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James Doyle Sell Mining Collection

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Sulfide
 Geochem Trends in Bedrock
 Cu / Mo
 101 / 3

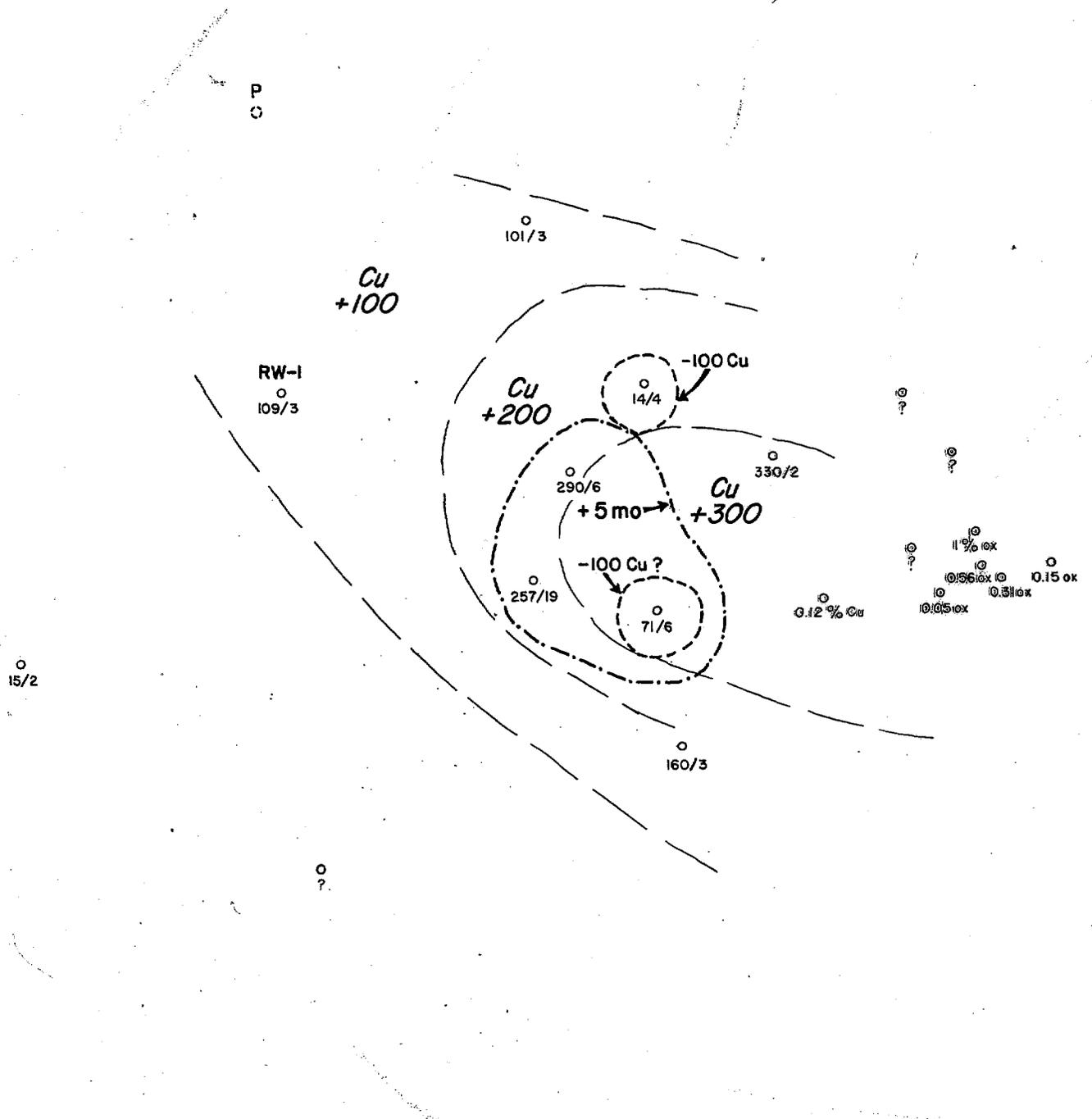
Overlay
 RAY WEST PROJECT
 Pinal County, Arizona

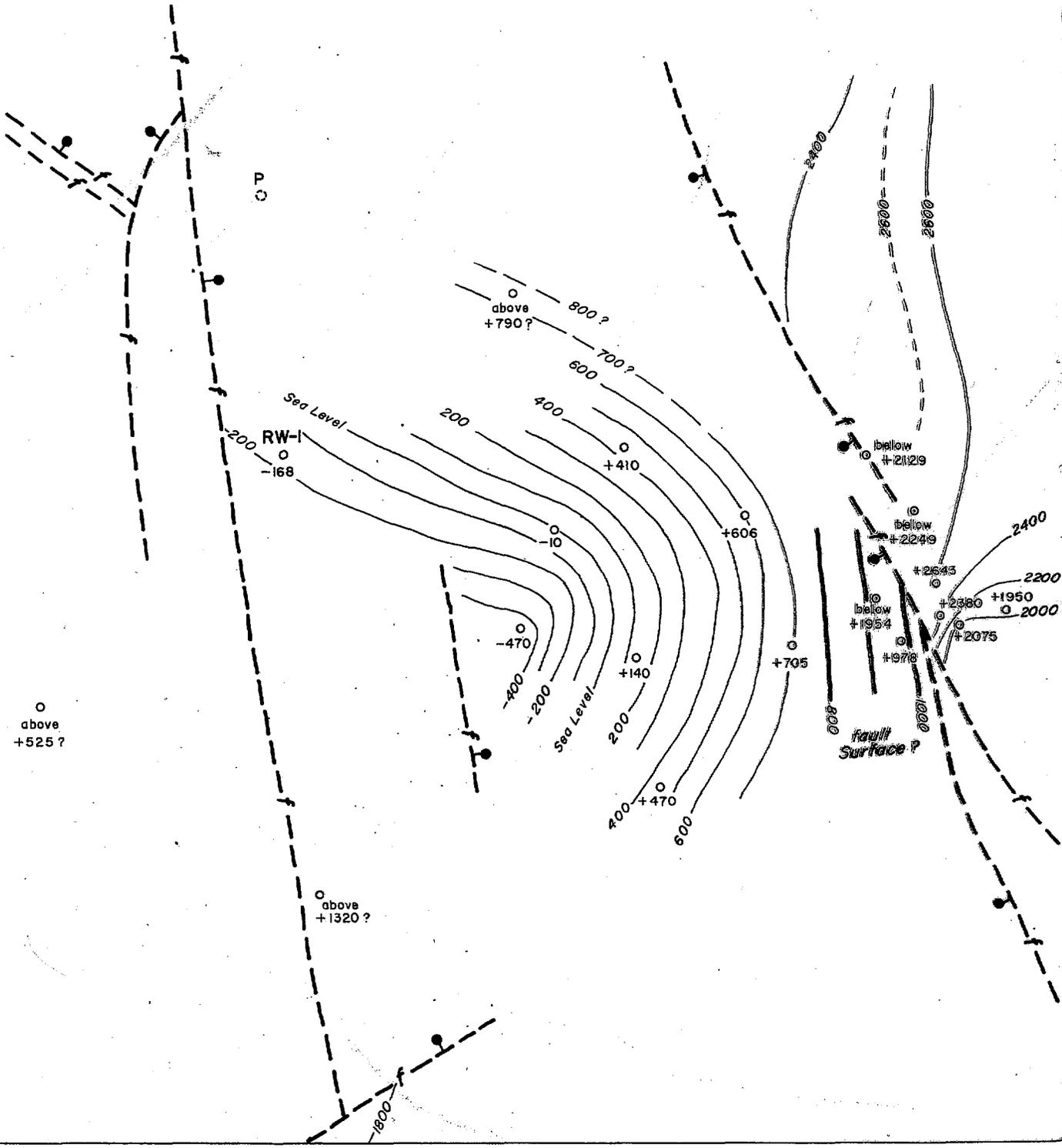
SCALE: 1" = 2000'

