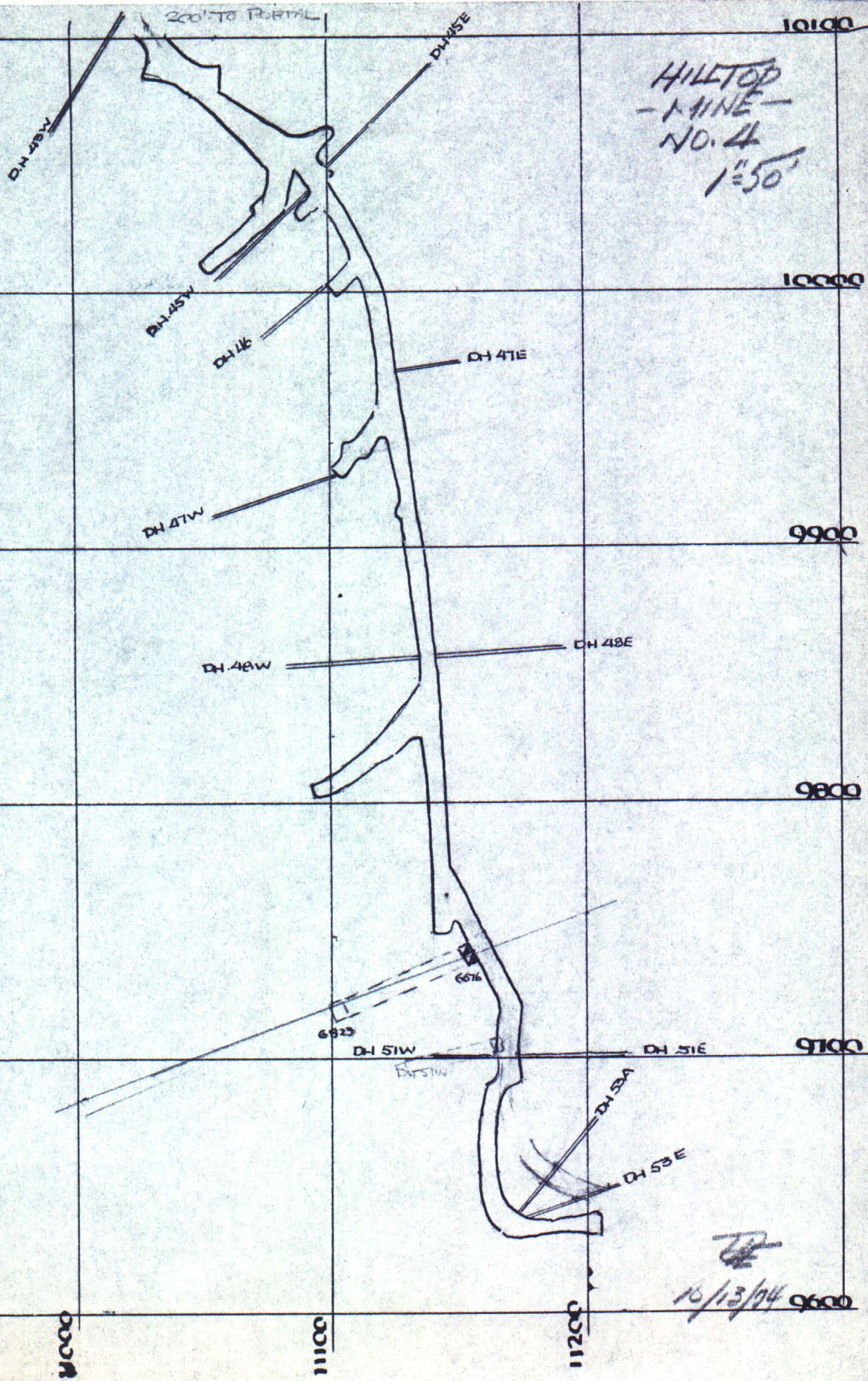


SUB-LEVEL
6723

6710

DP
10/13/74





HILTOP
-MINE-
NO. 4
1"50'

10/13/74

10100

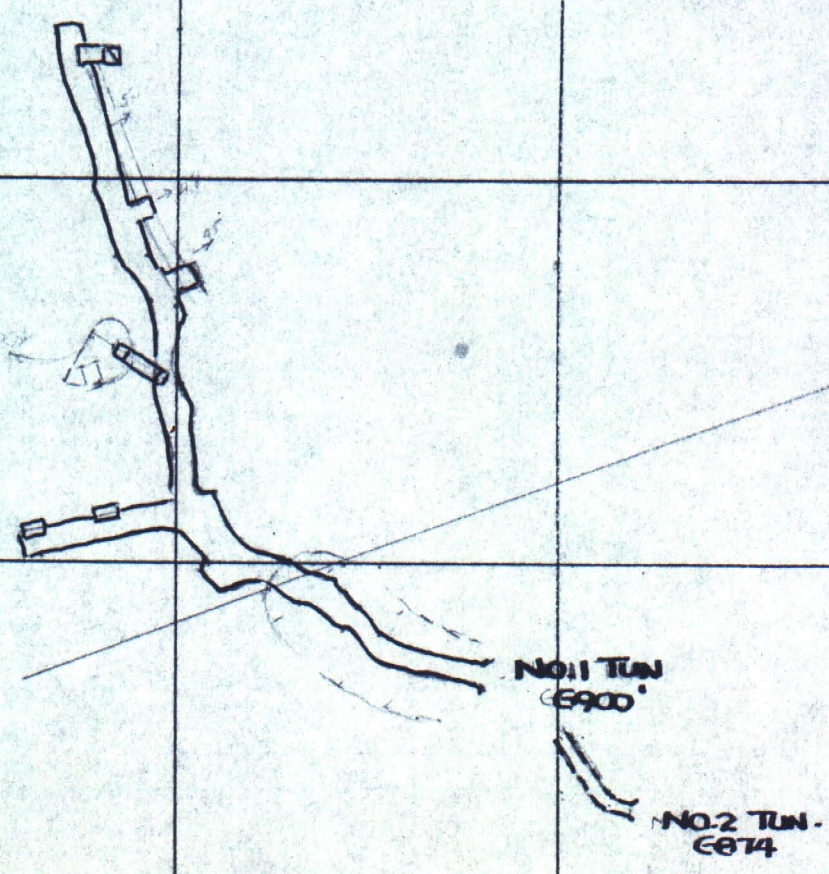
HILTOP
MAINE
- NO. 1 TUN
1250'

10000

9900

9800

9700



NO. 1 TUN
6900'

NO. 2 TUN -
6874

10/13/74
#1 TUN

11000

11100

11200

10100

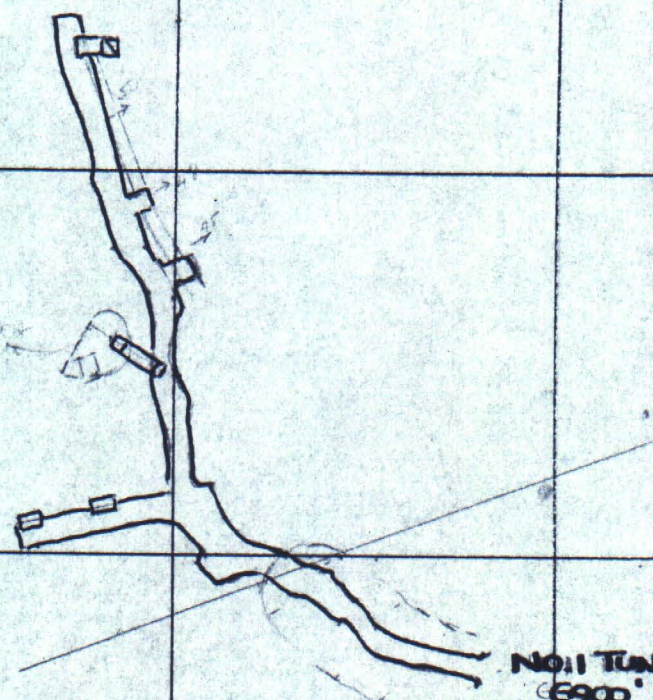
HILTOP
MINE
- NO. 1 TUN
1" 50'

