6000 0328 (2960)

WTB	Wally Boundy
DKH	Dave Hamilton
WOM	Bill Mollison
DTP	Dan Page
WJR	Bill Robinson
FTS	Fred Saunders
CDS	Clarence Sikkenga
WFS	Walt Simmons

Internal Communication

summa

Date: February 17, 1976

To: DISTRIBUTION (See Above)

From: W. J. Robinson

Subject: Manhattan Feasibility Responsibility

Pursuant to the February 2 Staff Meeting held in Tonopah, it would be good to review the areas of responsibility for completion of the Manhattan feasibility study. The outline is as follows:

No.	Item	Personnel
I	Property	WJR, WFS, WTB
II	Geology	FTS, DKH
III	Treatment Process	WJR, DKH, WFS, CDS
IV	Mine Planning	WJR, DKH, WFS, WTB
V	Ancillary Facilities	WFS, WTB
VI	Labor Supply	WFS, DTP
VII	Housing - Division Management	WJR, DTP
VIII	Transportation	DTP
IX	Management	WJR
X	Refining	DKH, WOM
XI	Financial Outcome Analysis	All Personnel, WJR
XII	Completed Feasibility Report	All Personnel, WJR

Each group will be called together to discuss and plan the areas for which they are responsible.

20,000 oz @ $130 → 2,600,000 @ 100%

1,300,000 @ 50%

MANHATTEN FEASIBILITY

Fd 11 I PROPERTY - WJR. - W.B.

12 II GEOLOGY - FRED SAUNDERS DKH.

11 III TREATMENT PROCESS - DKH - W.S. WJR.

IV MINE PLANNING - DKH WS WB WJR.

11 V ANCILLARY FACILITIES - W.S. & W.B.

VI LABOR SUPPLY - D.P. WJR

VII HOUSING - D.P. W.J.R.

VIII TRANSPORTATION D.P.

IX MANAGEMENT - WJR

X REFINING - DKH B.M. D.P.

~~XI MARKETING~~ (N.A.)

XII FINANCIAL OUTCOME ANALYSIS - ALL

XIII COMPLETED FEASIBILITY REPORT

6000 0328 (2960)

A LEACHING PROPERTY FROM START TO FINISH

To start from scratch and end up with an economically viable leach operation requires careful planning, thorough investigation, and good luck. As in any successful venture, such as a pro football game, chess tournament, gold mine operation or a copper leach property, every individual project must have a game plan or an outline of things to be done to achieve success. Such an outline for a leaching property might be as follows:

I. Property
    A. Location, descriptions, acreage, maps.
        1. Mine
        2. Plant site
        3. Tailings and ore waste disposal
        4. Townsite

    B. Legalities
        1. Ownership
        2. Mining Claims
        3. Fee Land
        4. Timber and Water Rights
        5. Rights of Way

    C. Access
    D. Climate
    E. Limiting Conditions
        1. Air pollution
        2. Water pollution
        3. Health hazzards
        4. Effect on neighboring areas
    F. Acquisition plans and costs

II. Geology
    A. Development
        1. Churn drilling
            (a) Spacing
            (b) Footage
            (c) Caving and effect on samples
        2. Diamond drilling
            (a) Spacing

            - (b) Footage
            - (c) Core recovery
        - 3. Rotary drilling
            - (a) Spacing
            - (b) Footage
            - (c) Wet or dry sampling
    - B. Type of deposit
    - C. Structure
    - D. Mineralization
    - E. Ore reserves - (mine planning)
        - 1. Types of ore or minerals
        - 2. Grades
        - 3. Tonnages
        - 4. By-Products
        - 5. Complete chemical analysis of ore and concentrates
        - 6. Pre-production stripping
        - 7. Discard ratio
            - (a) Overburden
            - (b) Included waste
            - (c) Sub-marginal minerals

III. Treatment Process

- A. Conventional flotation, smelting, and refining
- B. Leaching methods
    - 1. Dump
    - 2. Vat
    - 3. Heap
    - 4. In-situ
    - 5. Combinations
- C. Recovery Plants
    - 1. Copper
    - 2. Gold
    - 3. Uranium
- D. Bench scale tests
    - 1. Source of samples
    - 2. Metallurgical balances
    - 3. Other results
    - 4. Need for pilot plant
    - 5. Complete analysis of finished product
- E. Pilot plant
    - 1. Size
    - 2. Source of samples
    - 3. Metallurgical balances
    - 4. Other results
    - 5. Complete analysis of finished product

- F. Flowsheet
    - 1. Crushers
    - 2. Leach system
    - 3. Treatment plant
- G. Plant
    - 1. Tons per day
    - 2. Equipment
        - (a) Type and quantity
        - (b) Capital costs
        - (c) Operating costs
    - 3. Manpower
        - (a) Number and qualifications
        - (b) Costs
    - 4. Operating supplies and maintenance costs
    - 5. Other costs
        - (a) Buildings
        - (b) Metal credits
        - (c) Transportation
        - (d) General

IV. Mine Planning

- A. Leaching requirements
- B. Mining method
- C. Tons per day
    - 1. Stripping ratio
- D. Equipment requirements
    - 1. Type and quantity
    - 2. Capital costs
    - 3. Operating costs
- E. Manpower requirements
    - 1. Number and qualifications
    - 2. Costs
- F. Operating supplies and maintenance costs
- G. Other costs
    - 1. Buildings
    - 2. Taxes
    - 3. Royalties
    - 4. Transportation
    - 5. General

V. Ancillary Facilities

- A. Water supply
    - 1. Source
    - 2. Ownership - water rights
    - 3. Quality and quantity
    - 4. System
        - (a) Type
        - (b) Cost

- B. Power supply
    - 1. Source
    - 2. Costs
- C. Fuel supply - gas, oil, coal
    - 1. Source
    - 2. Costs
- D. Shops and garages
- E. Warehouse
- F. Change house
- G. Offices
- H. Health and welfare
- I. Other

VI. Labor Supply

- A. Requirements
- B. Availability
- C. Costs
- D. Labor relations in area

VII. Housing

- A. Requirements
- B. Availability
- C. Plans to meet requirement
    - 1. Company houses
    - 2. Private housing development

VIII. Transportation - Supplies and Products

- A. Railroad
- B. Highway
- C. Water
- D. Other

IX. Management

- A. Corporate level
- B. Local level - organization chart

X. Refining or other treatment

- A. Where
- B. Costs

XI. Marketing

- A. Market survey
- B. Prices
- C. Agent

XII. Financial Outcome Analysis

- A. Pre-production time and costs

- B. Year-by-year plans
    - 1. Expenditures
    - 2. Production
    - 3. Income
    - 4. Cash flows
- C. Present worth or yield
- D. Variances and sensitivity

XIII. Completed Feasibility Report

(Taken, in part, from an Anaconda Outline Form)

Randy Bur
6000 0328 (2960)

Salt Lake City Metallurgy Research Center

March 7, 1974

Mr. David J. Gribben
Summa Corp.
5700-B So. Haven
Las Vegas, Nev. 89119

Dear Dave:

We completed a percolation cyanidation leaching test on a sample of gold ore submitted by Randy Burke and identified as Manhattan, Nev., pit run ore. Our calculated head assay of the material was 0.09 oz gold and 0.08 oz silver per ton, and the sample was about 35 percent plus 4 inches in size. The test procedure and detailed results are given in the attached memorandum from Harris Salisbury.

The test results indicated that about 80 percent of the gold in the calculated head was recovered in 600 hours of leaching. Reagent consumption was 1.5 lb NaCN and 3.3 lb CaO per ton of ore.

We hope this information will be helpful.

Sincerely yours,
Signed George M. Potter

George M. Potter
Research Supervisor

Enclosure

cc: ✓ Randy Burke

SUMMA CORPORATION
MINING DIVISION
Tonopah

MAR 11 1974

RECEIVED

6000 0328 (296d

Salt Lake City Metallurgy Research Center

March 7, 1974

Memorandum

To: George M. Potter, Research Supervisor, Salt Lake City Metallurgy Research Center

From: Harris B. Salisbury, Project Leader

Subject: Percolation cyanidation test on ore submitted by Randy Burke, Summa Corp.

Approximately 267 lb of pit-run ore was loaded into a 14-inch diameter transite column. Lime solution was percolated downward through the bed at 16 ml/min until a pH value of 10.4 was reached. The solution was then made up to 0.1 pct NaCN and percolation continued for 600 hours, at which point the pregnant solution assayed 0.09 ppm Au and 0.05 ppm Ag, values considered too low to justify further leaching. The pregnant solution was collected in 24-hour increments then weighed and assayed before passing through an activated carbon column prior to reuse. The first carbon removed after 384 hours assayed 252 mg Au and 115 mg Ag compared to cumulative solution assays that indicated a recovery of 268 mg Au and 126 mg Ag. The final char was lost making it necessary to use the solution assays and atomic absorption residue assays for final calculations. Consumption of NaCN was 1.5 lb per ton of ore, and CaO usage was 3.3 lb.