JDS

Feb. 1974

MVK 2708-e



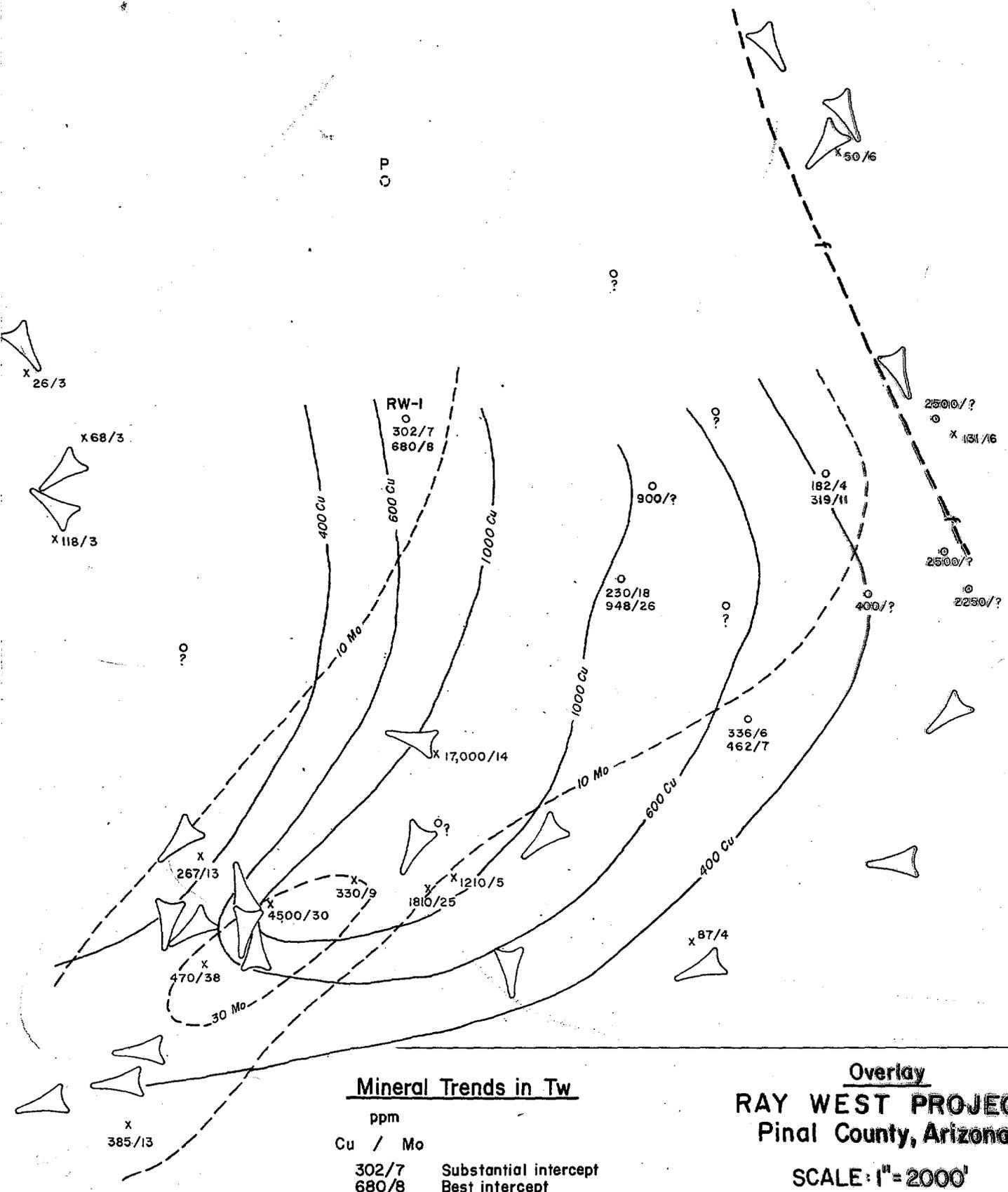


Isopach of Basement Rock
Elevation from Sea Level

Overlay
RAY WEST PROJECT
Pinel County, Arizona

SCALE: 1" = 2000'

- Drill Hole
- x Surface Sample
- ▶ Paleo-stream direction



Mineral Trends in Tw

ppm
 Cu / Mo
 302/7 Substantial intercept
 680/8 Best intercept

Overlay
RAY WEST PROJECT
 Pinal County, Arizona

SCALE: 1" = 2000'

J.H.C.

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

March 5, 1974

J. H. C.
MAR 15 1974

Mr. T. C. Osborne
Assistant Director of Exploration
New York Office

Ray West Project
ASARCO/Quintana Minerals
Pinal County, Arizona

Dear Sir:

In December 1973 Mr. Sell reviewed Quintana Mineral Corp.'s data on subject property and concluded that good exploration possibilities for the occurrence of porphyry copper mineralization beneath 1500-2000 feet of post-mineral cover still exists. For tax purposes Quintana needed to know prior to December 31, 1973, whether Asarco would explore their property. After discussing the property with you and obtaining your verbal approval, I informed Quintana Asarco would explore their property.

Attached is Mr. Sell's review of the data. The Ray West Project area is located about six miles west-southwest of Kennecott's Ray pit along a permissive exploration zone that extends westerly through Red Hills, Poston Butte, and Sacaton deposits. The area is covered by post-mineral Whitetail conglomerate, dacite, and Gila conglomerate. The Whitetail contains exotic copper and locally abundant concentrations of altered and leached porphyry fragments. Kennecott has drilled one area (Copper Butte Mitchell property) that supposedly contains an exotic copper oxide deposit of several tens of millions of tons.

Drilling west of the exotic copper oxide deposit has indicated a large zone of weak primary mineralization in the premineral Precambrian schist and granite. Our study of the available data strongly suggests that the source of much of the altered and mineralized pebbles in the Whitetail originated to the north of any previous drilling. It is this area, covered by claims staked by Quintana Minerals, that we propose to test for the occurrence of a porphyry copper deposit.