10000

9900

9800

9700

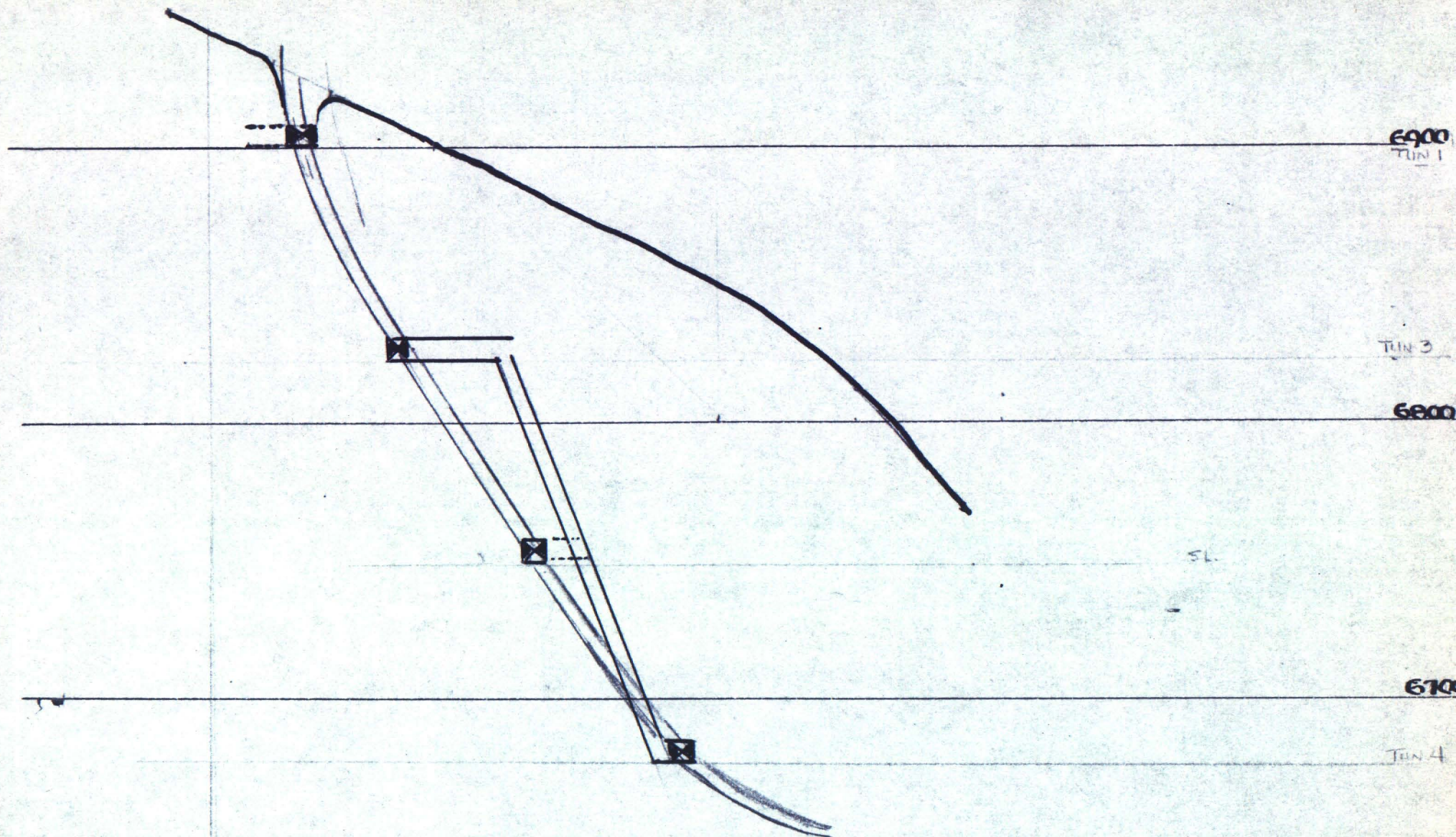


10/13/74
HILTOP

11000

11100

11200



6900
TUN 1

TUN 3

6800

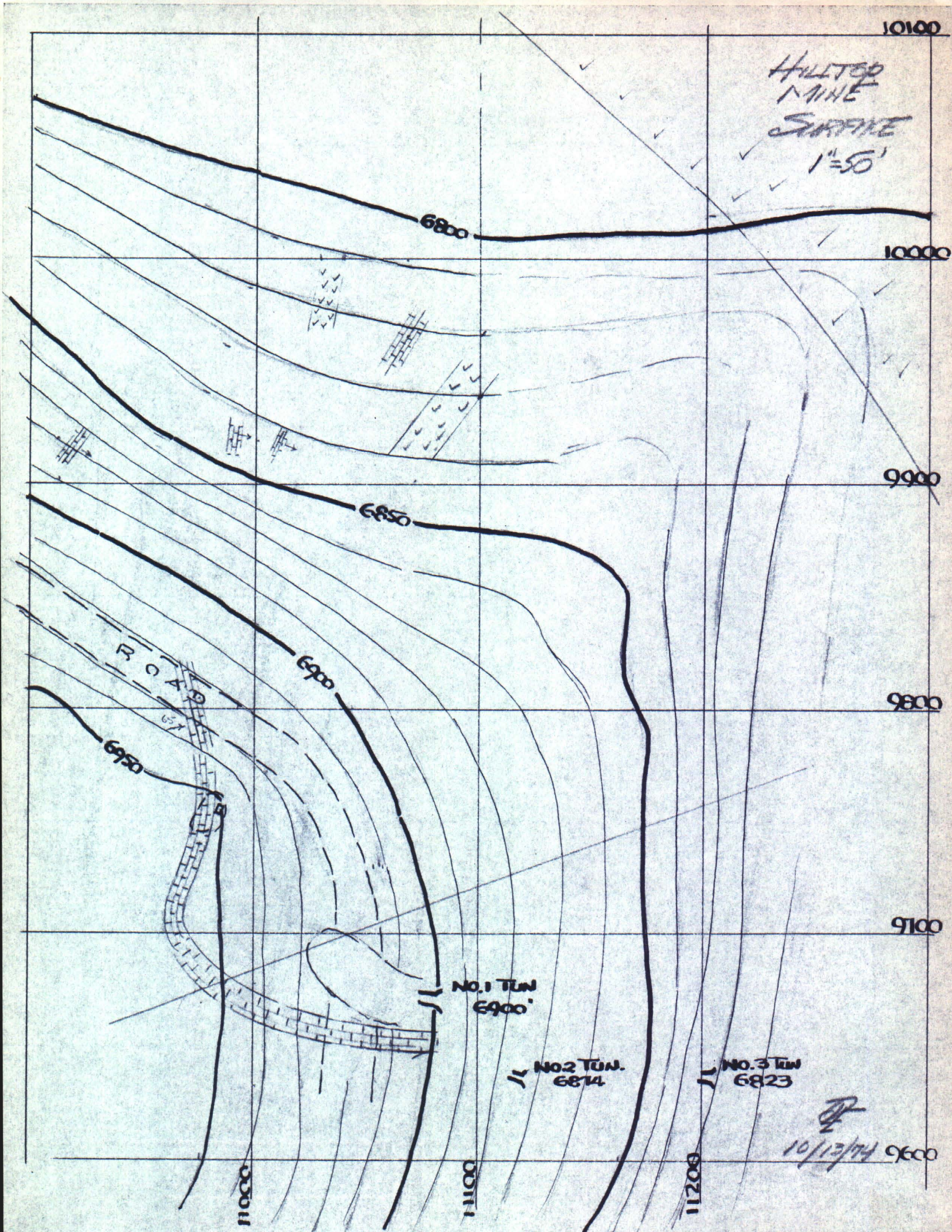
6700

TUN 4

6600

HILLTOP MINE
A-A'
1" = 50''