Harris B. Salisbury

Attachment

SUMMA CORPORATION
MINING DIVISION
Tonopah

MAR 11 1974

RECEIVED

6000 0328 (2960)

50.8 HM 73.2 2-25-74

Leaching time, hours		Solution volume	Assay, ppm		Metal Content Mg		Cumulative Metal Content Mg		Cum oz/Ton Recovered		Cum % Recovered	
INCREM.	CUM	LITERS	Au	Ag	Au	Ag	Au	Ag	Au	Ag	Au	Ag
24	24	18.596	1.2	.94	22.3	17.5	22.3	17.5	.006	.004	6.6	5.0
✓	48	17.722	2.2	1.03	39.0	18.3	61.3	35.8	.015	.009	16.5	11.3
✓	72	20.768	2.0	.86	41.5	17.9	102.8	53.7	.026	.014	28.6	17.5
✓	96	21.569	1.45	.66	31.3	14.2	134.1	67.9	.034	.017	37.4	21.3
✓	120	20.992	1.1	.52	23.1	10.9	157.2	78.8	.040	.020	44.0	25.0
✓	144	21.330	.9	.42	19.2	9.0	176.4	87.8	.044	.022	48.4	27.5
✓	168	21.809	.65	.33	14.2	7.2	190.6	95.0	.048	.024	52.7	30.0
✓	192	22.010	.60	.26	13.2	5.7	203.8	100.7	.051	.025	56.0	31.3
✓	216	21.703	.55	.23	11.9	5.0	215.7	105.7	.054	.027	59.3	33.8
✓	240	20.939	.60	.19	12.6	4.0	228.3	109.7	.058	.028	63.7	35.0
✓	264	20.881	.40	.17	8.3	3.5	236.6	113.2	.060	.029	65.9	36.3
✓	288	21.474	.25	.14	5.4	3.0	242.0	116.2	.061	.029	67.0	36.3
✓	312	21.618	.45	.13	9.7	2.8	251.7	119.0	.063	.030	69.2	37.5
✓	336	21.187	.30	.12	6.4	2.5	258.1	121.5	.065	.031	71.4	38.8
✓	360	20.316	.25	.12	5.1	2.4	263.2	123.9	.066	.031	72.5	38.8
✓	384	22.699	.21	.11	4.8	2.5	268.0	126.4	.068	.032	74.1	40.0
✓	408	22.679	.12	.13	2.7	2.9	270.7	129.3	.068	.033	74.7	41.3
✓	432	25.747	.10	.14	2.6	3.6	273.3	132.9	.069	.034	75.8	42.5
✓	456	22.436	.15	.15	3.4	3.4	276.7	136.3	.070	.034	76.9	42.5
✓	480	22.529	.12	.10	2.7	2.3	279.4	138.6	.070	.035	76.9	43.8
✓	504	22.398	.12	.07	2.7	1.6	282.1	140.2	.071	.035	78.0	43.8
✓	528	22.603	.09	.06	2.0	1.4	284.1	141.6	.072	.036	79.1	45.0
✓	552	11.947	.14	.09	1.7	1.1	285.8	1427	.072	.036	79.1	45.0
✓	576	21.185	.14	.06	3.0	1.3	288.8	1440	.073	.036	80.2	45.0
✓	600	17.906	.09	.05	1.6	.9	290.4	144.9	.073	.037	80.2	46.3
	RESIDUE								.018 1/	.043	19.8	53.7
	CALC	HEAD.	1/ tailing loss						.091	.080	100.0	100.0

Manhattan Survey
6000 0328 (296c)

CONTROL SURVEY POINTS OF BIG FOUR, BIG PINE, AND RILEY PIT AREA.

TRAVERSE FROM TP 1 TO TP 2

SURVEY POINT	EAST COORD.	NORTH COORD	ELEVATION
T.P. 1	8410.000	6615.000	7192.877
A1	8415078	67L2.433	7180.683
A2	8409.620	6810.071	7168.438
A3	8410.390	6904.730	7155.618
A4	8399.653	6988.933	7153.549
A5	8405.322	7075.824	7154.551
A6	8381.240	7172.894	7160.677
A7	8372.506	7269.808	7182.772
T.P. 2	8406.788	7271.344 7334 ?	7196.576
BIG FOUR SHAFT	8418.607	7198.769 ←	7197.000
A8	8477.568	7212.423	7169.831
A9	8485.568	7114. 247	7157.730
A10	8579.808	7092.217	7139.395
CRN LAST CHANCE	8579.613	7051.678	7161.730
CRN BIG PINE	8573.354	7055.682	7161.730
A11	8667.532	7067.027	7123.356
A12	8749.226	7025.815	71o4.998
W¼ CRN SECT 20	8850067	7055.145	7108.914
A13	8816.276	6952.987	7100601
A14	8870.156	6874.257	7111.412
A15	8879.936	6781.967	7118.199
A16	8838.716	6700.477	7123.122
A17	8792.446	6747.737	7140.019
A18	8766.906	6637.317	7124.868
A19A	8744.059	6547.354	7127.604
A20A	8703.279	6483.669	7128.427
A21A	8636.705	6427.707	713o.098
A24A	8560.210	6369.221	7141.557
A26A	8512.744	6441.803	7157.450
A27A	8493.361	6531.457	7172.630
A28A	8448.749	6606.395	7188.865
T.P. 1	8410.376	6613.923	7192.877
TRAVERSE FROM TP1 TO TP3			
A35	8669.471	6396.583	7119.977
A36	8666.627	6331.448	7114.624
A37	8667.908	6260.409	7111.928
A40	8670.650	6188.497	7123.244
A41	8675.712	6134.621	7136.616
A43	8675.825	6069.907	7144.813
A44	8719.441	5983.749	7154.086
S.E. CRN MONTELINER	8762.139	6660.493	

6000 0328(2960)

TRAVERSE FROM TP1 TO TP3 ALONG LINE A35 TO A59

A45	8792.446	5945.394	7161.816
A46	8877.663	5903.308	7173.268
TP3	8898.076	5937.237	7177.073
A47	8837.038	5910.146	7166.129
A48	8748.612	5914.987	7148.131
A49	8661.822	5914.129	7132.797
A50A	8566.195	5925.278	7116.519
A51A	8519.293	6003.921	7114.038
AT1	8537.240	6098.904	7132.732
A58	8558.902	6153.204	7142.626
A59	8552.789	6217.667	7151.017

60000328 (2960)

P COORDINATE CALCULATIONS - DEC. 18, 1974
BOOK NO 1 LARRY G HAYES
PAGES 20, 21,

	1	2	3	4	5	6	7	8	9	10
	AZ S @ 0°00'	AZ N @ 0°00'	BEARING	V ∠	V ∠	S. DIST	H. DIST	Δ ELEV		
TP1 - TP2	179°42'00"	359°42'00"	N 0° 18' W							
TP1 - POINT	134°00'55"	314°00'55"	N 45°59'05" W	3[illegible]°[illegible]'30"	+ 5°41'21"	1298.53	1292.13	- 128.78 (+1)		
TP1 - TP6	119°49'45"	299°49'45"	N 60°10'15" W	354°25'55"	+ 5°34'05"	2398.12	2386.80	- 232.68 (+1)		
TP1 - COR 6 UNION NINE	124°38'00"	304°38'00"	N 55°22'00" W	353°39'40"	+ 4°20'20"	2339.54	2325.24	- 258.11 (+1)		
TP1 - TP7	102°56'10"	282°56'10"	N 77°03'50" W	353°39'30"	+ 6°20'30"	2226.25	2015.85	- 225.81 (+1)		
TP1 - TP 5	30°54'20"	210°54'20"	S 30°54'20" W	356°17'35"	+ 3°42'25"	1541.52	1538.29	- 99.64		
TP1 - TP 4	60°37'20"	240°37'20	S 60°37'20" W	356°30'20"	+ 3°29'40"	2020.92	2017.14	- 123.18		
TP1 - TP3	324°20'20"	144°20'20"	S 35°39'40" E	359°25'40"	+ 0°34'20"	838.22	838.18	- 8.37		
USING REPEATED ANGLE RIGHTS P3 P4 & P5	∠ RT	AZ	BEARING	H DIST	Δ LAT	Δ DEP	LAT.	DEP.	ELEV	
TP1 - TP2	0°00'00"	359°42'00"	N 0°18' W				6615. N	8410. E	TP1 7192.7	
TP3	144°35'40"	144°17'40"	S 35°42'20" E	838.18	- 680.62	+ 489.18	5934.38 N	8899.18 E	7184.33	
TP4	240°22'30"	240°37'30"	S 60°[illegible]'30" W	2017.14	- 990.99	- 1755.93	5624.01 N	6655.07 E	7069.52	
TP5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					
TP6										

TP1 − TP6	119°49'45"	299°49'45"	N 60°10'15" W	35?°?3'04"	5°34'05"	2398.12	2386.80	−232.68	(T.D)
TP1 − CoRG UNION MINE	124°38'00"	304°38'00"	N 55°22'00" W	353°30'..."	6°22'20"	2339.54	2325.24	−258.71	(T.D)
TP1 − TP7	102°56'10"	282°56'10"	N 77°03'50" W	353°39'30"	6°20'30"	2226.25	2013.85	−223.81	(T.D)
TP1 − TP 5	36°54'20"	216°59'20"	S 36°51'20" W	356°17'35"	3°42'25"	1541.52	1538.22	−99.60	
TP1 − TP 4	60°51'20"	240°31'20	S 60°37'20" W	356°30'20"	3°22'40"	2020.20	2017.14	123.15	
TP1 − TP3	324°20'20"	144°20'20"	S 35°32'40" E	359°25'40"	0°34'20"	838.22	838.18	− 8.37	

USING REPEATED ANGLE RIGHTS
TP3, TP4 & TP5

	A.R.T.	AZ	BEARING	H. DIST	Δ LAT	Δ DEP	LAT.	DEP.	ELEV
TP1 − TP2	0°00'00"	352°12'00"	N 0°48'W				6615. N	8110. E TP1	7192.7
TP3	144°35'40"	144°17'20"	S 35°42'40" E	838.18	−685.62	+489.18	5934.38 N	8599.18 E	7184.33
TP4	240°32'30"	240°31'30"	S 60°31'30" W	2017.14	−990.99	−1756.93	5624.01 N	6653.97 E	7069.52
TP5	217°10'00"	216°52'00"	S 36°52'20" W	1538.20	−1230.68	−922.90	5384.32 N	7187.10 E	7092.28
TP6			N 60°10'15" W	2386.80	+1187.23	−2070.58	7802.23 N	6039.42 E	6961.02
TP7			N 77°03'50" W	2013.85	+ 452.81	−1962.24	7067.81 N	6147.76 E	6968.89

6000 0328 (2960)

6000 0328 (2960)

Internal Communication

summma

Date: October 13, 1975

To: D. J. Gribbin

From: Fred Saunders

Subject: Requested Metallurgical Sampling Group 26

On Wednesday, the 8th of October, I went to Manhattan to collect a metallurgical sample as requested by you.