We must spend \$180,000 to earn a 60% interest as follows:

1st year	\$ 25,000
2nd year	55,000
3rd year	100,000

Mr. T. C. Osborne

- 2 -

March 5, 1974

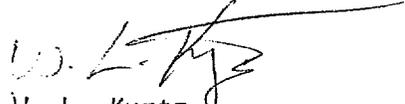
and can terminate anytime after \$25,000 has been spent. After we earn our 60% interest, if either party does not advance their share of expenses they forfeit all right (i.e., no dilution and no retained interest).

I estimate it will require \$50,000 to complete the first exploration hole as follows:

Site preparation	\$ 5,000
Drilling and Casing	40,000
Supervision	5,000

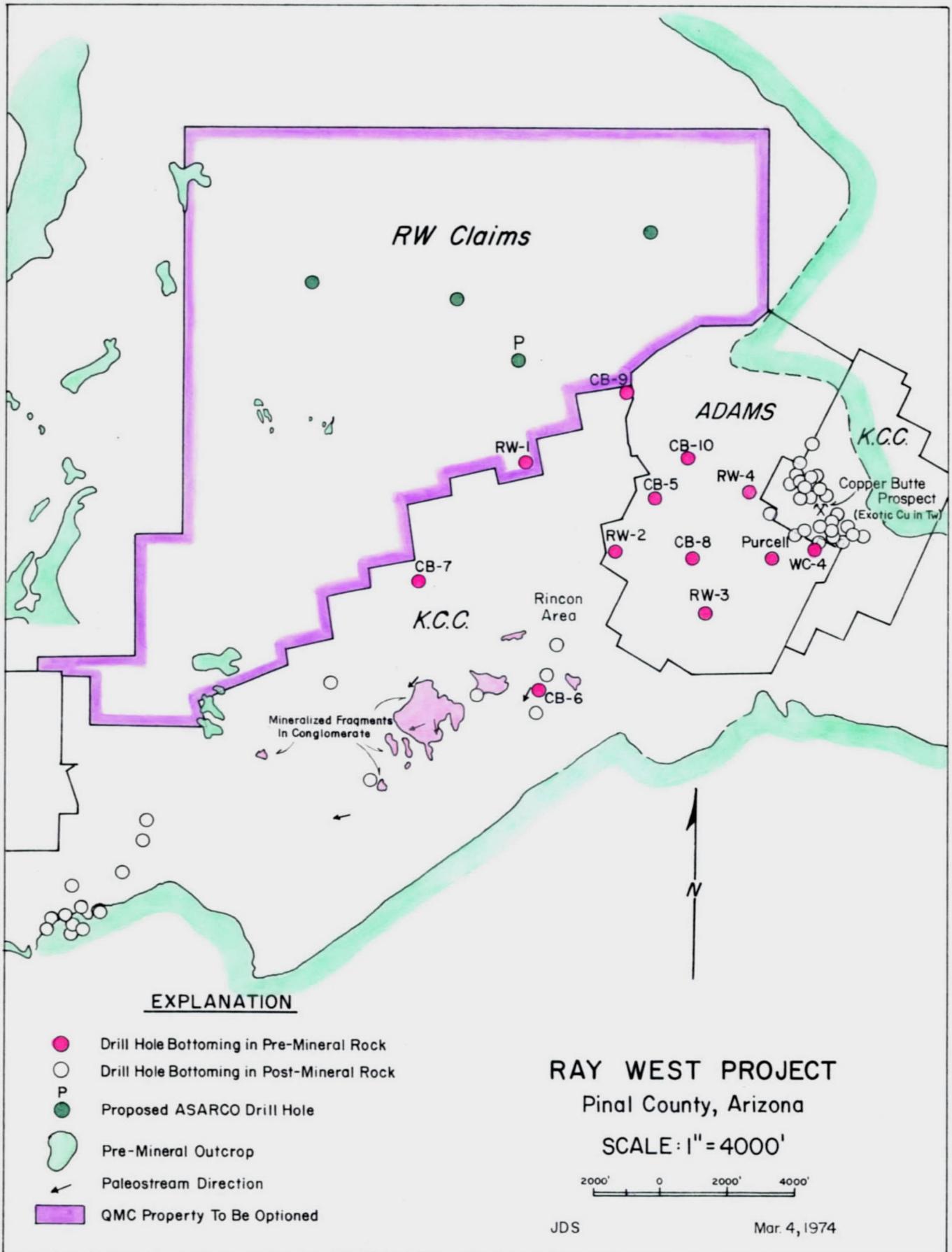
If you approve, please request an Exploration Authorization in this amount. Forms 302-E and 302-EA are attached.

Respectfully submitted,


W. L. Kurtz

WLK:1b
Attachs: Forms
Encls: Report
Map

cc: JHCourtright - w/attachs. & encls. ✓
RBCrist - w/o attachs. & encls.
JDSell - w/o attachs. & encls.
ADCoumides - w/forms only



TO ACCOMPANY *Expl. Auth. Request*
 DATED *March 5, 1974*
 BY *W. L. Kertz*

FORM 302-E

APPLICATION FOR EXPLORATION AUTHORIZATION

March 5, 1974

Originating Office SWED - Tucson

DESCRIPTION: RAY WEST PROJECT

LOCATION OF PROSPECT/PROJECT: 6 miles WSW of Ray, Arizona

PARTNERS: Corbin J. Robertson (Quintana Minerals Corp.)

Partner's Per Cent 40%

COMPANY: ASARCO

Subsidiary. Specify

WORK CONTEMPLATED:

Drill one exploration hole between 2000-3000' in depth to test for porphyry copper mineralization.

Total estimated cost (FORM 302-EA ATTACHED)

\$50,000.00

Reviewed by *[Signature]* ..
Acct. Mgr. or Chief Acct.

Approved by
Vice President

Recommended by *[Signature]* ..
Supervisor

Approved by
Comptroller

Account Chargeable to
To be designated by Comptroller

Approved by Advisory Committee
.....19 ...

Approved by Board of Directors
.....19

.....
Secretary

COST ESTIMATE, MINERAL EXPLORATION

PROSPECT RAY WEST PROJECT

OFFICE SWED - Tucson

LOCATION Pinal County, Arizona

BY W. L. Kurtz

No.	Type of Work	Salaries/Wages		Material	Fees, Rent, Services	Traveling	Taxes	Other	Total Estimate Cost
		Days	Amount						
501	Outright Purchase								
502	Option Payments								
503	Bonus Payments								
504	Minimum Royalties- Deductible from Future Production								
505	Minimum Royalties-Not Deductible from Future Production								
506	Rental Payments								
507	Staking Claims								
511	Surface Excavating								
512	Underground "								
521	Surface Drilling				40,000				40,000
522	Underground "								
530	Geologic								
540	Sampling, Assaying, Lab.				1,000				1,000
550	Geophysics								
560	Geochem								
570	Engineering								
580	Construction (temp.)				5,000				5,000
590	Construction (perm.)								
610	Administration, Field Offices and Camps		3,000			1,000			4,000
620	Administration, General								
641	Autos and Vehicles								
642	Aircraft and Boats								
650	Partner's Share ASARCO'S SHARE		3,000		46,000	1,000			50,000
661	Commission or Fees								
663	Exchange								
	TOTAL		3,000		46,000	1,000			50,000

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

February 19, 1974

TO: W. L. Kurtz

FROM: J. D. Sell

Ray West
Joint Venture Proposal
ASARCO/Quintana Minerals
Pinal County, Arizona

Summary

Review of the Quintana data suggests the source for the exotic copper in Whitetail Conglomerate in the Ray West area is to the north of the present drilling.