10/10/94



10100

HILLTOP
MINE
SURFACE
1"=50'

10000

9900

9800

9700

9600

6800

6850

6900

6950

No. 1 Tun.
6900'

No. 2 Tun.
6874

No. 3 Tun.
6823

10/13/74
H/C 101

11000

11100

11200

De Lancey - at Air Port,

Tom Sawyer - (213) 684-0582

Conference call with
Lue Fisher -

- Highsmith - - 60 feet

- Dick Barron - - 18' yunker @ Port Q.
9 miners - $\frac{1}{4}$ 12 ft/a day expected. T

✓ oe Warren 977-0351 10:00 AM
12140 Lemmon Dr 2:41 PM
Lemmon Valley (805) 773-4090 3:53 -

- H. Heintz - Holiday Hotel - ? 10:00 AM
1500 - not at hand. 2:41 PM
must call Ny-Torner 3:53 -
and know that they will. or
request that I off Highway 773-2989.
further noted down payment Answering
at hand Service.

How to put it in mail?

I have Samples here but hesitate
shipping & requesting assay makes
1500 at hand

I have viewed the property in some
detail - but without check & assay.
Gen provide so - conclusions or
opinions - until samples back
Then - reaction must be the property
by Gary Fisher

855
635
230
65
130

In account with
B.D.

777
113
2331
777
10101

240
145
145
240
777

— Re: Tungsten EXAM

Prof. Seever's

Date — Days — Hours

Oct. 12 4
13 5
16 1
17 1
18 1
19 1

2.00
7.17

~~Prof. Seever's~~

Prof. Expenses

Supplies, Carols 7.17
mail - etc.
Prints 4.86
Postage if
Woz Lamp 16.35
Meals 119.25
(for taxi)
M. P. 23.10

Investigation:

77 miles @ 17c

101.01

75
16.00
16.50
91.50
79.25

770
770
770
770

CONCLUSIONS -
- PRIOR TO -
CHECK SAMPLE RESULTS
OCTOBER 23, 1974.

ON BASIS OF -

- ① 4-DAYS OF STUDY.
- ② DETAILS FROM ARTHUR LAKES 1962 REPORT
- ③ CONSTRUCTION OF NEW MAPS & CROSS SECTIONS!

① OPEN CUT. SURF. TO TUN 3 -
 NOT ADVISED -

ONLY 1239 TONS - ORE
 24000 TOT. TONS.
 A RATIO OF 19/1

OR - A COST OF 100,000 \$
 to get 1239 @ \$80/T above
 \$13/T - POSSIBLE UNDERGROUND.

② REMAINING RESERVE - MOSTLY BLOCKED
 OUT - IS 3867 TONS WITH 8,841 UNITS

(IN CONTRAST TO 50,000 UNITS CLAIMED)

③ 1961-1962 - MILL RECOVERY - ABOUT 26%
 (LAKES REFERS TO LESS THAN 50%)

④ EXPLORATION & DEVELOPMENT
 POSSIBILITIES ARE - EXCELLENT -
 IN-MINE AREA - FROM TUNNELS
 4+5

⑤ REGIONALLY - ONE WOULD ANTICIPATE
 MORE MINERALIZED AREAS.

⑥ IMMEDIATE REQUIREMENTS -

- ① METALLURGICAL STUDY -
- ② COMPLETE MINE SAMPLING.
- ③ START & COMPLETE - MINE
 & REGIONAL GEOLOGICAL
 MAPPING.

⑦ PROPERTY AS IS - DOES NOT HAVE THE
 20,000 UNITS - CLAIMED.

MINING & MILLING (IN A REBUILD MILL).
 OF ASSURED RESERVE - MIGHT PROVIDE
 A 100,000 PROFIT & ADDITIONAL RESERVES.

BUT - THIS ROUGH ESTIMATE - NEEDS REVIEW.

2. FACTORS ARE - CRITICAL
INFLATION - WHAT WILL COSTS
 BE - 6 MONTHS + 12 MONTHS
 FROM NOW
OPTION - WHAT IS ROYALTY + OTHER
 WREN. ET AL. DEMANDS.

TO H.H.
ORIGINAL
+ TWO COPIES

Same Preliminary Conclusions -

1. - OPEN-CUT - SURF TO TUN-3 -
UNADVISED -
only - 1400 TONS
& Ratio is 8/1 - using
60% - slope.
2. only Piled-out - ore - is
~~4,607~~ - TONS - with 10,720 UNITS
~~3867~~ 9,841
cost is $(-)\frac{1}{2}$ of claimed
3. ~~4607~~ TONS = 1 to 1.5 KPS - of ore -
... ALLOWING - 3-6 mo's - preparation.
IT IS AN ASSET - & of Value.
4. Indicated mill recovery is 76%.
5. Development CHANCES - EXCELLENT
6. Exploration - FROM TUN-5 - EXCELLENT
7. OTHER - POSSIBILITIES - REGIONALLY
SHOULD - BE VERY GOOD.
8. - METALLURGY - IMPROVEMENTS A MUST!

ROUGH ESTIMATE OF
- COST OF REHABILITATION -
- & MINING - -

ASSUMING:

① RESERVE OF 3867 TONS & 8841 UNITS WO₃

② VALUE/UNIT: \$89; 85% RECOVERY = 7415 UNITS

③ RECOVERABLE VALUE — \$660,000.

④ LIFE OF RESERVE - 387 Days \approx 1.25 YEAR

PRE-OPERATING.

INITIAL COSTS:

38,000

CONSULTING 3000

CLEAN-UP &
 PREPARATION 31,000
 (6 WEEKS)

LABOR - 10,000

MINE

EQUIP. 12,000

LESS:

SUPPLY 4,000

LABOR 5,000
 MILL 31,000

RE-BUILD-MILL

125,000

100 TON GRAY

* 100T - @

* 2500/TC = 250,000

$\therefore \frac{1}{2} = 125,000$

OPERATING

158,000

STOPPING @ = 50,000
 5/13/T

MILLING @ 29,000
 7.50/T

DEVELOPMENT

3 HEADINGS = 1750' - 70,000
 350 DAYS @ 40'/
 @ 5' 12"/day

D. DRILLING @ 750' - 9,000
 @ 12'/FT

MISC.