I panned several areas in the Big Pine Pit until I found several areas with coarse gold. I then took three bulk samples approximately 400 pounds each and had assays run on these.

The number 1 sample was selected, because it had the coarsest gold and was of fairly high grade. It was resampled as it was put into test for a head assay. It ran over .2 ounce/ton.

This should give us a very representative sample of high-grade coarse gold for a metallurgical test.

Fred Saunders

Fred Saunders

6000 0328 (2960)

Nov. 4, 1974
Snow - Cool
Transit Larry G Hayes
Rod Fred Saunders

HI = 1^{17} 7196.87

BS	Sta	FS	H∡	Rod	Rod Int	Elev	
TP 2	TP 1		0-00				
-8°30'		11-74-1	338-25	5^{2} -27^{8}	1^{90} 186	7163^{9}	✓
-10°0'		11-74-2	331-15	7^{2} -56^{9}	3^{30} 320	7133^{3}	✓
-6°0'		11-74-3	58-05	7^{2} -35^{6}	3^{42} 338	7154^{1}	✓
-9°0'		11-74-4	80-13	5^{0} -68^{9}	4^{10} 429	7123^{2}	✓
-10°0		11-74-5	83-57	4^{1} -42^{1}	2^{46} 239	7150^{7}	✓
-9°0'		DH 386	27-0	2^{5} -42^{2}	2^{73} 266	7152^{2}	✓
		HI 5^{0}	7155.7				
T.P. 2	11-74-5		0-00				
+3		T	341-20	3^{0} $+11^{9}$	2^{27}	7164^{6}	✓
+3		DH	314-30	2^{6} $+12^{1}$	2^{31}	65^{2}	✓
+3		T	317-55	5^{5} $+9^{0}$	1^{83}	59^{5}	✓
+1		T	302-10	2^{2} $+2^{8}$	1^{63}	56^{3}	✓ Fault #1
+1		T	294-40	3^{5} $+2^{0}$	1^{15}	54^{7}	✓
+1		T	286-50	2^{5} $+2^{3}$	1^{35}	55^{5}	✓ Fault #2
+1		T-T-C	271-15	1^{8} $+2^{2}$	1^{25}	56^{1}	✓
+1		T	252-30	4^{1} $+2^{3}$	1^{33}	53^{6}	✓
+1		DH	249-10	5^{1} $+2^{3}$	1^{32}	52^{6}	✓ DH 7437
-2		T	236-50	5^{0} $+6^{5}$	1^{77}	49^{5}	✓
-2		T	228-40	4^{8} $+8^{0}$	2^{30}	42^{9}	✓
-2		T-C	229-20	1^{1} $+10^{5}$	3^{01}	43^{2}	✓
—		C	231-45	6^{8}	2^{90}	48^{2}	✓
—		C	230-25	7^{4}	2^{22}	48^{3}	✓
—		C	240-45	3^{5}	1^{73}	52^{2}	✓
+3		C	252-40	1^{8} $+7^{9}$	1^{41}	7161^{3}	✓
		T-T-C					

6000 0328 (2960)

+3		T	261-25	8^{0} $+7^{5}$	1^{43}	7155^{2}	✓		
+3		T	253-05	3^{7} $+8^{8}$	1^{69}	60^{9}	✓		
—		T	240-45	3^{2}	1^{28}	52^{5}	✓		
-1		T	232-50	4^{1} -3^{8}	2^{21}	47^{8}	✓		
—		T	234-50	6^{2}	2^{27}	49^{5}	✓		
—		T-C	232-45	6^{5}	2^{73}	49^{2}	✓		
—		C	236-50	0^{0}	2^{24} ✓	55^{7}	✓		
+1		C-T	244-10	2^{7} $+3^{5}$	2^{03}	54^{2}	✓		
+2		T	243-10	3^{9} $+7^{8}$	2^{24}	51^{8}	✓		
+3		T-C	243-10	5^{7} $+15^{6}$	2^{98}	65^{6}	✓		
+4		C	248-55	2^{9} $+15^{0}$	2^{15}	67^{8}	✓		
+8		C	260-00	5^{5} $+21^{2}$	1^{54} 151	71^{4}	✓		
+8		C-T	271-35	1^{5} $+22^{0}$	1^{60} 157	76^{2}	✓		
+5		T	255-55	4^{1} $+21^{5}$	2^{79} 246	73^{1}	✓		
+4°05'		T-C	252-05	5^{1} $+17^{9}$	2^{52}	68^{5}	✓		
+7		C	$2\overset{6}{5}8$-45	5^{6} $+25^{2}$	2^{08} 205	75^{3}	✓		
+11		C	277-05	7^{0} $+30^{9}$	1^{65} 159	79^{6}	✓		
+10		C	285-05	5^{2} $+28^{1}$	1^{68} 163	79^{2}	✓		Fault #2
+10		C-T	289-30	5^{7} $+29^{1}$	1^{72} 167	79^{1}	✓		
+10		T	276-20	6^{3} $+32^{5}$	1^{90} 184	81^{9}	✓		
+10		T-C	270-45	7^{9} $+34^{9}$	2^{04} 198	83^{2}	✓		
+10		C	287-25	1^{8} $+30^{3}$	1^{77} 172	84^{2}	✓		
+10		C	299-55	3^{7} $+34^{9}$	2^{04} 198	86^{9}	✓		
+9		C	301-40	4^{5} $+31^{2}$	2^{03} 197	82^{4}	✓	T.C. 3' left	Fault #1
+7		C	307-35	4^{6} $+28^{0}$	2^{31} 228	79^{1}	✓		
+5		C	310-25	4^{0} $+23^{6}$	2^{72} 270	7175^{3}	✓		

6000 0328 (2960)

+2		T	314-30	0^{5} $+7^{0}$	200
+2		T	313-25	2^{7} $+6^{2}$	178
+2		T	320-10	7^{1} $+6^{3}$	180
+4		℄	317-15	4^{2} $+19^{8}$	212 ✓
+5		C	319-40	2^{8} $+19^{1}$	220 218
+7		C	320-10	2^{5} $+28^{9}$	239 235
+7		C	317-45	7^{1} $+30^{3}$	250 246
+7		C	317-35	5^{5} $+27^{5}$	227 224
+7		POINT	318-55	2^{0} $+29^{0}$	240 236
+3		T	314-30	3^{7} $+13^{3}$	254
—		T-C	303-15	1^{1}	135
—		C	292-10	0^{1}	118
—		C-T	265-20	1^{0}	107
—		DH	269-55	3^{4}	101
—		T	290-55	4^{4}	113
—		T-C	309-40	3^{4}	91
—		C	284-30	3^{3}	91
—		C-T	260-00	2^{0}	105
—		T	226-50	7^{8}	85
—		T-C	337-10	2^{1}	69
—		C	338-30	2^{0}	54 -
—		C	317-20	3^{0}	45
—		C-P-C	264-25	1^{2}	53
—		P	250-10	1^{8}	75
—		P-T	241-55	3^{3}	117

71 62^{2}	✓	
59^{2}	✓	
54^{9}	✓	
66^{3}	✓	
72^{0}	✓	CREST AT EDGE OF PIT
82^{1}	✓	
78^{9}	✓	
77^{7}	✓	
82^{7}	✓	
65^{3}	✓	TIE TO DH 2nd Shot
54^{6}	✓	No 1 FAULT 3' LEFT
55^{6}	✓	No 2 FAULT
54^{7}	✓	
52^{3}	✓	
51^{3}	✓	No 2 FAULT
52^{3}	✓	
52^{4}	✓	
53^{7}	✓	
47^{9}	✓	
53^{6}	✓	
53^{7}	✓	
54^{7}	✓	No 2 FAULT
54^{5}	✓	
53^{2}		
71 52^{1}		

6000 6328 (2960)

	–		T	259-15	$5^{\underline{7}}$	71	71 $50^{\underline{9}}$	✓	
	–		T	314-40	$6^{\underline{8}}$	51	$48^{\underline{9}}$	✓	
	–		C-T	278-40	$5^{\underline{4}}$	29	$50^{\underline{3}}$	✓	Ties to C-P-C Shot
+	–6		T	232-00	$5^{\underline{0}}$ $-11^{\underline{5}}$	111 110	$39^{\underline{2}}$	✓	
+	–6		T	230-00	$5^{\underline{6}}$ $-15^{\underline{3}}$	147 145	$34^{\underline{8}}$	✓	
+	–4		T	224-25	$4^{\underline{9}}$ $-13^{\underline{7}}$	197	$37^{\underline{1}}$	✓	
+	–2		T-C	223-20	$4^{\underline{0}}$ $-9^{\underline{8}}$	280	$41^{\underline{2}}$	✓	
+	–2		C	229-20	$5^{\underline{7}}$ $-6^{\underline{3}}$	180	$43^{\underline{7}}$		
+	–		C-P	237-35	$4^{\underline{6}}$	135	71 $51^{\underline{1}}$	✓	TIES INTO PEAK

6000 0328 (2960)