It is proposed that limited drilling be done on the Ray West property to further delineate and locate the source area. Although the surface rocks are Quaternary gravels and dacite, it is believed that the depth to bedrock in the northern area is between 1500 and 2000 feet.

Location & Property

The Ray West Project of Quintana Minerals Corporation is located some six miles west of the Ray pit of KCC and adjacent to the Mineral Butte (Mitchell) Property currently held and being drilled by KCC.

The main body of claims lie in parts of 12 sections in the southwest quarter of R12E, T3S, Pinal County, Arizona. Most are in a contiguous group, though a few are separate and scattered to cover open fractions. Quintana also had the Adams Property under option, as well as some State Prospecting Permits.

Past Drilling

KCC has drilled a number of holes in the exotic copper in Whitetail Conglomerate on the Mitchell (Copper Butte) Property testing and confirming the earlier drilling by the U.S. Bureau of Mines and the Walnut Canyon Mining Company. KCC also had an option on the Adams property which lies west of Copper Butte and adjacent to the Quintana Ray West Property. At least seven KCC holes, plus 4 churn drill holes and one drill hole by Purcell are on the Adams Property.

South of the Ray West Property, KCC has a large block of claims and at least twenty holes have been drilled in the block.

Quintana has compiled the available information on the various holes which was submitted along with several of their preliminary reconnaissance-evaluation reports. Table 1 lists the holes and the available information to the various units. These holes are colored on the base map of Attachment A.

Quintana Drilling

Quintana has drilled 4 holes (RW-series) during their program; one on their Ray West claims and three on the Adams Property. All four holes penetrated the post-mineral units and cored the underlying premineral units, finding bleached and pyritized Precambrian Pinal Schist, granite and diabase.

Present Study

As noted from Table 1, some sixteen holes have been drilled into premineral rock through post-mineral gravels and volcanics. These holes are shown on Attachment A along with several other informative holes.

As noted, the bulk of the drilling has been done on the C. F. Mitchell property, held by KCC, where some tens of millions ($\pm 100?$) of tons of exotic copper have been found, mainly in the Whitetail Conglomerate. It is rumored that KCC has bids out for a 30-hole program in this area at the present time.

The exploration question has been raised as to the source of such mineralization. In order to accumulate in the Whitetail, the source would have been exposed during the time of sedimentation. To help evaluate the question, several studies have been previously undertaken by others and I have compiled several overlays as follows:

- 1) Overlay showing Mineral Trends in the Whitetail Conglomerate. The overlay shows the surface paleo-stream direction measurements after L. C. Arnold and the copper-moly geochem values as found in surface and drilling results. Contoured, the values suggest a probable channeling of values in a south to southwesterly direction and overall following the paleo-stream direction. These values are scattered thru substantial (600-1400 feet) thicknesses of conglomerate and indicate that bedrock underlying such values could not have been the source of the values.
- 2) Overlay of the thickness of Whitetail Conglomerate. This overlay shows the rapid increase in thickness west of a northwesterly-trending fault. As noted from the drilling map, most of the Mitchell ore is found in the proximity and east of the fault. The overlay also shows the trough (i.e., thinner values) cut into the conglomerate and later filled with dacite and tuffs.

- 3) Overlay of the Isopach of Basement Rock. This overlay shows the apparent major faulting and some fair control on the basement topography. Note a general westward dip. It also suggests somewhat rising topography as one goes to the north.
- 4) Overlay of the Pyrite-Magnetite and Bleaching Trends in the Bedrock. In general, this indicates a northwesterly trend to the known pyrite mineralization as well as to the extent of bleaching in the predominant Pinal Schist basement.
- 5) Overlay of the Sulfide Geochemistry Copper-Moly Trends in Bedrock. This overlay again points out a suggestive northwesterly trend to the various values and suggests the better bedrock values to lie in the vicinity of drill holes RW-2, CB-5, and CB-8.

Present Evaluation

Using the above overlays and information, it is believed that the trend and range of values in the Whitetail Conglomerate could not have originated from the presently buried area of drill holes RW-2, BC-5, and BC-8. Topographically this area would have been covered by conglomerate sometime prior to the first half of deposition of the conglomerate and shortly after that time would have ceased as a metal-contributing source. Also, the rather high values found in conglomerate above bedrock in holes RW-1, RW-2, and CB-5 are higher than the bedrock values and northwestward and against the apparent drainage direction.

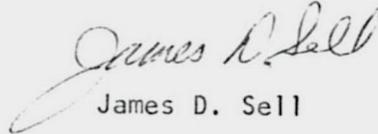
The above conclusion is also that of L. C. Arnold, who directed the early exploration for Quintana. He was also looking for the bedrock source to be in the area of CB-5 and CB-8, but the three RW holes failed to improve on the bedrock values in the area.

Proposed Test

Based on the above, the first test should be in a readily available site in the NE1/4 of Section 23. The site is some 3500 feet from either RW-1 or CB-9 drill sites. Arnold originally selected three sites further northward. All are somewhat readily available in that they are near pioneer roads established in validating the claims. Based on the present concepts, the site in the W1/2 of Section 13 should be topographically higher bedrock and possibly in a position and trend to be a source for both the Mitchell group area as well as that found elsewhere as shown in the overlays. The remaining two sites in Sections 14 and 15 should be considered only after additional information is available.

Files

The available maps and reports by Quintana are found in the file and drafting room.