75,000

GEOL. + ENG. - 25,000

ASSAYING 20,000

OVERHEAD - 30,000
 75,000

396,000

+ CONTINGENCIES

@ 10% - normal

12% inflation

TOTAL

87,000

BEFORE ROYALTY 483,000

FINAL ASSESSMENT

1.	RECOVERABLE-	660,000	- 660,000
2.	LESS - ALL EST COSTS	483,000	177,000
3.	LESS - ROYALTY ? AMT ESTIMATED @ 10% of NET	48,000	* 129,000

* BEFORE - DEPLETION
ALLOWANCE - TAXES
ETC.
—

THE ABOVE IS A
ROUGH - ESTIMATE

- OCT 22 - 1974
(AFTER NEW MAPS
SECTION)

ESTIMATE - of "PROVED" - RESERVES

1. South ORE - BODY -
REMAINS - ONLY "PROVED"
POSSIBILITY -

A. TUN-3 - TUN-1 -

	TUN	LENGTH	WIDTH	INCLINED	GRADE	TUN 1	UNIT
VIRGIN	1	50'	4.00		2.64		
	3	65	5.5		2.85		
	1 to 3 -	57	4.7	50.00	2.5	1239	3097
MINED.	3	65	5.5		2.85		
	S. Lev -	55	5.5		2.25		
		60	5.5	80	2.57	880*	2262
MINED -	S4	55	5.5		2.25		
	4	70	3.83		1.64	291	582
		62	4.7	30	2.0		
	S4	55	5.5		2.25		
	4	70	3.83		1.64		
		62	4.7	50	2.0	1457	2900
						3867.	8841

(10720
cu ft)
(.9 men)

LAKES " Stopped From S.L. to TUN-3
± 33% as pillars - TOT. TON
is 2640 + 1/3 is 880
∴ 1760 - MINED.

Dr. 874 TON x 1/3 =

MINED - 1760
582
2242

Oct. 20th

ESTIMATE - OF - PROVED - RESERVE -

1. MAIN - SOUTH - ORE - SHOOT -
IS - ONLY POSSIBILITY

A. TUN. 3 - TUN. 1 -

60' Dip length						
TUN. 3.	LENGTH.	WIDTH.	INCLINED VERT	GRADE	TONS	UNITS
1	50'	4.0		2.04		
3.	50'	5.5		2.85		
143	50'	4.7	60.0	2.5	1410	3525
3.	50	5.5		2.85		
S. LEV	80	5.5		2.25		
	65	5.5	50.0	2.48	1787	4431
S. LEV.	80 -	5.5		2.25		
4	70	3.83		1.64		
	75	4.7	40.0	1.96	1410	2764
				2.33	4607	10,720*

* IF USING - LAKES 1.09% - 5,022

** - LESSES - CLAIM - 20,000

OTHER - ARTHUR LAKES

1960-1961 - Prod.

- Based on Observation
 of Arthur LAKE's Data
 of Samples

TUN-3.

STOPE - 500 T @ 2.85
 RAISE 260 T @ 1.35

760 2.40

465

SUBLEV -
 ABOVE
 Below

1760 2.25
 660 2.25

= 2420 @ 2.25 = 2242

- TUN-4 -
 CONTACT
 ore

2100 2.53

2100 @ 2.53

5280 @ 2.36

TOTAL
 #

TOTAL
 UNITS

∴ 5280 @ 2.36 =
 + 1000 @ 0.35 =
 6280

12.460

350

12.810

Paid for 3,085 units = 24%
 Recovery

As a Check in *

- ore shipped Direct - was

341 1.91
 111 2.47
 233 2.02
 685 2.04

* Not including
 low grade

LAKE - ON-BASIS OF
 3085 UNITS - RECALCULATED
 on assumed recovery of
 Less Than 50% PLACES
 HEAD-Value at 1.0990
 was -

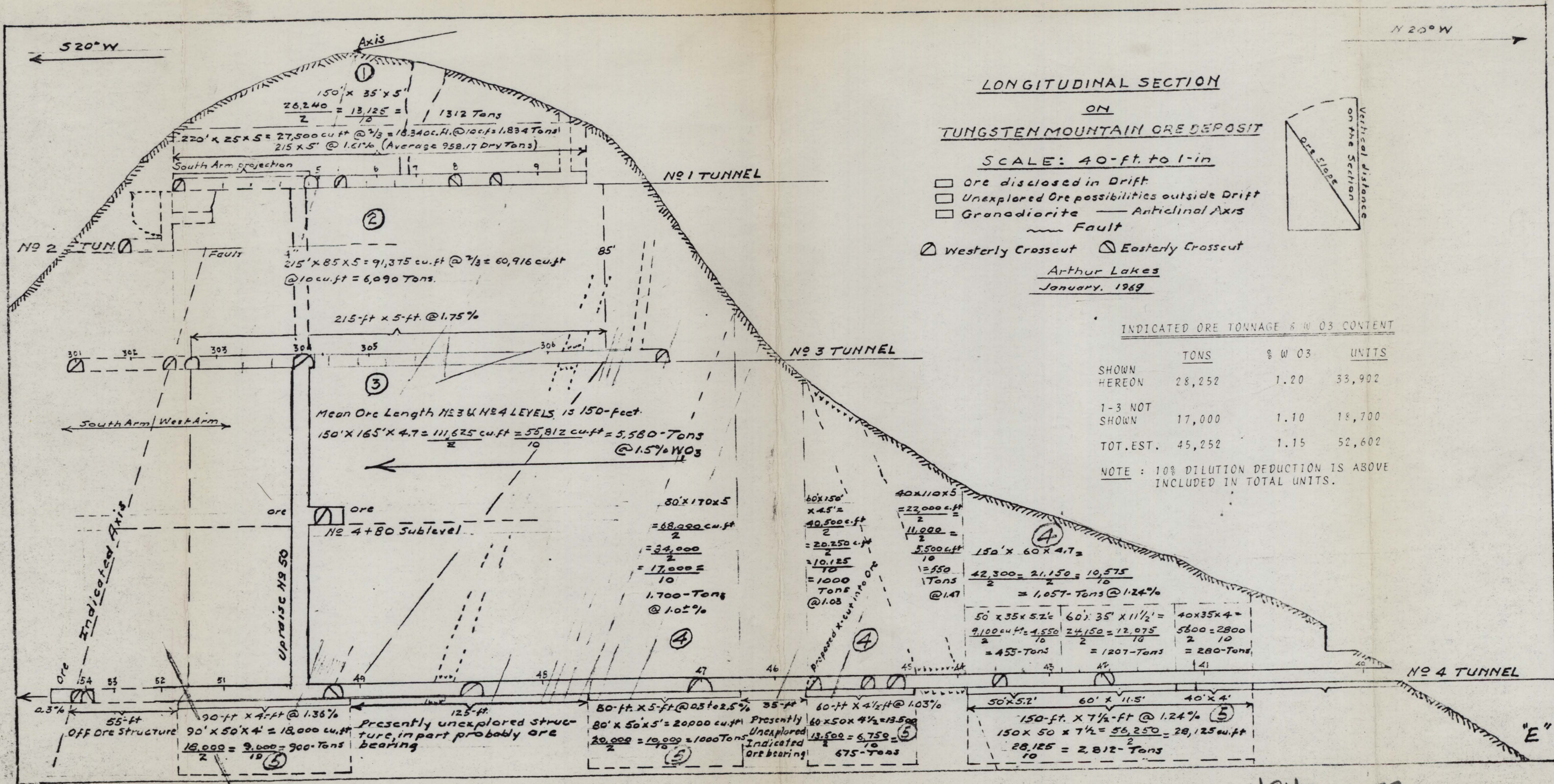
HIS MAP. Shows Sublevel
 grade of 2.25 (Hawaii)
 which provided 4690 yds.

TUNNEL 5 - WILL ENCOUNTER THE SAME FAVORABLE- ENVIRONMENT FOR ORE - AS - SEEN ON NO. 4 TUNNEL.