H.I. 5^{9} $\boxed{7155^{7}}$

Nov. 5, 1974
Clear - Sunny - Cool
INST L. HAYES
ROD F. SAUNDERS

BS	STA.	FS	H.A.	ROD	ROD INST.			
T.P. 2	11-74-5		0-00					
—		T-C	20-25	4^{9}	10	7150^{8}	✓	
-6		C	177-35	5^{2} -4^{5}	43 43	46^{0}	✓	
-6		C	181-20	4^{4} -7^{8}	75 74	43^{5}	✓	
-6		C	202-00	3^{9} -10^{8}	104 103	41^{0}	✓	
-6		C	214-25	5^{4} -15^{2}	146 144	35^{1}	✓	
-6		C	220-20	0^{9} -18^{7}	177 175	36^{1}	✓	
-4		C	216-00	3^{6} -14^{6}	210	37^{5}	✓	
-6		C-T	210-55	1^{7} -22^{2}	213 211	31^{8}	✓	
-6		T	213-25	4^{4} -21^{5}	207 205	29^{0}	✓	
-7		T	216-50	5^{6} -21^{3}	176 173	28^{8}	✓	
-7		T	211-40	5^{5} -11^{7}	146 144	32^{5}	✓	
-7		T	177-50	5^{9} -9^{1}	75 74	40^{7}	✓	
-7		T	166-40	6^{6} -4^{0}	33 33	45^{1}	✓	TIE TO TC
-7		℄	178-15	5^{8} -14^{2}	117 115	35^{7}	✓	4 SHOTS OF 15' ROAD
-7		℄	194-15	6^{3} -19^{5}	161 159	29^{0}	✓	
-7		℄	205-50	0^{0} -24^{7}	204 201	31^{0}	✓	
-3		℄	215-00	3^{6} -14^{6}	280	37^{5}	✓	
-2		DH 379	218-00	5^{4} -11^{8}	337	38^{5}	✓	
-3		T-C	211-15	4^{2} -13^{6}	260	37^{2}		
-7		C	200-00	3^{4} -23^{4}	193 190	28^{9}		
-7		C	186-55	3^{4} -19^{1}	158 156	33^{2}		
-7		C	183-50	2^{0} -20^{8}	172 169	32^{9}		
-7		C	177-20	2^{1} -19^{8}	164 162	33^{8}		
-7		T	174-10	5^{7} -21^{8}	180 177	28^{1}		
-7		T	184-25	7^{1} -21^{8}	180 177	7126^{8}		

6000 0328 (2960)

-7		T	188-30	7^{5}-20^{1}	166 164
-7		T	197-00	7^{2}-23^{3}	192 189
-6		T	203-50	3^{8}-22^{7}	218 216
-5		T	208-00	2^{8}-20^{8}	240 238
-6		T.C	171-55	6^{2}-14^{1}	136 135
-6		C	163-45	6^{6}-9^{3}	89 88
-6		C	136-05	5^{6}-4^{0}	46 45
-		C	54-20	4^{0}	45
-		C	59-35	2^{5}	86
-		C	59-30	3^{8}	130
-		C	60-15	4^{1}	163
-		C	44-10	3^{0}	178
-		C	38-25	1^{9}	198
-		C-T	36-00	0^{5}	198
-		T	32-45	4^{9}	198
-		T	26-40	4^{4}	207
-		T	21-55	7^{6}	235
-		T	15-20	6^{7}	233
-		T	12-15	6^{7}	219
-		T	8-40	4^{0}	200
-		T	1-35	2^{8}	207
-		T-C	356-50	3^{7}	221
-		C-T	355-15	4^{6}	182
-		T	356-40	4^{1}	235
-		T-PIT	355-00	2^{6}	268

7128^{1}	
25^{3}	
29^{2}	TOE & PIT CREST
32^{1}	PIT CREST & TOE
35^{4}	
39^{8}	
45^{3}	
51^{7}	
53^{2}	
51^{9}	
51^{6}	
52^{7}	
53^{8}	
55^{4}	CREST AT TOE OF SCREEN PILE
50^{8}	
51^{3}	
48^{1}	
49^{0}	
49^{0}	SCREEN TO BROKEN X
51^{7}	
52^{9}	
52^{0}	
51^{1}	
51^{6}	BROKAN X + SCREEN
7153^{1}	SCREENS AT PIT CREST

6000 0328 (2960)

—		T-C	342-35	3^{2}	69
—		T	341-50	3^{6}	95
—		T	346-40	3^{6}	104
—		T-C	348-00	3^{0}	143
+3°		P	337-00	2^{7} $+4^{0}$	76
+3		P	337-40	4^{1} $+4^{9}$	93
+3		P-C	342-15	1^{2} $+5^{5}$	106
+3		C-P	341-50	4^{8} $+6^{6}$	127
+3		P	342-20	5^{0} $+7^{0}$	134
+3		P	334-00	1^{4} $+6^{5}$	125
+3		P-T	321-40	7^{4} $+5^{7}$	104
+3		T	334-15	6^{3} $+5^{8}$	111
+3		T	336-05	6^{8} $+5^{0}$	96
—		T	331-20	3^{3}	70
+3		T-P	335-35	3^{7} $+6^{9}$	132
+3		P-C-T	331-30	4^{2} $+7^{5}$	143
+3		C	327-00	4^{6} $+7^{9}$	151
+3		C	321-35	5^{0} $+7^{8}$	150
+3		C	323-20	4^{6} $+7^{4}$	141
—		T	319-45	2^{7}	135
—		T	319-00	1^{1}	150
—		℄	13-00	3^{0}	186
—		℄	22-05	1^{6}	172
—		℄	29-35	1^{9}	140
—		℄	20-20	1^{9}	100
—		℄	1-35	4^{3}	132

7152^{5}	MUCK PILE
52^{1}	↓
52^{1}	
50^{7}	
57^{0}	P ties to T-C shot 4 shots previous
56^{2}	
54^{0}	
57^{5}	
57^{7}	
60^{3}	
53^{7}	
55^{2}	
53^{9}	TIES TO C-P SHOT
52^{4}	TIES TO P-C SHOT 5 SHOTS PREVIOUS
58^{9}	
58^{3}	
59^{0}	
58^{5}	
58^{5}	TIES TO P.C.T
53^{0}	TIES TO P.C.T
54^{6}	
52^{7}	
54^{1}	
53^{8}	
53^{8}	

7151^{4}

6000 0328 (2960)

-		℄	9-25	$2^{\underline{3}}$	54
-5		℄	221-55	$6^{\underline{1}}$ $-7^{\underline{0}}$	81 80
-5		℄	205-10	$5^{\underline{3}}$ $-5^{\underline{6}}$	65 65
-5		℄	221-55	$7^{\underline{8}}, 10^{\underline{2}}$	118 117
		HI	$5^{\underline{3}}$	$\boxed{7159.4}$	
11-74-5	11-74-3		0-00		
-2	T		55-30	$4^{\underline{3}}$ $-5^{\underline{3}}$	151
—	T		54-30	$6^{\underline{8}}$	178
—	T		58-10	$6^{\underline{5}}$	188
-1	T		62-50	$5^{\underline{7}}$ $-3^{\underline{0}}$	171
-2	T		74-20	$4^{\underline{3}}$ $-6^{\underline{2}}$	178
—	T-P		87-20	$6^{\underline{4}}$	182
—	P		77-55	$5^{\underline{4}}$	184
-	P-C		72-55	$7^{\underline{4}}$	181
—	C		64-00	$4^{\underline{0}}$	178
—	C		58-55	$2^{\underline{2}}$	193
-	C		58-00	$2^{\underline{5}}$	213
—	C		60-35	$4^{\underline{1}}$	218
—	C		63-50	$4^{\underline{9}}$	189
—	C		69-15	$7^{\underline{3}}$	186
—	T		96-50	$5^{\underline{5}}$	139
—	T-C X		101-25	$4^{\underline{0}}$	108
—	C		110-55	$2^{\underline{0}}$	116
+5	C-T		122-10	$2^{\underline{3}}$ $+10^{\underline{7}}$	123 122

$7153^{\underline{4}}$	
$42^{\underline{7}}$	
$44^{\underline{8}}$	
$37^{\underline{7}}$	
$7149^{\underline{0}}$	
$52^{\underline{6}}$	
$52^{\underline{9}}$	
$50^{\underline{7}}$	
$48^{\underline{9}}$	
$53^{\underline{0}}$	PIT EDGE
$54^{\underline{7}}$	
$52^{\underline{0}}$	
$55^{\underline{1}}$	
$54^{\underline{2}}$	
$56^{\underline{9}}$	TIES TO CREST TO LEFT
$55^{\underline{3}}$	EDGE OF PIT + TIES TO LEFT TO CREST & PIT EDGE SHOT
$54^{\underline{5}}$	
$52^{\underline{1}}$	TIES BACK TO PEAK CREST
$53^{\underline{2}}$	TOE OF X PILE AT SCREEN PILE
$55^{\underline{1}}$	
$57^{\underline{4}}$	
$7167^{\underline{8}}$	

6000 0328 (2960)

		HI	$5^{\underline{0}}$	$\boxed{7155^{\underline{7}}}$	
T.P. 2	11-71-5		0-00		
+3		T-C	5-05	$2^{\underline{9}}+15^{\underline{7}}$	300
+3		C-T	11-00	$1^{\underline{0}}+15^{\underline{7}}$	300
+3		T	9-00	$5^{\underline{2}}+14^{\underline{2}}$	272
+2		T	6-55	$4^{\underline{2}}+9^{\underline{3}}$	266
+2		T	2-40	$4^{\underline{7}}+9^{\underline{2}}$	265
+2		P	359-00	$1^{\underline{9}}+8^{\underline{9}}$	256
+4		P	5-25	$3^{\underline{2}}+19^{\underline{8}}$	294
+1		P	9-15	$3^{\underline{9}}+20^{\underline{3}}$	291
+4		C	17-00	$0^{\underline{7}}+19^{\underline{8}}$	284
+4		C	16-35	$0^{\underline{9}}+18^{\underline{8}}$	270
+5		C-P	21-40	$4^{\underline{3}}+23^{\underline{7}}$	273 271
+3		P	28-25	$3^{\underline{6}}+13^{\underline{3}}$	255
+3		P	29-45	$4^{\underline{1}}+11^{\underline{5}}$	220

$7169^{\underline{1}}$	PT. 2' RT
$67^{\underline{7}}$	
$61^{\underline{7}}$	
$60^{\underline{1}}$	
$60^{\underline{2}}$	TIES to TOE AT SCREEN TO [illegible]
$62^{\underline{7}}$	
$72^{\underline{3}}$	
72.1	
$74^{\underline{8}}$	
$73^{\underline{6}}$	
$75^{\underline{1}}$	
$65^{\underline{1}}$	
$7163^{\underline{1}}$	