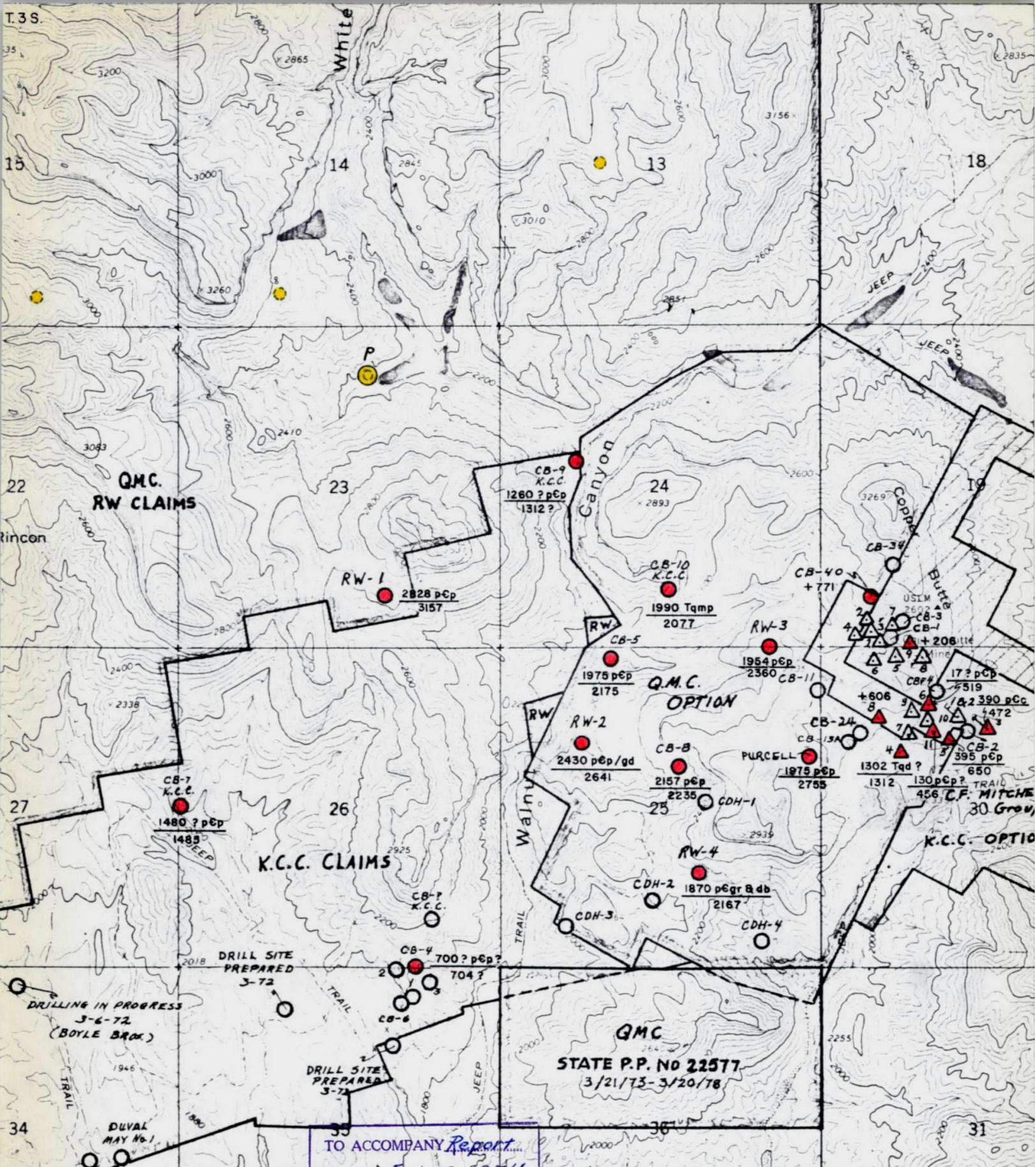

James D. Sell

JDS:lb
Attachs.

TABLE 1 - DRILL HOLE DATA

RAY WEST AREA										
Hole Number	Surface Elev.	Depth Base of Volc., et al *	Sub-Elev. Base of Volc., et al	Depth Base of Tw	Sub-Elev. Base of Tw	Sub-Elev. Top of Bedrock	Type of Bedrock	Total Depth	Sub-Elev. Total Depth	Thickness of Tw
RW-1	2660	1020 g&d	1640	2828	-168	-168	pεp	3157	-497	1803
RW-2	1960	846 d	1114	2430	-470	-470	pεp & gd	2641	-681	1584
RW-3	2560	370 t&d	2190	1954	+606	+606	pεp	2360	+200	1584
RW-4	2340	1520 g&d	820	1870	+470	+470	pεgr & db	2167	+173	350
CB-4	2020	?	?	700?	+1320?	+1320?	pεp?	704?	+1316?	?
CB-5	1960	1400 g&d	560	1970	-10	-10	pεp	2175	-215	570
CB-7	2005	?	?	1480?	+525?	+525?	pεp	1485	+520	?
CB-8	2300	1390 g&d	910	2160	+140	+140	pεp	2235	+65	770
CB-9	2050	?	?	1260?	+790?	+790?	pεp	1312?	+738?	?
CB-10	2400	850 g	1550	1990	+410	+410	Tgmp	2077	+323	1140
CB-40	2900	190 d	2710	below 771	below +2129	below +2129	Unknown	771	+2129	more than 581
Purcell	2680	370 t&d	2310	1975	+705	+705	pεp	2755	-75	1605
△ 3	2340	216 d	2124	390	+1950	+1950	pεp	472	+1868	174
△ 4	2280	946 d	1334	1302	+978	+978	Tqd?	1312	+968	356
△ 5	2470	332 d	2138	395	+2075	+2075	pεp	650	+1820	63
△ 6	2660	17 d	2643	None?	None?	+2643	pεp	519	+2141	None?
△ 8	2560	407 d	2153	below 606	below +1954	below +1954	Unknown	606	+1954	more than 199
△ 9	2580	200 d	2380	below 331	below +2249	below +2249	Unknown	331	+2249	more than 131
△ 11	2510	118	2392	130	+2380	+2380	pεp	456	+2054	12

*g Gila gravels; t tuff; d dacite



- RW-1 Drill Hole & Number
- P Proposed Drill Hole

Depth to Bedrock = 2828 pCp = Type of BR
 Total Depth = 3157

RAY WEST PROJECT
 Pinal County, Arizona
 SCALE: 1"=2000'

J.H.C.

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

October 25, 1974

J.H.C.
OCT 30 1974

TO: W. L. Kurtz
FROM: J. D. Sell

Monthly Report - Oct. 1974
Ray West Project
Pinal County, Arizona

Continued bedrock fringe mapping and sampling have taken place during the month. The work will continue on the north and west sides as time permits. No interpretation of the geochemical samples has been made.

No map is attached to this report.

Unexpended funds are \$15,400.