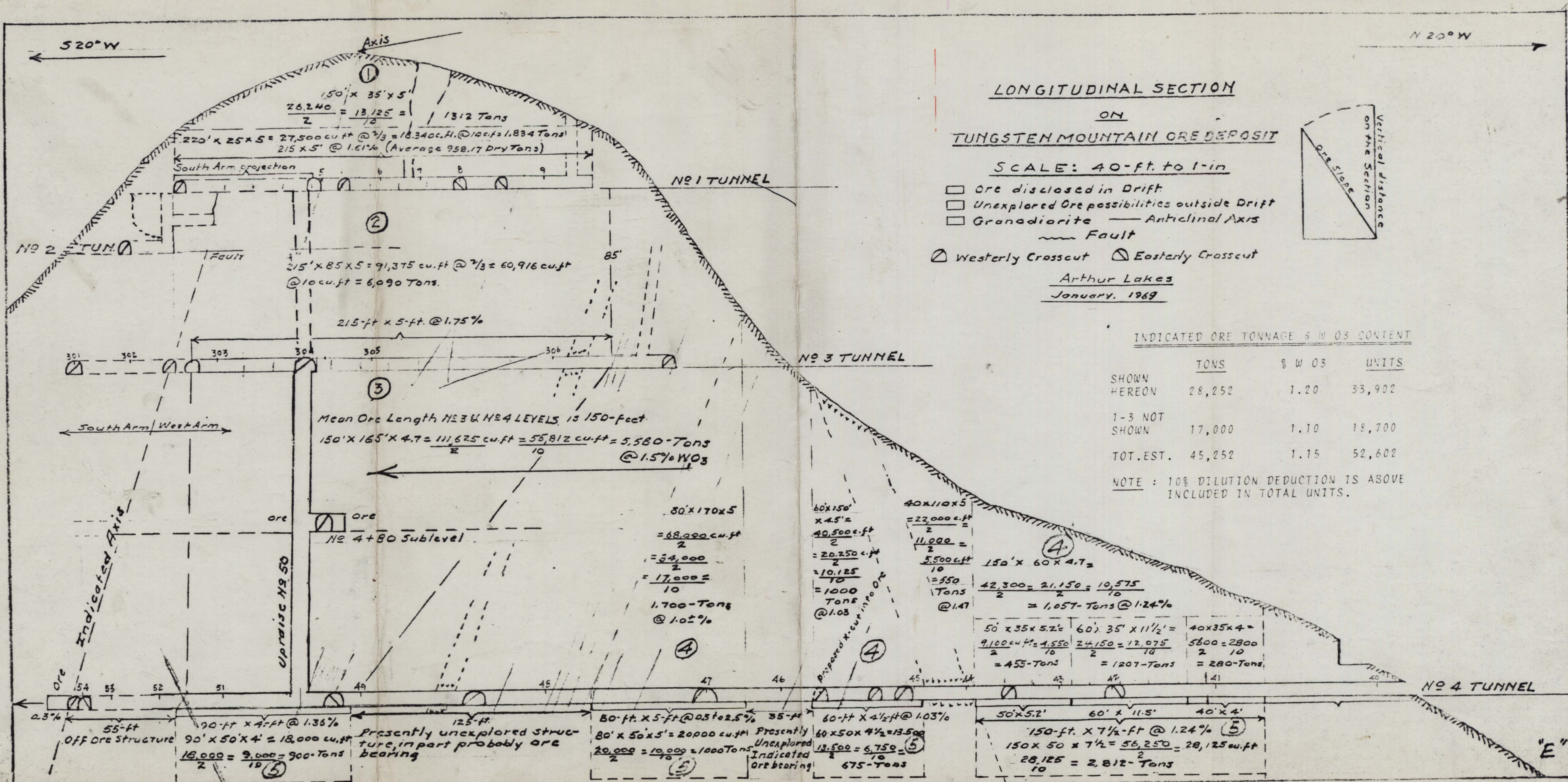
Samples.

Seven Samples were Act. wet mail - across the exposed true thickness. Sample Locations - were chosen on the basis of values shown on Arthur Lakes - map. Chassi also divided between obsidian here grade and higher grade results. Returns - increased by Metallurgical Laboratory. 1142 Howard Street San Francisco - are as follows:

Sample #	%Cu	%W	Thickness	Comments
T.D. 1				
1	0.01	0.75	4'	
2	0.29	2.64	6'	
3	1.07	1.75*	4'	Lakes shows 6 DINEA
4	0.46		4'	DINEA - shows 7' * LAKES shows 5.25%
5	0.11	—	6'	6 in Back of Steel
6	0.45	—	5'	LAKES - DID NOT SAMPLE.
7	0.77	2.0	3'	



4940 007A



WESTERN HEMISPHERE PRODUCTION CORP.
TUNGSTEN MTN. MINE
 CHURCHILL CO., NEVADA

NO. 4 TUNNEL RECONNAISSANCE
 1" = 50'

BEHRE DOLBEAR & CO.
 DAVID L. COUNT EVANS
 GEOLOGIST

OCT. 31, 1974

VALUES RPTD 0.3% TO 2.5% WO₃

AS INDICATED BY ARTHUR LAKES SURFACE MAP

NO. 5 TUN. 6486'

NO. 4 TUN 6670'

BD.1 0.01% WO₃

BD.2 0.29% WO₃

BD.3 1.07% WO₃

BD.4 0.46% WO₃

BD.5 0.19% WO₃

BD.6 0.45% WO₃

BD.7 0.77% WO₃

60 FT. W. 3.83' 1.64% WO₃

70 FT. W. 4 FT. 0.94%

65 FT. W. 11 FT. 2.53%

DH.42E

DH.45E

DH.46

DH.47W

DH.48W

DH.48E

DH.51W

DH.51E

DH.52E

DH.41E

DH.42W

DH.43W

DH.44W

DH.45W

DH.46W

DH.47E

DH.48E

DH.49E

DH.50E

DH.51E

DH.52E

DH.53E

DH.54E

DH.55E

DH.56E

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DH.58E

DH.59E

DH.60E

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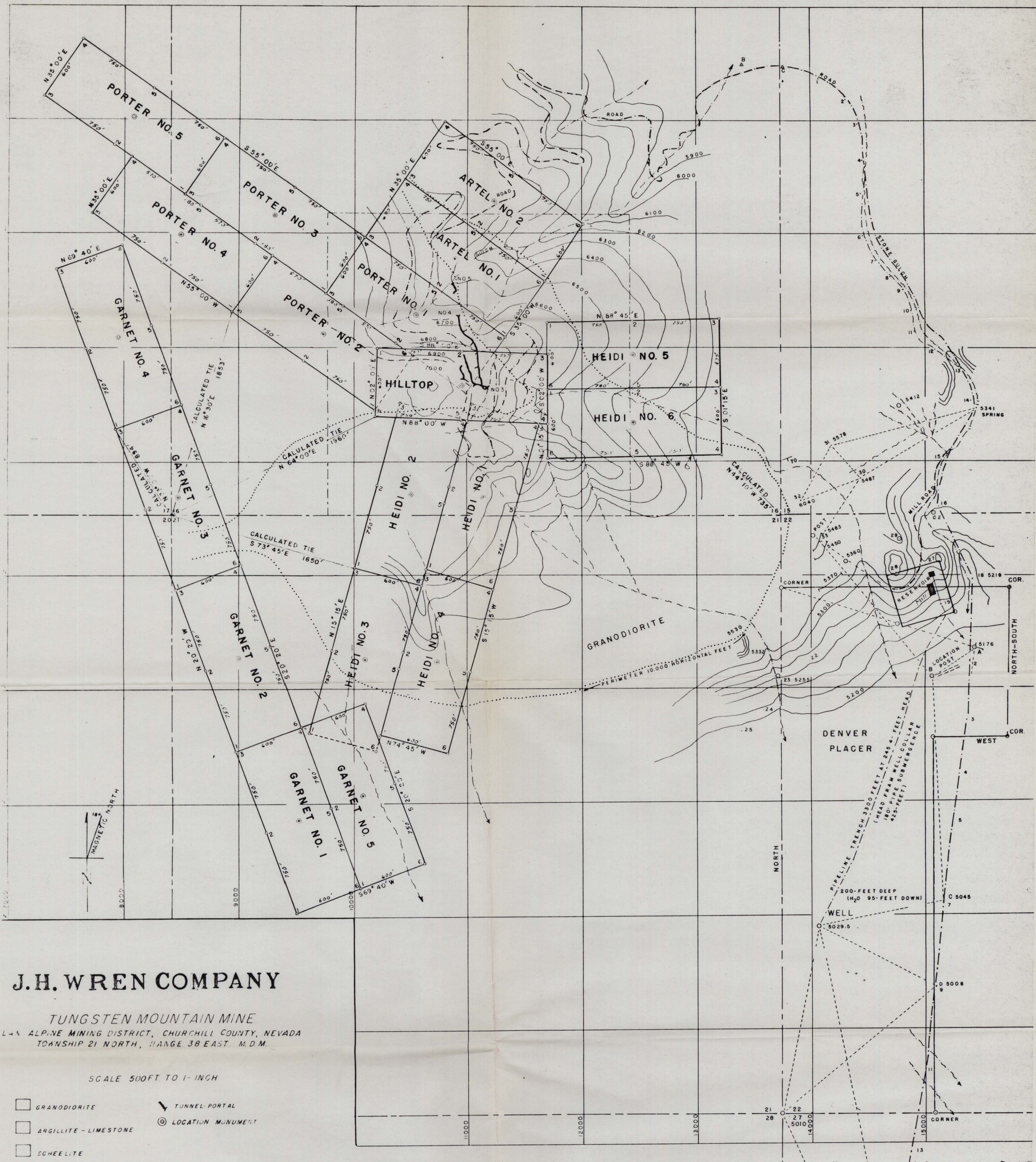
DH.240E