HI 5^{4} $\boxed{7129^{0}}$

BS	STA	FS	HA	ROD	ROD INT
+9°0' TP 1	11-74-4		0-00	+68 4 4^{65}	443 432
+2		T	321-00	$1^{4} +6^{5}$	186
+3		T	337-30	$1^{4} +8^{2}$	157
+5		T	353-45	$1^{0} +12^{8}$	148 147
+7		T	6-50	$2^{2} +19^{0}$	157 155
+7		T	17-20	$0^{8} +14^{8}$	122 120
+8		T	30-10	$1^{4} +16^{0}$	116 114
+8		T	52-35	$3^{1} +13^{5}$	98 96
+10		T	57-10	$4^{4} +19^{3}$	113 110
+9		T	59-20	$9^{5} +23^{8}$	151 150
+5		℄	68-10	$1^{9} +7^{1}$	82 81
+5		℄	22-05	$5^{6} +4^{1}$	47 47
–		℄	347-10	2^{1}	73
–		℄	329-50	0^{9}	126
+1		C	? 309-40	$1^{7} +3^{3}$	187
+1		C	307-20	$3^{2} +2^{5}$	142
-3		C	286-25	$3^{2} -5^{2}$	100
-3		C	281-45	$4^{8} -2^{2}$	42
—		C	134-25	2^{7}	29
–		C	122-25	1^{7}	60
–		C	111-55	2^{5}	72
+4		C-T	89-05	$5^{6} +5^{8}$	84
–		T	19-50	9^{8}	82
-8		T	145-30	$6^{0} -8^{1}$	59 58
-13		T	156-30	$5^{0} -6^{8}$	31 29
-23		T	224-00	$6^{3} -9^{4}$	26 22

6000 0328 (2960)

Nov 6, 1974
CLEAR - SUNNY - COOL
INST L. HAYES
ROD F. SAUNDERS

7134^{3}
35^{8}
40^{8}
45^{8}
43^{0}
44^{3}
39^{4}
43^{9}
43^{3}
34^{2}
27^{5}
26^{6}
23L
30^{6}
28^{3}
20^{6}
22^{0}
26^{3}
27^{3}
26^{5}
29^{2}
19^{2}
14^{9}
17^{2}
7113^{3}

TIES TO C-T of ROAD

TOE CONTINUES TO DH 320 AT TOE OF SCREEN PILE

℄ SHOTS AT CONTACT OF HILL & X DUMP

•C-T SHOT AT AD. SMITH SAMPLE TRENCH

-14		T	264-20	6^{2} -14^{3}	61 57
-10		T	277-10	5^{2} -20^{3}	119 115
-2		T	295-35	11^{2} -5^{2}	198
—		T	305-55	6^{1}	200
+1		T	308-15	5^{4} +3^{8}	220
+2		T-C	316-55	4^{6} +8^{7}	250
	HI - 5^{1}				
TP3	11-79-6		0-00		
—		T-C	138-50	5^{3}	19
—		C	328-55	5^{3}	10
—		C	273-55	5^{6}	29
-5		C	289-55	6^{6} -5^{6}	65 65
-5		C-T	285-20	6^{2} -8^{9}	102 101
-5		T	279-20	5^{0} -5^{3}	61 61
—		T	261-20	6^{1}	32
—		T	222-55	6^{3}	54
—		T-C	206-10	7^{0}	51
—		C	228-20	2^{3}	69
—		C	223-50	2^{9}	79
—		C-T	189-15	7^{3}	68
-1		T	214-15	7^{8} -1^{0}	60
-2		T	206-50	6^{7} -4^{9}	141
-2		T	201-15	3^{2} -8^{2}	234
-2		T	204-30	2^{5} -9^{0}	257
-1		T	203-50	5^{4} -5^{2}	300

6000 0328 (2960)

7108^{3}
3^{5}
12^{1}
22^{9}
27^{1}
7133^{1}

NOTE: 11-79-6 HAS NOT BEEN LOCATED AT THIS TIME — LOOK FORWARD IN BOOK

T-C AT ROAD

Susie

6000 0328 (2960)

DRILL HOLES
GROUP 26 - LITTLE GREY AREA

page 1 of 2

Hole Number	Depth-ft.	Northerly	Easterly	Elevation-ft.
26-189-73	50	7926.7	6707.5	6943
26-190-73	20	7921.7	6691.0	6941
26-191-73	78	7905.6	6687.3	6941
26-192-73	25			
26-193-73	95			
26-194-73	90	7879.3	6689.4	6936
26-195-73	70	7879.9	6674.2	6942
26-196-73	80	7879.3	6659.5	6939
26-204-73	60			
26-205-73	60			
26-206-73	60			
26-207-73	60	7796.8	6759.3	6951
26-208-73	60			
26-209-73	60			
26-210-73	60			
26-211-73	45	7924.7	6726.6	6944
26-212-73	60	7908.4	6692.7	6942
26-213-73	60			
26-237-73				
26-238-73				
26-239-73				
26-240-73				
26-429-74	55			
26-430-74	80			
26-431-74	80	7961.4	6657.4	6937
26-432-74	80	7968.7	6627.6	6935
26-494-74	80			
26-495-74	80			
26-496-74	80			
26-497-74	80			
26-498-74	75			
26-499-74	80			
26-500-74				
26- 1-75	100	7890.1	6721.3	6943.9
26- 2-75	100	7789.6	6810.2	6957.6
26- 3-75	100	7677.1	6904.8	6968.7
26- 4-75	100	7677.6	6878.9	6963.4

Hole Number	Depth-ft.	Northerly	Easterly	Elevation-ft.
26- 5-75	100	7671.8	6833.5	6956.2
26- 6-75	100	7673.3	6781.9	6949.0
26- 7-75	100			6940.5
26- 8-75	200	7582.3	6757.9	6935.9
26- 9-75	100	7573.9	6807.7	6941.5
26-10-75	100	7570.9	6858.0	6951.1
26-11-75	40 hit stope	7573.6	6909.8	6959.5
26-12-75	100	7565.6	6977.8	6964.4
26-13-75	200	8065.8	6589.4	6920.0
26-14-75				
26-15-75	200			

Distribution:
R. Lutz
F. Saunders
Tonopah
Della
Group 26 file

by: R. Lutz
10-9-75

6000 0328 (2960)

SPEED MEMO

To Skyline Labs, Inc. At Wheat Ridge, Colorado 80033

Group 2B

Date: November 3, 1975

Subject: Enclosed Samples

Would you please run these 4 tailings samples for spectrographic analysis.

Please send results to this office, attention Fred Saunders.

Thank you.

Sincerely,

Fred Saunders

Fred Saunders, Staff Geologist

Date Signed

6000 0328 (2960)

11-7-75

Dear Bob:

Enclosed are the petro. sheets on the spls. we collected in the Reilley Pit. At the time we collected the spls. I thought we could possibly get the trend of recognizable features in the metasediments, but soon realized that things were not that simple. As you can see we've described the spls. since late April but did not send them to you simply because we doubted their usefulness. Anyway, we are enclosing the original copies to you now.

Sorry about the delay.

Sincerely,

copy Fred Saunders 12-12-75

6000 0328 (2960)

PETROGRAPHIC ANALYSIS

Date 4-24-75 Sample Location Manhattan, 323, Nev. Sunaa Reilley R. #6 fault zone.

Submitted by: Rck Petrographer Rck.

Probable Original Mode	Present Mode	Notes
%	89 % quartz	
%	8 % sericite / hydromica.	
%	½% apatite	
%	1½ % FeO(OH)	
%	½ % rutile ~ leucoxene	
%	¼ % hydrobiotite.	
%	tr.% zircon.	

Rock Name arkosic? SS Original Rock

Alteration: much crushed (in hd-sp.) ; epiz. meta.

6000 0328 (2960)

PETROGRAPHIC ANALYSIS

Date 4/24/75 Sample Location Manhattan, Nev. (Summa-Riley) #12-5

Submitted by: BSK Petrographer Rm

Probable Original Mode	Present Mode	Notes
%	46 % Quartz	
%	31 % Biotite	→ alt to chlorite
%	10% Sericite	
%	1 % Plagioclase	
%	1 % Chlorite	
2 % FeOx + magnetite	1/2% Rutile	~ leucoxene
1/4 % Apatite	8 % Adularia	- vuggy veinlet w/ qtz overgrowths

Rock Name phyllite Original Rock siltstone?

Alteration: upper epizonal metamorphism

6000 0328 (2960)

PETROGRAPHIC ANALYSIS

Date 4-24-75. Sample Location Manhattan, 323, Nev. Summa-Reilley #R4 A.

Submitted by: Bk Petrographer Bal.

Probable Original Mode	Present Mode	Notes
%	70 % quartz	(incl. veins).
%	11 % epidote	
%	1½% sphene	
9 % relict plagiocl.	½ % apatite.	
%	2½% biotite → chlorite (prochlore.	(incl. minor ±biot. or hydrobiotite).
%	5 % sericite/hydromica.	
%	½ % FeOx (incl magnetite/ilmenite)	

Rock Name (arkosic) ss. & veins. Original Rock

Alteration: up. epiz. (retrograde?).

6000 0328 (2960)

PETROGRAPHIC ANALYSIS

Date 4-24-75 Sample Location Manhattan, 323, Nev. Simna-Reilley R-4.

Submitted by: BsK Petrographer BsK

Probable Original Mode	Present Mode	Notes
%	95 % quartz	
%	4 % sericite	/hydromica.
%	½ % apatite	
%	¼ % leucoxene	
%	¼ % FeOx.	
%	Tr % zircon	
%	%	

Rock Name S.S. Original Rock

Alteration: slightly crushed (& recrystallized?)