J. D. Sell
J. D. Sell

JDS:1b

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

JNC

July 31, 1974

J. H. C.

AUG 5 1974

TO: W. L. Kurtz

FROM: J. D. Sell

Monthly Report -- July 1974
Ray West Project
Pinal County, Arizona

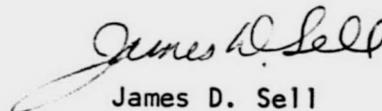
Copper State Exploration completed hole RW-5 during the month. Footage-contacts are as follows:

0-180	Quaternary Gila tuff and conglomerate
180-980	Tertiary Dacite
980-2240	Tertiary Whitetail Conglomerate
2240-2502	Precambrian Pinal Schist

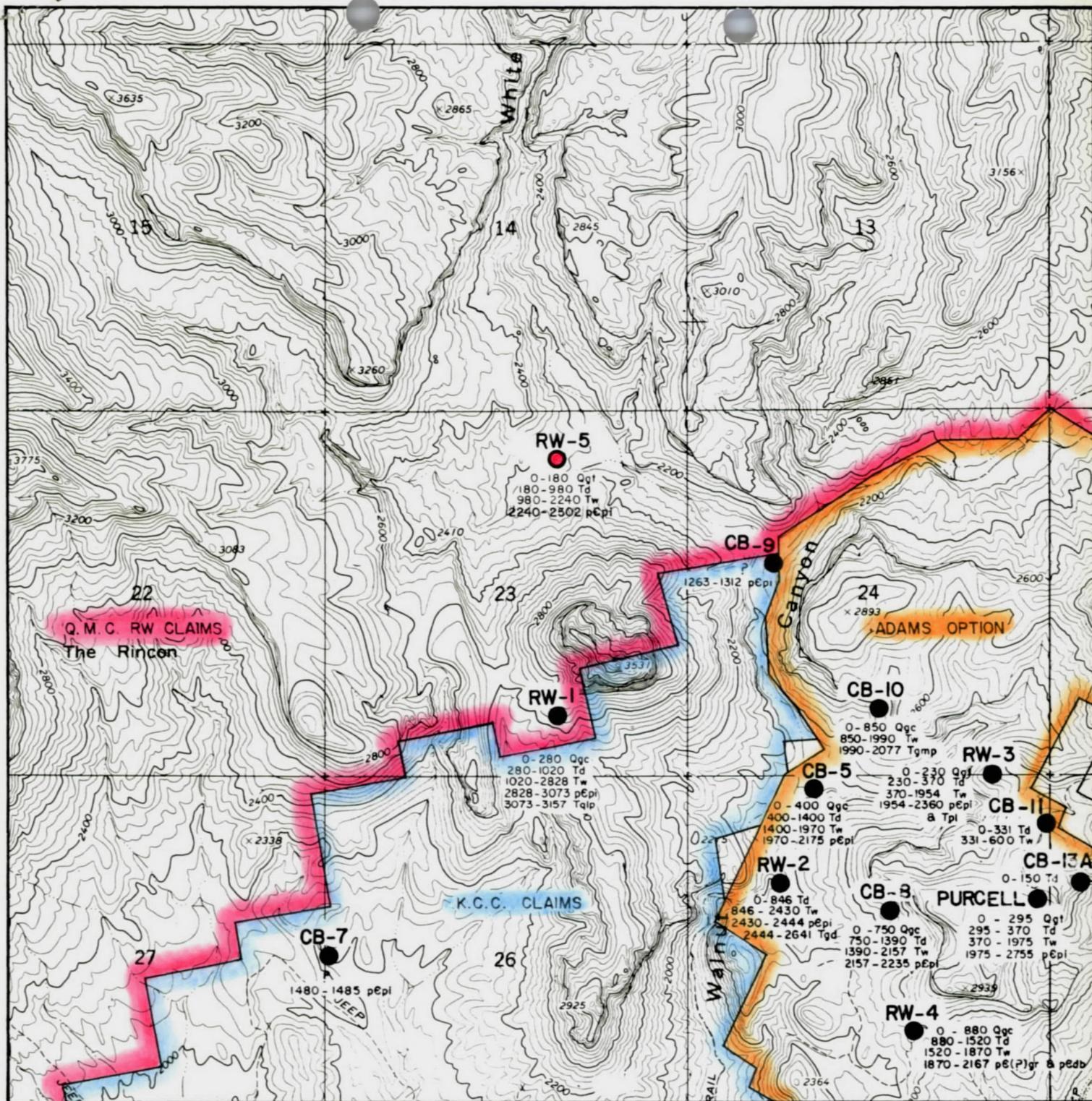
Based on the samples collected, the bedrock Pinal Schist core intervals returned 25 ppm Cu, 20 ppm Pb, 85 ppm Zn, and 3 ppm Mo, in contrast to the Whitetail (total) which returned 343 ppm Cu, 87 ppm Pb, 1173 ppm Zn, and 11 ppm Mo.

Evaluation of the hole in relation to the area is presently under way.

Total expenditures on RW-5 were \$33,000, leaving an unexpended balance of \$17,000.


James D. Sell

JDS:lb
Attach.



EXPLANATION

- Previous drill hole
- ASARCO drill hole
- Hole designation
- 280 Qgc
|
Rock type
Bottom hole depth
- P
⊕ Proposed drill site

POST-MINERAL ROCK UNIT

- Qgc - Gila conglomerate
- Qgt - Gila tuff
- Tqtp - quartz latite porphyry
- Td - Dacite
- Tw - Whitetail conglomerate

PRE-MINERAL ROCK UNIT

- Tpl - porphyritic latite
- Tgmp - Granite Mt. porphyry
- Tgd - granodiorite
- pEdb - Diabase
- pEgr - Granite
- pEpi - Pinal schist

TO ACCOMPANY Monthly Drilling Report
 DATED July 31, 1974
 BY J.D. Sell

**RAY WEST PROJECT
 DRILLING PROGRESS MAP**
 for the month of July 1974
 PINAL COUNTY, ARIZONA
 SCALE: 1" = 2000'
 J.D.S.
 2748 ar

JHC

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

June 25, 1974

J. H. C.

AUG 9 1974

TO: W. L. Kurtz

FROM: J. D. Sell

Monthly Report - June 1974
Ray West Project
Pinal County, Arizona

Copper State Exploration (J.C. Tackett) moved onto drill site RW-5 and has reached the depth of 2106 feet. Synopsis of the hole is as follows:

0-180	Quaternary Gila tuff and conglomerate
180-980	Tertiary Dacite
980-2106	Tertiary Whitetail Conglomerate

Drilling has been slow due to short rotary bit life and the spot coring recovers only a few feet at each core run. Three core runs have been made to check drilling breaks and suspected rock type changes. The three were:

1950-1952	packed sc-gr clasts in Tw matrix
1975-1976-1/2	as above
2105-2106	mudstone, few clasts, Tw type

The Whitetail Conglomerate exhibiting the packed sc-gr clast variety lies between 1925 and 1990 feet. Above the packed clast variety, the Whitetail contained noticeable native copper specks in the panned concentrate. Visual estimate suggests it will assay less than 0.2%. The best values were in samples from 1400 to 1900 feet. Very little native copper has been noticed in the concentrate from the mudstone below the packed clast variety.

Drilling will continue for assessment expenditures and a bedrock penetration for further evaluation of the area.

Samples of the rotary cuttings have been submitted for geochemical analysis.

KCC is presently doing assessment drilling by coring (Joy) on their claims south of the RW claims. They are drilling on a hole near our southwest corner where information suggests the volcanic and other post-mineral cover rocks are quite thin. They are reported to have penetrated schist, then limestone, and back into schist by 1650 feet.