DH.241E

DH.242E

DH.243E

DH



LODE CLAIMS:

HILLTOP
 PORTER NO. 1 - NO. 5
 ARTEL NO. 1 - NO. 2
 HEIDI NO. 1 - NO. 6
 GARNET NO. 1 - NO. 5

PLACER CLAIM:

DENVER PLACER

MILL SITE:

FIVE ACRE MILL SITE CLAIM

TUNGSTEN MOUNTAIN MINE

Underground development 3,100 feet.
 Tungsten depth proven..... 500 "
 Tungsten probable depth 1,000+

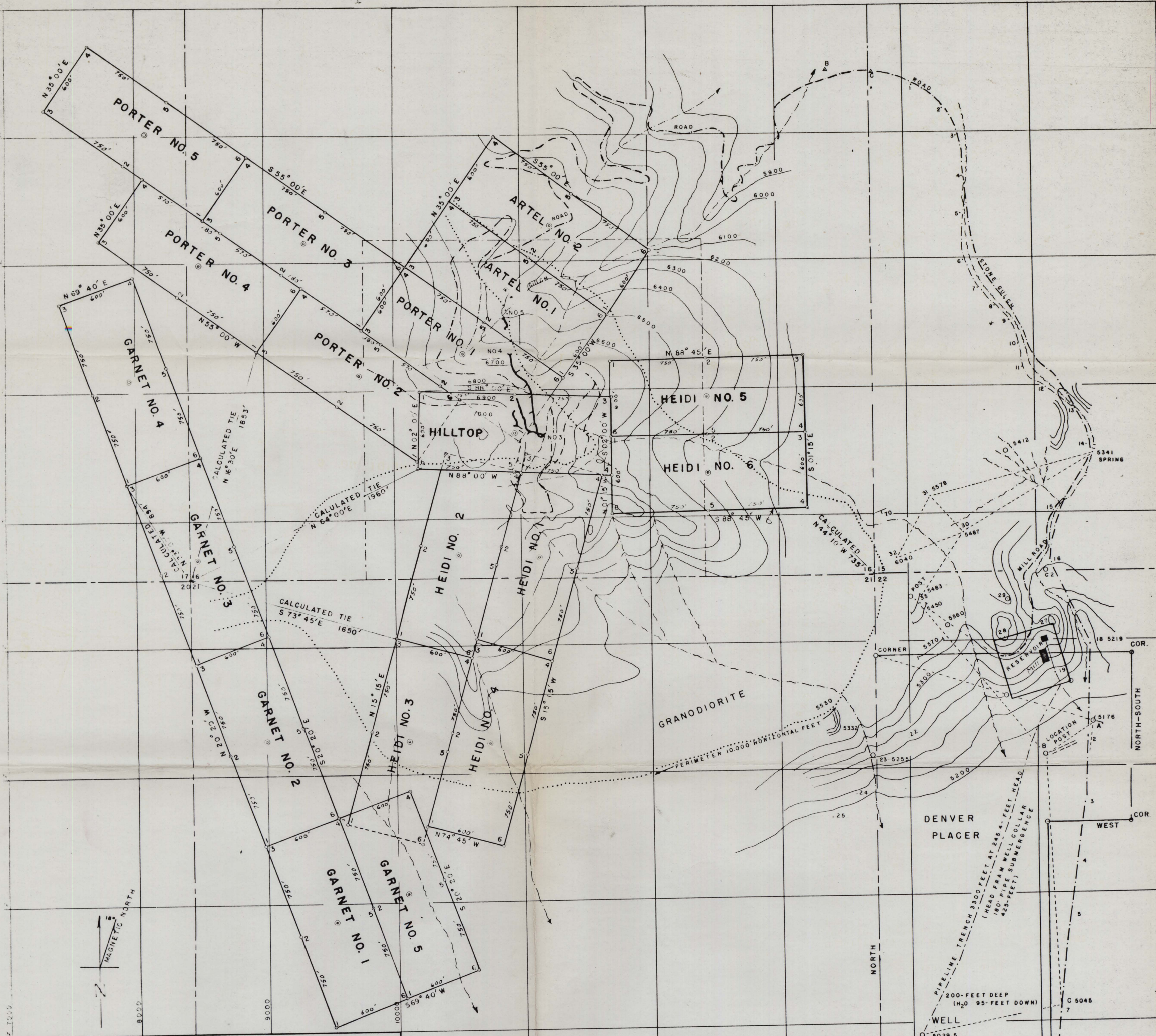
MILL, 100 tons capacity, gravity, flotation, magnetic separation, concrete foundation and flooring, steel frame, sheet iron sheathed. Historical mill head 1.00% W.O₃ plus. Pump plant, 3,300' waterline buried, four miles of road facilities, stockpiling area. Proven units : 50,000. Possible units : 200,000.

James H. Wren Ph.D.
 January 1, 1973.

7 - 2 - 72

JAMES H. WREN, PH. D.

4940 0079



J.H. WREN COMPANY

TUNGSTEN MOUNTAIN MINE
 LAS ALPINE MINING DISTRICT, CHURCHILL COUNTY, NEVADA
 TOWNSHIP 21 NORTH, RANGE 38 EAST M.D.M.