6000 0328 (2960)

PETROGRAPHIC ANALYSIS

Date 4-24-75. Sample Location Manhattan, 323, Nev. Suma-Reiley #3A.

Submitted by: RM Petrographer BR

Probable Original Mode	Present Mode	Notes
%	49 % quartz	
%	39 % epidote	(also relict actinolite/tremolite)
%	8 % chlorite	
%	½ % apatite	
%	2 % sphene	
%	1 % FeOx	
%	%	

Rock Name metasandstone Original Rock

Alteration: epiz. meta.

6000 0328 (2960)

PETROGRAPHIC ANALYSIS

Date 4-24-75 Sample Location Manhattan, 323 Nev. Suma-Reilley. #3.

Submitted by: Bke Petrographer Rik

Probable Original Mode	Present Mode	Notes
%	43 % quartz	
%	42% sericite	(
%	5% biotite →	prochlore.
%	3% chlorite	
%	½ % apatite	
½ % plagioclase	tr. % leucoxene	
%	6 % FeOx.	(incl. magnetite)

Rock Name meta-siltstone Original Rock

Alteration: epizonal meta.

6000 0328 (2960)

PETROGRAPHIC ANALYSIS

Date 4-24-75 Sample Location Manhattan, @ 323, Nev. Sunna-Reilley #2A

Submitted by: BSK Petrographer BSK

~~Probable~~ ~~Original~~ ~~Mode~~	Present Mode	Notes
%	57 % quartz	
%	30 % epidote	(incl. vein).
Tr % magnetite	tr % calcite	
%	6 % sericite	
1 % K-feldspar (veinlets)	1½ % sphene	
%	½ % apatite	
½ % FeOx	3 % chlorite	

Rock Name metasandstone. Original Rock

Alteration: epiz. meta.

60000328 (2960)

PETROGRAPHIC ANALYSIS

Date 4-24-75 Sample Location Manhattan, 323, Nev. Suma-Reilley R-2.

Submitted by: RdL Petrographer RdL

Probable Original Mode	Present Mode		Notes
%	49 %	quartz	
%	41 %	epidote	
%	2 %	sphene	
%	8 %	chlorite	
%	tr. %	apatite	
%	tr. %	FeOx.	
%	%		

Rock Name SS. (hornfelsic). Original Rock

Alteration: epig. meta.

6000 0328 (2960)

PETROGRAPHIC ANALYSIS

Date 4-24-75 Sample Location Manhattan, Nev. Suma-Reilley. #R-1.

Submitted by: BsK Petrographer BsK

Probable Original Mode	Present Mode	Notes
%	40 % quartz	
%	48 % sericite	
%	4 % chlorite	
%	½ % apatite	
%	1 % leucoxene	
%	6 % FeO(OH)	
%	%	

Rock Name phyllite. Original Rock

Alteration: epiz-meta.

.6000 0328 (2960)

Internal Communication

summa

Date: November 11, 1975

To: Bob Baker

From: Fred Saunders

Subject: White Caps Tailings

On October 24, 1975, I went to the White Caps tailings to take 4 samples to be assayed and sent off for spectrographic analysis. These samples were labeled "26 Tailings Test 1-4".

26-Tailing Test #1-75: Taken on upper dump and was a channel sample from 2'-5'.

26-Tailing Test #2-75: Taken on next lower dump and was a channel sample from 2'-5'.

26 Tailing Test #3-75: Taken on the lowest of three main dumps and was a channel sample from 2'-5'.

26 Tailing Test #4-75: Taken in gulch ¼ mile below on small tailing pond 2' channel from surface.

These samples were assayed by Summa's lab, then I sent them to Skyline Labs to be run for spectrographic analysis.

On November 10, 1975, Wally Boundy took a backhoe to the tailings and sampled the tailings to the east and the upper dump again. This was done to get a better sample at depth. His samples were called White Caps #1 and #2.

Sample #1 on the main upper dump was a channel sample from 2'-9'. Sample #2 was taken on tailings pile to the east and was a channel sample from 2'-9'. Both sample trenches were cut in the top center of the dumps.

Fred Saunders

Fred Saunders

cc: Walt
Gr 26 Geology ✓
FS reading file

summa

Internal Communication

Date: December 5, 1975

To: Dave Gribbin

From: Fred Saunders

Subject: Transfer of Heap #1 5000-Ton Test Leach

General

On November 7, 1975, work started on the transfer of the 5000-ton test leach pile. The pile was removed with Summa's 980 frontend loader and trammed 400' to Heap #4 for continued leaching. (See photos 1 and 2.)

Approximately 4000 tons of the pile were removed. Sampling was done under my direction with the help of the loader operator and were assayed by Summa's assay lab.

Sampling

A 10 to 15 pound sample was taken for every 5 loads of rock removed.

The sampling procedure consisted of taking a shovelful of material from several places across the face of the pile being removed. Due to our sampling capacity rocks greater than 2" in diameter were not included in the sample. Material greater than 2" in size probably represents about 20% of the material removed.

There were 106 samples taken, which were assayed in Summa's lab in Tonopah, Nevada. The assay results of the 106 samples indicate that the 3,975 tons removed averaged approximately 0.028 oz./ton gold, but this figure is believed to be very misleading and should be used only as a relative figure, representing only the 3,975 tons removed, because the sampling technique used contains inherent bias which makes evaluation extremely difficult. The reasons the value obtained are very misleading are:

1. Material sampled represented only the minus 2" in size range.

2. Material of minus 2" in size would be more accessible to leaching than the larger material.

3. The pile was built in a manner such that it graded itself, having big rocks on bottom and fines on top. Fines at top will leach before boulders on bottom.

4. Only the top 2/3 of the pile was taken. The top would be more accessible to leaching than the bottom.

5. The pile was built in two stages: a lower ramp and an upper ramp. The lower ramp consisted of approximately 25% by volume assayed approximately 0.16 oz./ton gold, while the top 75% only assayed approximately 0.08-.09 oz./ton gold. (Information taken from Mike Brady report on Manhattan Test Sampling N240-1-B Appendix G, Summary of Sampling of Ore by Fred Saunders.)

These are a few of the reasons I believe the value obtained is not an accurate estimation of the grade of the pile and should not be used for calculations. The assays of the samples taken are a relative value used to determine differential zones of leaching throughout the pile, as seen in Figure 2.

Geology

Heap #1 was built on a 20% slope. It was therefore built in a two-layer system. Each layer was built by ramping out from a high point. Therefore, structurally, it consists of individual units approximately 4"-12" thick that dip to the north, east and west at approximately 25-35°. (See photos 3 and 4.) Each individual unit is graded, having large rocks on bottom and fines on top. Rocks range in size from 2-foot boulders to fine silt.

Upon leaching of this pile it appears that these distinct units or beds acted as solution channels. Each bed would have fines at the top that would wash down to a point where they would clog the channel. Then the channel would break through to the next lower bed. Therefore, fines at top of pile really worked in helping solution movement throughout the pile. Solution channels could be easily detected by the white lime crusts on the rocks. (See photos 5 and 6.)

The rocks within the top 10 feet of the surface of the pile have been broken down by frost freeze action on bedding planes and fractures. They crumble easily by hand pressure. Rocks in the center of pile were not effected to any degree. The limonites on the fractures in the leached zones have been changed to a yellow color, whereas in the center of the pile they still retain their orange-brown appearance. The druzy quartz and adularia remained unchanged in both leached and unleached zones. Figure 1 was derived from these field observations. Assay correlation and field observation correlate that the middle of Heap #1 was probably not leached very much.

Fred Saunders

Fred Saunders

Attachments

Dist: W. Simmons
C. Sikkenga
Gr. 26 Geology
FS Reading File

TRANSFER OF HEAP #1 5000-TON TEST LEACH

Photo 1: Summa's 980 Frontend Loader digging into Heap #1.