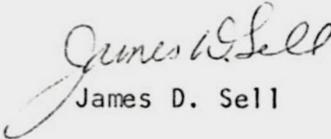
W. L. Kurtz

- 2 -

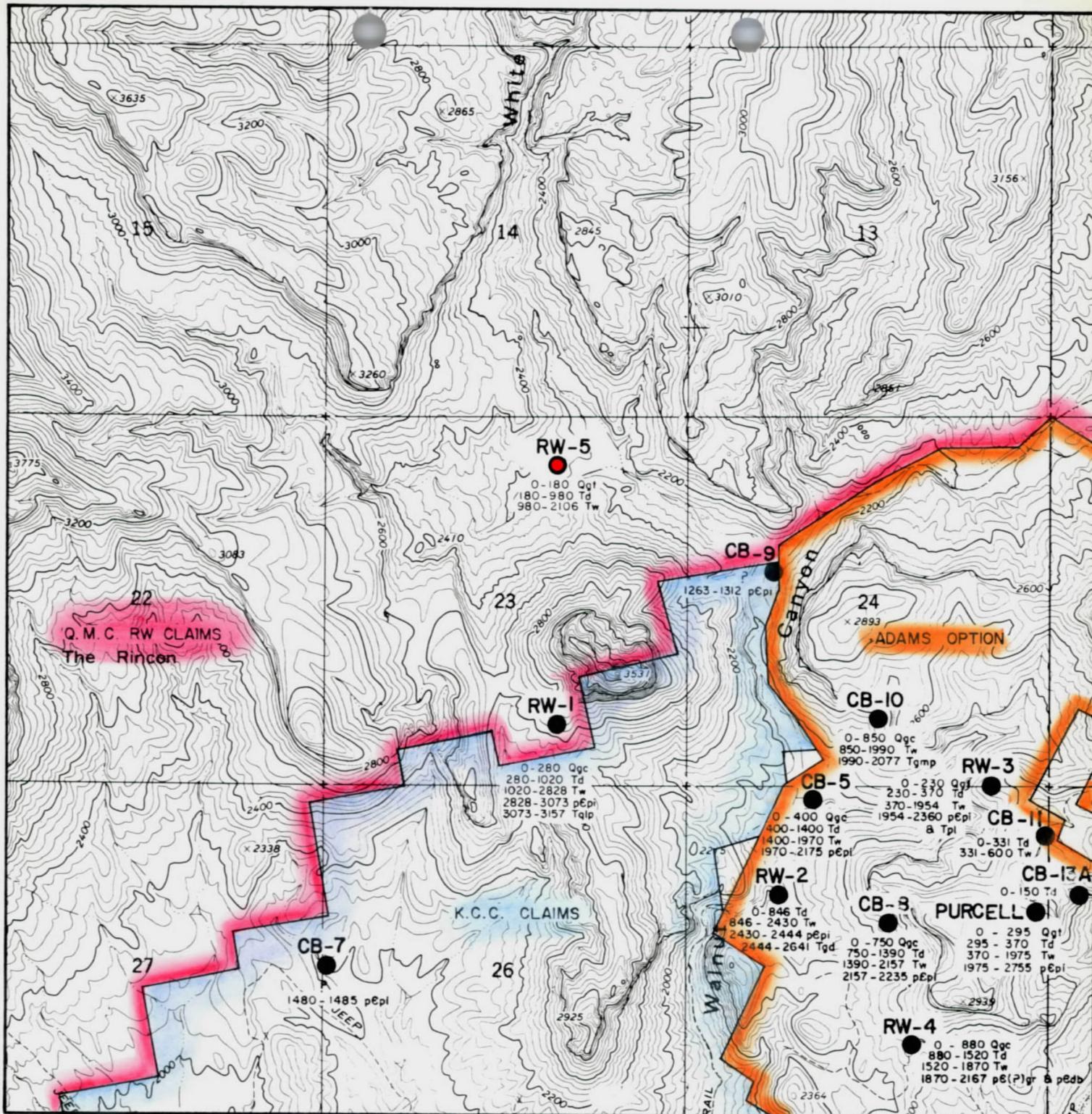
June 25, 1974

Neil Gamble of KCC says he will only drill three holes on the Copper Butte area starting in about six weeks.

Unexpended funds are \$26,500.


James D. Sell

JDS:1b
Attach.



EXPLANATION

- Previous drill hole
- ASARCO drill hole
- RW-1
- Hole designation
- 280 Qgc
- └ Rock type
- └ Bottom hole depth
- P
- ⊕ Proposed drill site

POST-MINERAL ROCK UNIT

- Qgc - Gila conglomerate
- Qgt - Gila tuff
- Talp - quartz latite porphyry
- Td - Dacite
- Tw - Whitetail conglomerate

PRE-MINERAL ROCK UNIT

- Tpl - porphyritic latite
- Tgmp - Granite Mt. porphyry
- Tgd - granodiorite
- pEdb - Diabase
- pEgr - Granite
- pEpi - Pinal schist