SCALE 500 FT TO 1" INCH

- GRANODIORITE
- ARGILLITE - LIMESTONE
- SCHAEELITE
- TUNNEL PORTAL
- LOCATION MONUMENT

LODE CLAIMS:

HILLTOP
 PORTER NO. 1 - NO. 5
 ARTEL NO. 1 - NO. 2
 HEIDI NO. 1 - NO. 5
 GARNET NO. 1 - NO. 5

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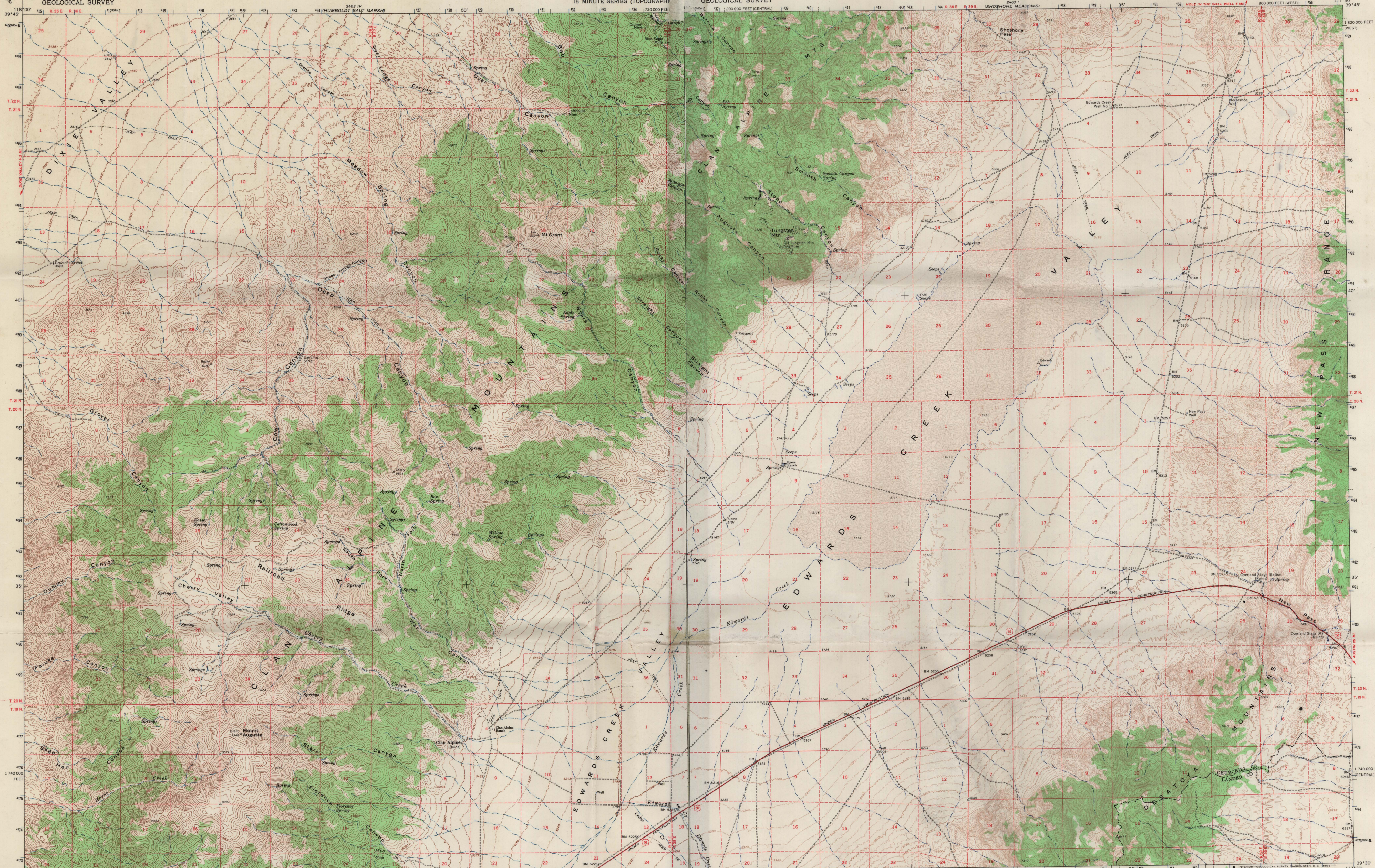
4940 0079

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CLAN ALPINE RANCH QUADRANGLE
NEVADA—CHURCHILL CO.
15 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

EDWARDS CREEK VALLEY QUADRANGLE
NEVADA
15 MINUTE SERIES (TOPOGRAPHIC)



Maped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial
photographs taken 1964. Field checked 1966
Polyconic projection. 1927 North American datum
10,000-foot grid based on Nevada coordinate system, west zone
1000-meter Universal Transverse Mercator grid ticks,
zone 11, shown in blue
Where omitted, land lines have not been established

SCALE 1:62,500
CONTOUR INTERVAL 80 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

ROAD CLASSIFICATION
Heavy-duty ——— Unimproved dirt ———
U.S. Route ———

CLAN ALPINE RANCH, NEV.
N3930—W11745/15
1966
AMS 2463 III—SERIES V796

Maped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography by photogrammetric methods from aerial
photographs taken 1964. Field checked 1966
Polyconic projection. 1927 North American datum
10,000-foot grid based on Nevada coordinate system,
east and central zones
1000-meter Universal Transverse Mercator grid ticks,
zone 11, shown in blue
Where omitted, land lines have not been established

SCALE 1:62,500
CONTOUR INTERVAL 80 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

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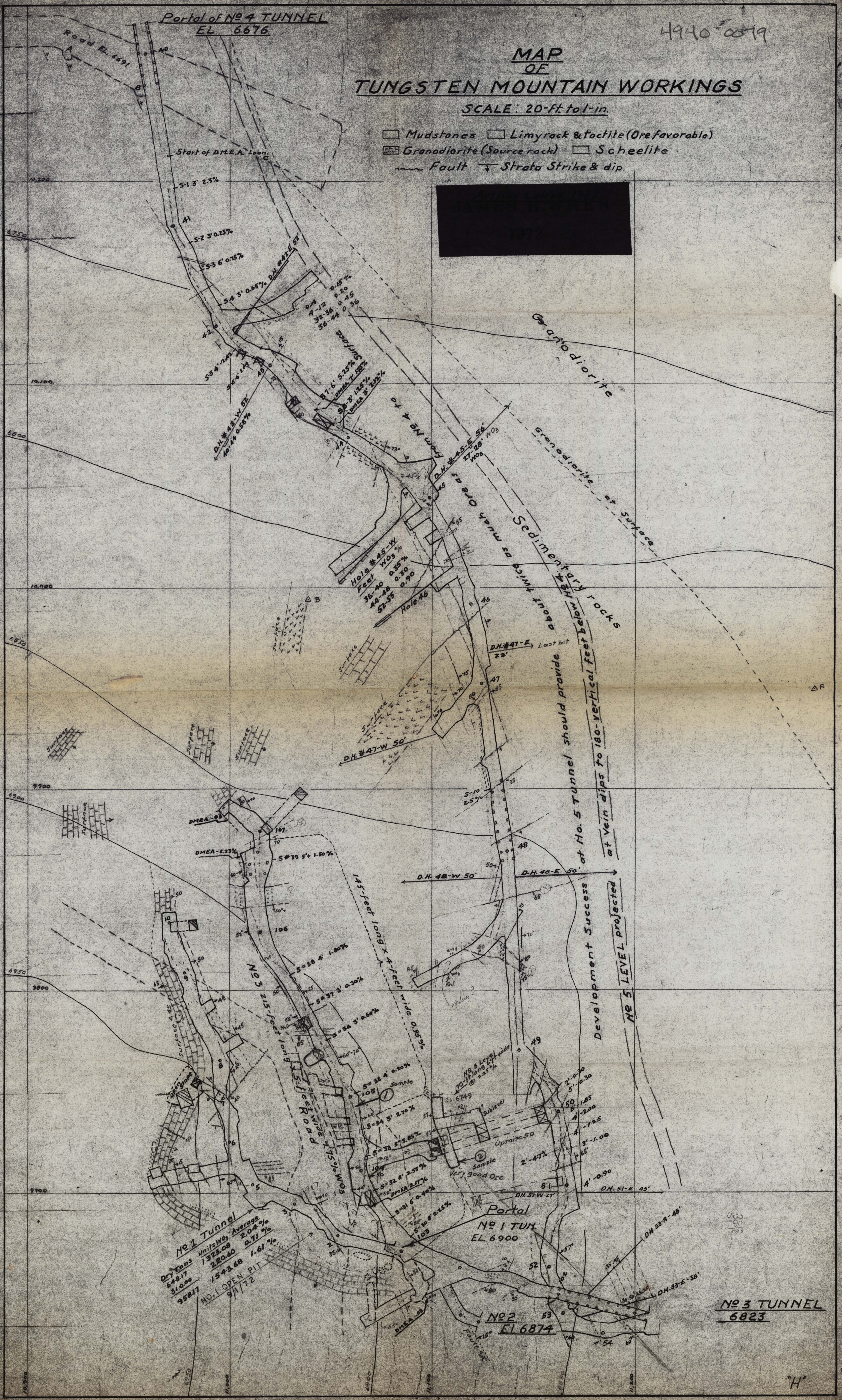
EDWARDS CREEK VALLEY, NEV.
N3930—W11730/15
1966
AMS 2463 II—SERIES V796

4940 0079

4940 0079

SCALE: 20-ft. to 1-in.