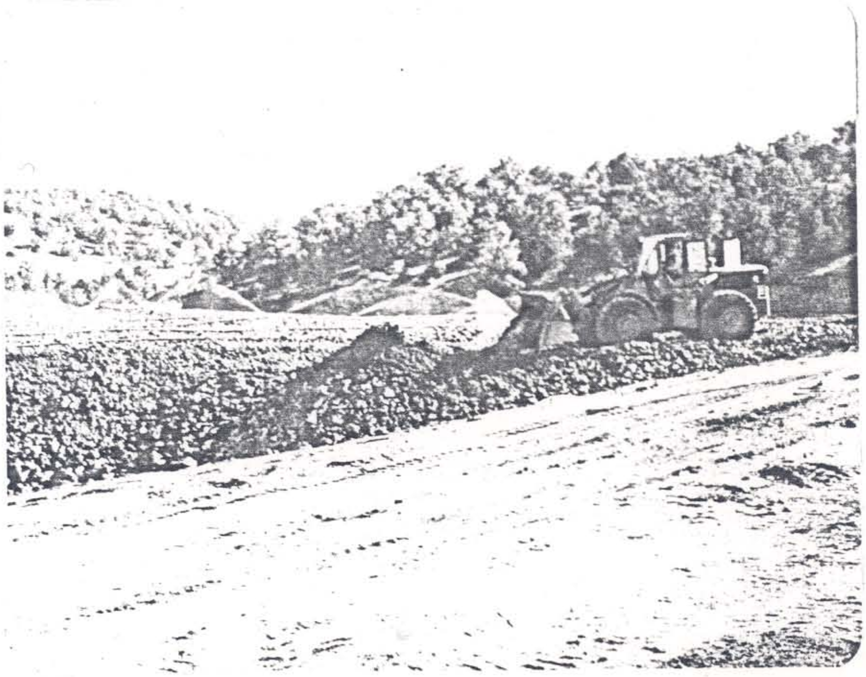
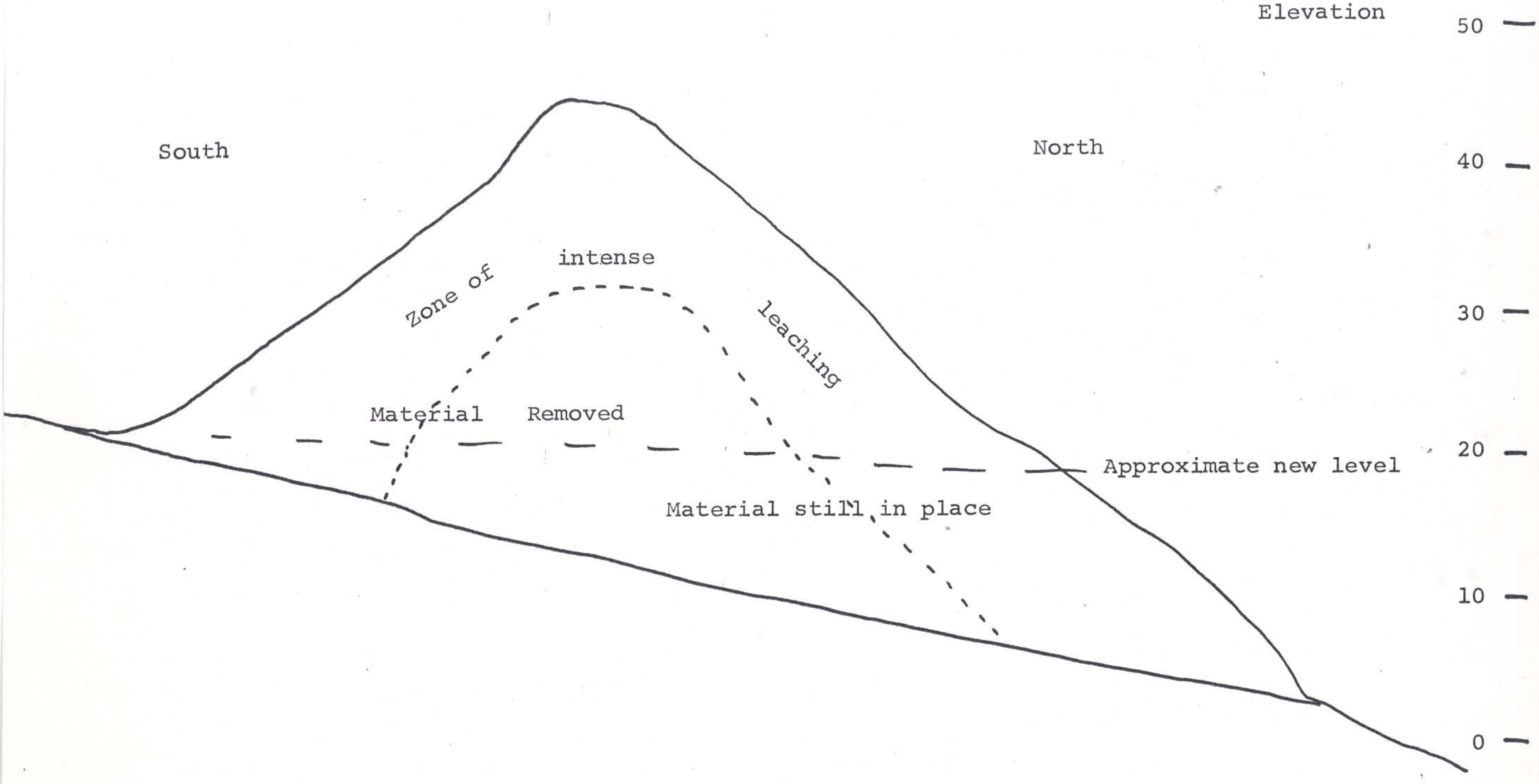


Photo 2: Loader dumping load on Heap #4 approximately 400 feet away.

FIGURE 1

Cross Section of Heap #1 showing material removed and zone of intense leaching.

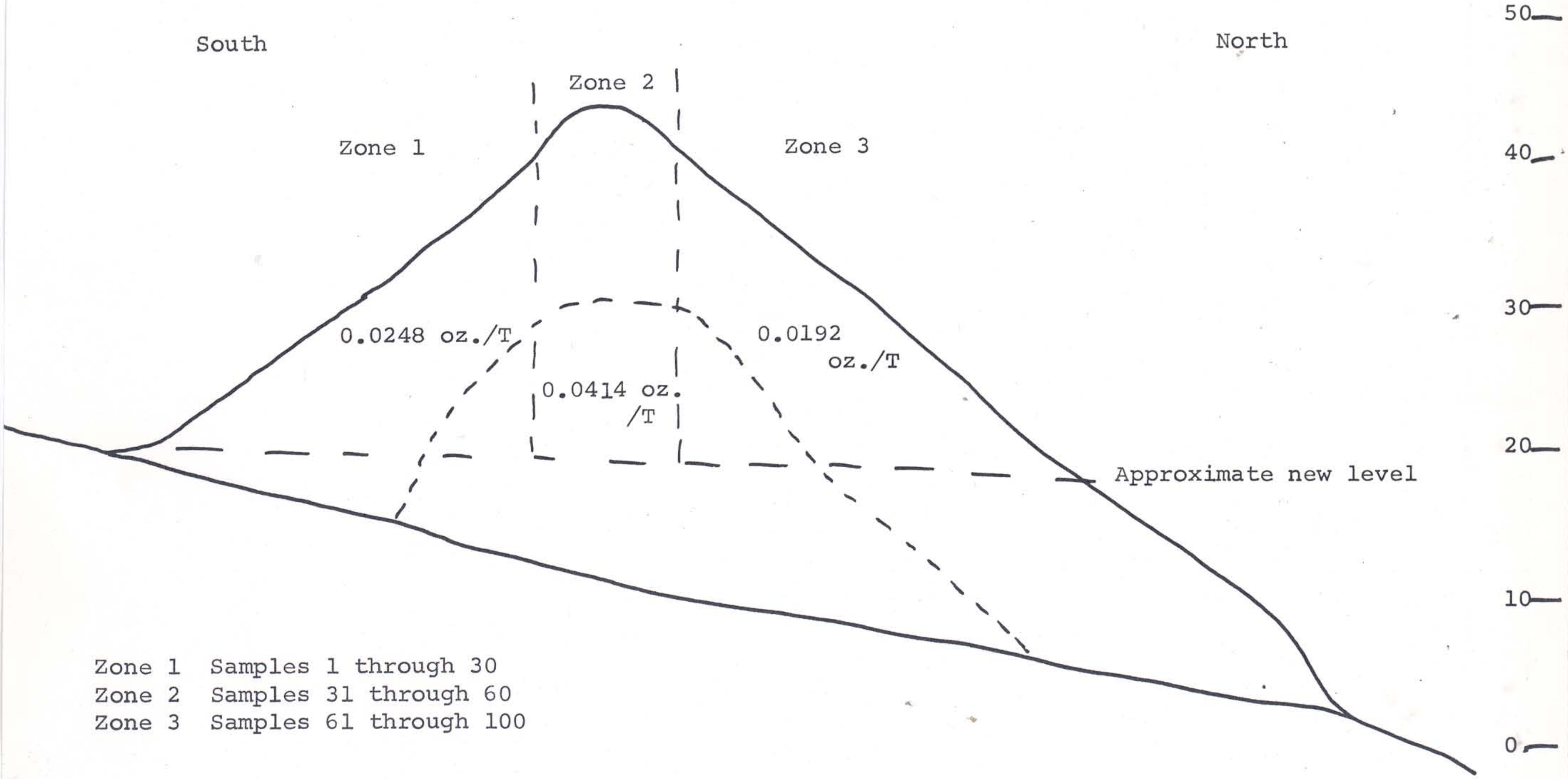


Scale 1" = 10'

F. Saunders 12/5/75

FIGURE 2

Cross Section of Heap #1 showing zone of intense leaching in relation to relative assays.



Zone 1 Samples 1 through 30
Zone 2 Samples 31 through 60
Zone 3 Samples 61 through 100

Scale 1" = 10'

F. Saunders 12/5/75

TRANFER OF HEAP #1 5000-TON TEST LEACH

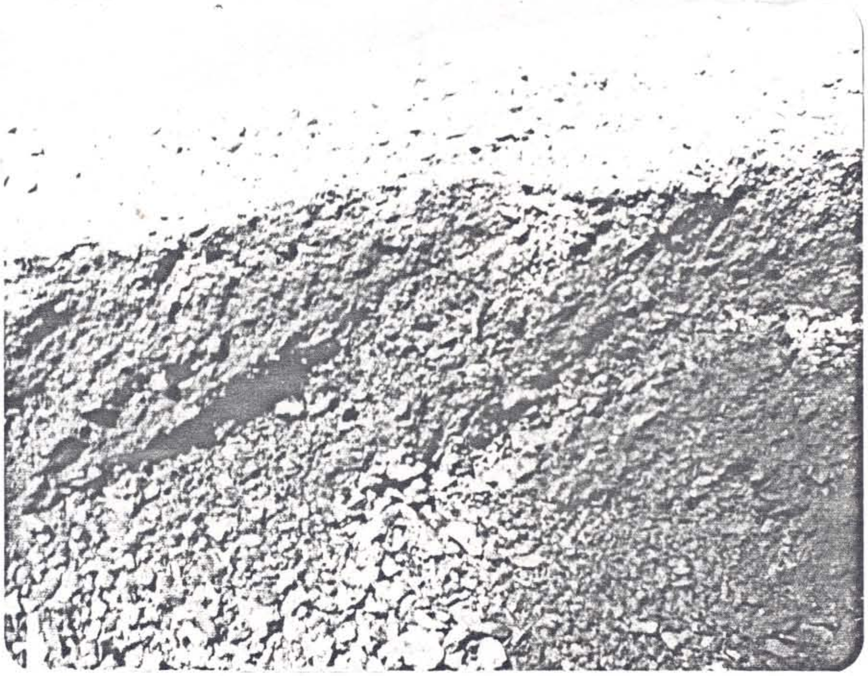


Photo 3: Shows bedding of pile. Note gradation in size, thickness of beds and dip to the west of approximately 35°. Photo looking north.