TO ACCOMPANY
 MONTHLY REPORT
 DATED 6-25-74
 BY T.D. SELL

**RAY WEST PROJECT
 DRILLING PROGRESS MAP**
 for the month of JUNE, 74

PINAL COUNTY, ARIZONA
 SCALE: 1" = 2000'
 J.D.S.
 2748 ar

JHC

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

May 31, 1974

J. H. C.
MAY 31 1974

TO: W. L. Kurtz
FROM: J. D. Sell

Monthly Report - May 1974
Ray West Project
Pinal County, Arizona

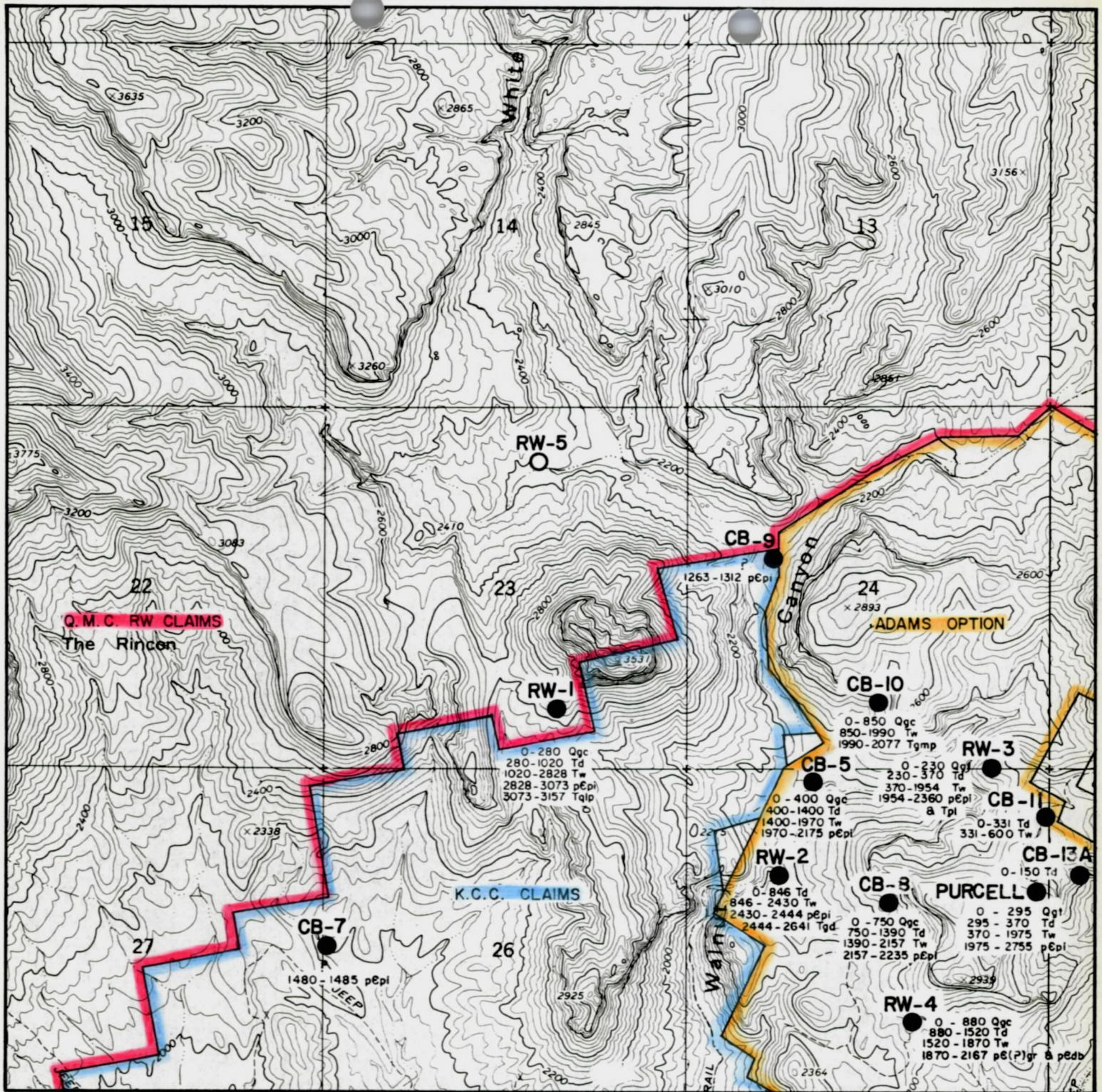
Drill site preparation, water collection sump facilities, and permission to use the water from the artesian well area have been completed during the month.

J. C. Tackett will move his DMX rig onto the site upon completion of the A-6 hole in the Superior East area, which is now estimated to be after mid-June.

Unexpended funds are \$48,900.

James D. Sell
James D. Sell

JDS:1b
Attach.



EXPLANATION

- | | |
|-----------------------|--------------------------------|
| ● Previous drill hole | <u>POST-MINERAL ROCK UNIT</u> |
| ○ ASARCO drill hole | Qgc - Gila conglomerate |
| RW-1 | Qgt - Gila tuff |
| ○ Hole designation | Tqtp - quartz latite porphyry |
| 280 Qgc | Td - Dacite |
| Rock type | Tw - Whitetail conglomerate |
| Bottom hole depth | <u>PRE - MINERAL ROCK UNIT</u> |
| P | Tpl - porphyritic latite |
| ⊕ Proposed drill site | Tgmp - Granite Mt. porphyry |
| | Tgd - granodiorite |
| | pCdb - Diabase |
| | pCgr - Granite |
| | pCpi - Pinal schist |

TO ACCOMPANY REPORT
 DATED MAY 31, 1974
 BY J. D. SELL

**RAY WEST PROJECT
 DRILLING PROGRESS MAP**
 for the month of **MAY 1974**
 PINAL COUNTY, ARIZONA
 SCALE: 1" = 2000' J.D.S.
 2748ar

AMERICAN SMELTING AND REFINING COMPANY
TUCSON ARIZONA

May 1, 1974

J.H.C.
MAY 2 1974

TO: W. L. Kurtz

FROM: J. D. Sell

Monthly Report - April 1974
Ray West Project
Pinal County, Arizona

The Ray West Project has been authorized. The project is the continuation of a program initiated by Quintana Minerals Company. All work from this date is to our account and managed by this office under the agreement with Quintana.

Initial investigation of drill site, water availability and drill contractors has been made and evaluated.

The site proposed is adjacent to a well-graded road and will require a minimum of site preparation. Water is available from a pond filled by artesian flow from a drill hole capped by K.C.C. and used with their permission. The contractor is scheduled to be Copper State Exploration Co. (J. C. Tackett), who drilled two of the holes for Quintana and has experience in the area.

Drilling is expected to commence in May.

Unexpended funds are \$49,500.

J. D. Sell
J. D. Sell

JDS:1b
Attach.

Copper ~~Butte~~ Butte - Ray District -

1-17-74

With JDS, WLK, GTS to Ray gate -
met Neal Gamble (ch geol) and Charlie
To Copper Butte pits - Drilling est :
- 20 mil ton plus 5 Cr -

1. Whitetail beds overlain by rhy (younger than dacite)
2. Reddish beds - mainly schist at top - passing downward - more limestone - bottom beds mostly ls -
3. Highest grade shows much supergene replacement of ls with cop-sil - some boulders with rim of copper - barren center -
4. alt-min (leached) schist frags common - abundance of iron ox - suggests at least part of frags transported prior to complete leaching - mineralized quartzite and por frags - some residual live limonite in schist - see frag of diabase -
5. Frags derived from erosion of porphyry ~~deposit~~ deposit - possibly Ray - where stripping of ls (now complete) furnished abundant ls in lower whitetail horizon -
6. Some copper detrital but most transported in solution -

JH

J. H. C.

JAN 2 1974



AMERICAN SMELTING AND REFINING COMPANY
SOUTHWESTERN EXPLORATION DIVISION
P. O. BOX 5747, TUCSON, ARIZONA 85703

1150 NORTH 7TH AVENUE
TELEPHONE 602-792-3010

December 28, 1973

Mr. W. E. Saegart
Quintana Minerals Corp.
1892 West Grant Road
Tucson, Arizona 85705

Ray West

Dear Mr. Saegart:

This will confirm our telephone conversation of this date that Asarco is interested in exploring your Ray West Project Area, consisting of approximately 250 lode mining claims staked by Quintana Minerals Corp. The QMC Adams Option would not be included in the agreement.

I propose a joint venture agreement in which Asarco will spend \$180,000 over a 4-year period to earn a 60% interest in the property. During the first year of the agreement, Asarco will spend a minimum of \$25,000 and may terminate the agreement anytime thereafter.

At your convenience we can get together to draft the specific terms. I'm optimistic that this project is the start of a profitable year for both of us.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "W. L. Kurtz", with a long horizontal line extending to the right.

W. L. Kurtz
Manager of Exploration

WLK:1b

cc: TCOsborne
JHCourtright ✓
RBCrist
JDSell

Blind note on ASARCO copies:

Quintana has spent \$120,000 on Ray West and \$117,000 on Ray West Adams, plus an estimated \$250,000 on North Butte.

WLK