- Arthur Baker 1966*
JAMES H. BAKER
1972



No. 5 TUN.
6488'

GRANITE

HIGHWHEELS
DISSEMINATED
WOL

WESTERN HEMISPHERE
PRODUCTION CORP

TUNGSTEN MTN. MINE
CHURCHILL CO., NEVADA

NO. 4 TUNNEL RECONNAISSANCE

1" = 50'

BEHRE DOLBEAR & CO.
DAVID LEICHT EVANS
GEOLOGIST

OCT. 31, 1974

No. 4 TUN
6670'

G' SHOW

Hard thin
bedded ls

CUT

10' LOW GRADE
AT CONTACT

GRANITE

GRANITE

GRANITE

GRANITE

GRANITE

GRANITE

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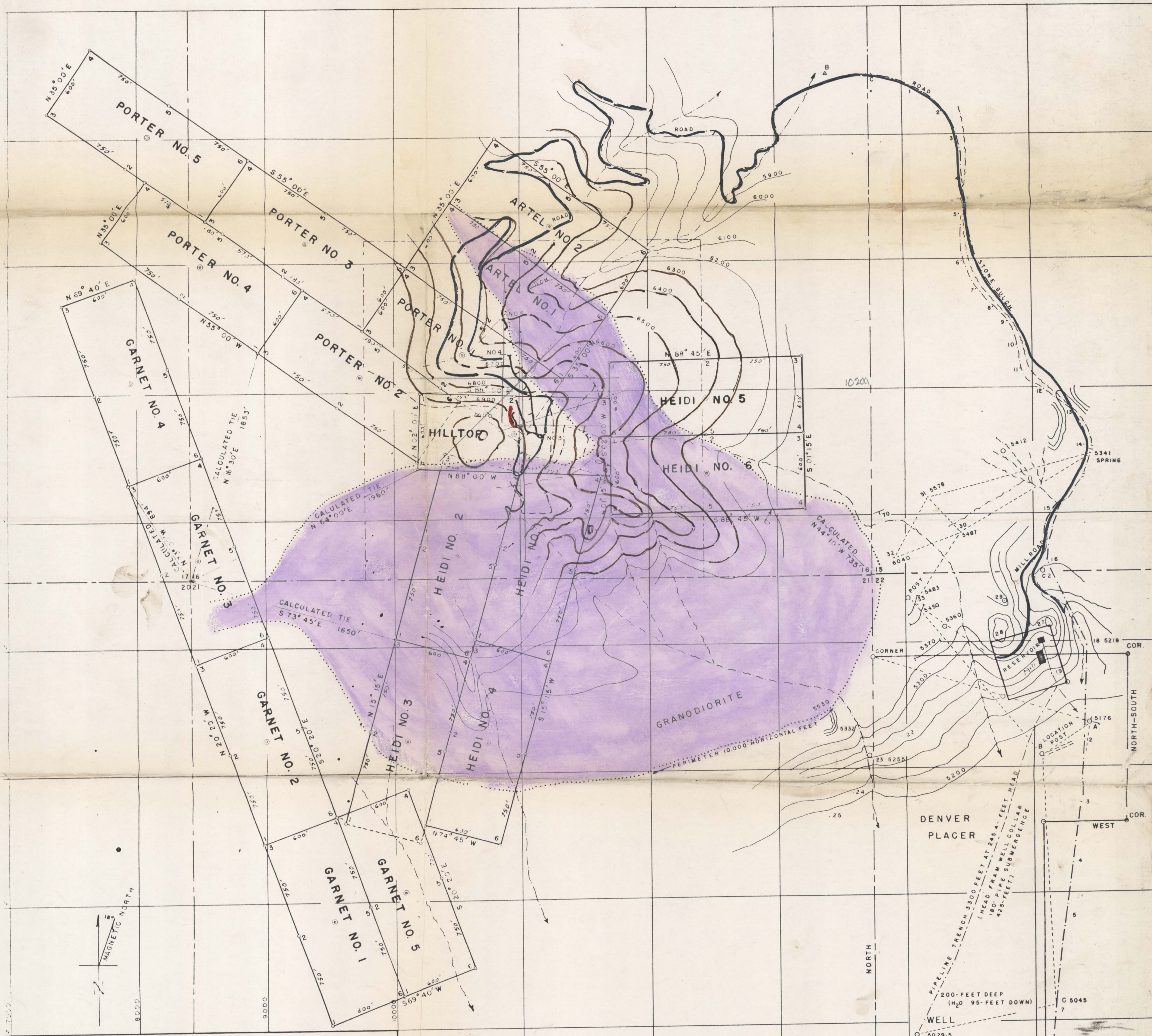
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J.H. WREN COMPANY

TUNGSTEN MOUNTAIN MINE
LAS ALPINE MINING DISTRICT, CHURCHILL COUNTY, NEVADA
TOWNSHIP 21 NORTH, RANGE 38 EAST M.D.M.

SCALE 500 FT TO 1- INCH

- ☐ GRANODIORITE
- ☐ ARGILLITE - LIMESTONE
- ☐ SCHEELITE
- TUNNEL-PORTAL
- LOCATION MONUMENT

LODE CLAIMS:

HILLTOP
PORTER NO. 1 - NO. 5
ARTEL NO. 1 - NO. 2
HEIDI NO. 1 - NO. 6
GARNET NO. 1 - NO. 5

PLACER CLAIM:

DENVER PLACER

MILL SITE:

FIVE ACRE MILL SITE CLAIM

TUNGSTEN MOUNTAIN MINE

Underground development 3,100 feet.
Tungsten depth proven..... 500 "
Tungsten probable depth 1,000+

MILL, 100 tons capacity, gravity, flotation, magnetic separation, concrete foundation and flooring, steel frame, sheet iron sheathed. Historical mill head 1.00% W.O.₂ plus. Pump plant, 3,300' waterline buried, four miles of road facilities, stockpiling area. Proven units : 50,000. Possible units : 200,000.

James H. Wren Ph.D.
January 1, 1973.

7 - 2 - 72

JAMES H. WREN, PH. D.

4940 0079h

No. 5 Tun.
6496'

2196-601

No. 4 Tun.
6676

AREA FROM HERE

BD#1

BD2

BD3

BD4

BD5

BD6

80x35x10 = 2100T
10 @ 2.53%
(4-sample cuts)

No. 4
1"50'

DH 45W

DH 46

DH 47W

DH 47E

SW - 0.37 to 0.5%

DH 48W

DH 48E

STRINGS Values

60'-L

3.82 1.04%

DH 51W

DH 51E

DH 52A

DH 53E

10/13/74

4940 0079