Photo 4: Shows bedding of pile with dip to east of 25°. Photo looking north.

TRANSFER OF HEAP #1 5000-TON TEST LEACH

Photo 5: Shows a solution channel following one individual bed.

Photo 6: Closeup of Photo 5 showing lime crusts and clogging by fines of solution channel.

Gr 26
6000 0328 (2960)

Internal Communication

summa

FS-1-76-11

Date: January 27, 1976

To: Dave Gribbin

From: Fred Saunders F.S./ln

Subject: Summa - Mining Claims and Mill Location on Manhattan Groups

During August of 1973, we started mining a 5,000 ton ore zone from the Reilly Fraction claim. We finished mining on the Reilly Fraction in September of 1973.

On approximately July 1, 1974, mining activity resumed on the Big Pine claims where approximately 30,000 tons of ore was removed. An additional 6,000 tons of ore was taken off the Jumping Jack claims in the form of dump material.

Between April 23 and September 30, 1975, another 145,000 tons of ore was removed from the Big Pine claim. An additional 40,000 tons of screen pile material was taken during this period from the Big Pine claim.

At present, an ore zone of approximately 150,000 tons has been drilled and blocked out on the Big Four and Jumping Jack claims. Another ore zone of approximately 50,000 tons is in the process of exploration drilling on the Little Grey and Union Nine claims.

During the fall of 1974, a placer operation was performed on the Skookum and Skookum Placer claims.

For future reference, it may be important to know the location of the mill, pads, and water wells. It is as follows:

Description	Location/Claim
Mill Building	Squirrel
Trailer House	St. George and Squirrel
Pad #2	Boatsan
Pad #3	Virginia and Boatsan
Pad #4	Iron King, Boatsan, and Squirrel
Water Well #1	Squirrel
Water Well #2	Iron King
Water Well #4	Mayflower
Water Well #5	Iron Queen
Water Well #3- dry	
Water Well #6- unsurveyed	

FS:ln

xc: C. Gordon

6000 0328 (2960)

Internal Communication

summa

Date: March 11, 1976

To: Walt Simmons

From: Wallace T. Boundy

Subject: Big Pine Pit Screen Test: Part 2

The following is a follow-up on the Big Pine Pit Screen Test #1 (See Part 1 dated 2/27/76).

Due to the dampness of the material it was necessary to run separate screen analysis on each of the size ranges (-1", -½", -¼"). Also the oversize material was quartered by hand sizing. The finer materials (-1", -½" and -¼") were also coned and quartered and split down for Assay purposes and the breakdown is as follows on the attached sheet.

Test results by Fred Saunders and myself.

Att.

Dist: FS
WJR
Gr. 16

BIG PINE PIT SCREEN TEST

Size Range	Lbs. Material	Assay	Oz Au.	% Total Mat. This Size	Accum. Total	% Material	% Total Au Accumulative		% Au This Size
					↓	↑	↑	↓	
+10"	502	.0166	.0042	4.6017	4.6017	100.	100.	2.3438	2.3438
+1" -10"	5,341	.0180	.0483	48.9596	53.5613	95.3984	97.6362	29.2969	26.9531
-1" +½"	983.1294	.0468	.0230	9.0121	62.5733	46.4388	70.7031	42.1317	12.8348
-½" +¼"	973.8025	.0140	.0068	8.9268	71.5001	37.4267	57.8683	45.9263	3.7946
-¼" +6 M	649.5016	.0480	.0156	5.9538	77.4540	28.4999	54.0737	54.6317	8.7054
-6M +12M	474.0527	.0519	.0123	4.3455	81.7995	22.5461	45.3683	61.4955	6.8638
-12M +20M	357.8863	.0799	.0143	3.2807	85.0801	18.2006	38.5045	69.4754	7.9799
-20M +80M	692.466	.0887	.0307	6.3477	91.4278	14.9199	30.5246	86.6071	17.1317
-80M	935.1434	.0513	.0240	8.5722	100.0000	8.5722	13.3929	100.	13.3929
TOTAL	10,909.	.0329	.1792						

*	Original head assay from conveyor belt at plant:	.0346
	Calc. head:	.0329

WTB & FS 3/10/76

60000328 (2960)

summa

Internal Communication

Date: March 12, 1976

To: Walt Simmons

From: W. T. Boundy

Subject: Screen Analysis #3 Group 26
Big Pine Pit

Screen Analysis No. 2 (salted)

Screen Analysis No. 3

2.9 tons of material were taken in the bottom of the Big Pine Pit at a point 30 feet west of the Big Pine Shaft on 3/11/76.

All material was coned and quartered at the screen plant and hauled to town.

Size Range	Lbs. Material	Tons Material	% Total Volume	
10 +1"	3,622	1.8110	62.44	
-1" +½"	778	.3890	13.41	37.56
-½" +¼"	486	.2430	8.38	
-¼"	915	.4575	15.77	
TOTAL	5,801	2.9005	100.00	

Assays of head sample expected to be ready on Friday, March 12. Further splitting and crushing at size range to begin 3/12/76 and will probably be assayed on Monday 3/15/76.

Dist: WJR
DKH
Gr. 26 ✓
WTB rf

6000 0328 (2960)

Internal Communication

summa

Date: March 22, 1976

To: William J. Robinson

From: Fred Saunders

Subject: Gold Analysis

Since we are concerned to find out what form the gold in the piles is in, it is my opinion that the best samples to use would actually be the sample of the muck that was put on the piles. We have 10% of these samples saved in the core shed. So, for the Big Pine Pit analysis, I will use mostly muck samples taken during the hauling of the ore.

For the Big Four, I have selected 10 underground samples that were taken last spring. This should save extensive field sampling and speed up the analysis, so we should have an answer sooner.

Attached is the form I plan to use in this analysis. If you wish me to add any other information, please note.

Att.

Fred Saunders

Fred Saunders

6000 0328 (2960)

SAMPLE #

SAMPLE EXAMINATION FORM

ASSAY OF SAMPLE
WEIGHT OF SAMPLE PANNED
WEIGHT OF SAMPLE > 1/4" NOT PANNED
TOTAL WEIGHT OF SAMPLE
ASSAY OF SAMPLE > 1/4"
CALCULATED ASSAY OF PANNED SAMPLE

SIZE OF GOLD:

% COARSE NUMBER OF PIECES
% MEDIUM NUMBER OF PIECES
% FINES NUMBER OF PIECES

DESCRIPTION OF GOLD:

FREE GOLD

GOLD ON OR IN QUARTZ

GOLD ON MAGNETITE

OTHER MINERALS:

MAGNETITES

QUARTZ

SCHIST

SILVER

SAMPLE LOCATION AND DESCRIPTION

COMMENTS

6000 0328 (2960)

BIG PINE PIT SCREEN ANALYSIS TEST #3

Size Range		Lbs. Material	Assay	Oz. Au	% Total Mat. This Size	% Au This Size	% Au Accumulative	% Total Mat. Accumulative
10"	+1"	3,622	.0267	.0484	62.44	41.54	100.00	100.00
-1"	+½"	778	.0240	.0093	13.41	7.98	58.46	37.56
-½"	+¼"	486	.0402	.0098	8.38	8.41	50.48	24.15
-¼	+6M	101	.0260	.0013	1.74	1.12	42.07	15.77
-6	+12M	175	.1533	.0134	3.02	11.50	40.95	14.03
-12	+20M	159	.0787	.0063	2.74	5.41	29.45	11.01
-20	+40M	137	.1200	.0082	2.36	7.04	24.04	8.27
-40	+80M	148	.1763	.0130	2.55	11.16	17.00	5.91
	-80M	195	.0693	.0068	3.36	5.84	5.84	3.36
		5,801	.0402	.1165	100.00	100.00		

Compiled by W. T. Boundy
F. Saunders

3/16/76

Distribution:
WS
WJR
DKH
Gr. 26
WTB rf

6000 0328 (2960)

summa

Internal Communication

Date: February 27, 1976

To: Walt Simmons

From: Wallace T. Boundy

Subject: Big Pine Pit Screen Test

On 2/26/76 a screen test of the ore in the Big Pine Pit was made, utilizing the trommel screening plant at the placer site. Prior to this test and between snow storms, approximately 3 days of preperation was required to prepare the plant for this test and included the following:

1. 1 day setting power plant in place and running trommel and conveyor's to clean out hopper of placer material.
2. 2 days welding and repairing trommel so that the different sizes could be properly collected. Also a dry run of plant was made to clear the trommel and belts of all placer material so that a salt or desalt did not occur.

On 2/26/76 Wally Boundy and Fred Saunders, with the help of Mark Eskeldson and Mr. Berger, ran the plant and collected approximately 5½ ton of material from the Big Pine Pit and the break down is as follows:

1. Bob Bottom's dump truck was taken to Round Mountain and weighed empty. This weight: 14,650 lbs.
2. Four sizes of material were collected and included: -¼", -½", -1" and +1" to 10". The -¼" through -1" was collected separately in cyanide barrels while the oversize went directly to the dump truck.

3. All material including 14 cyanide barrels holding the -¼" through the -1" was loaded into the dump truck and again taken to Round Mountain and weighed. This weight, including the truck, was 25,800 lbs.

4. Truck was returned to Tonopah and on 2/27/76 the barrels of material were weighed so that a breakdown of each material size could be determined. These breakdowns are as follows:

Loaded Truck:	25,800	lbs.
Empty Truck:	14,650	lbs.
Material & Barrels:	11,150	lbs.
Barrels w/lids:	241	lbs.
TOTAL WT. all material:	10,909	lbs.

Total weight of -1" material	1,459	lbs.	13.37	% of total
" " " -½" "	1,355	lbs.	12.42	% " "
" " " -¼" "	2,252	lbs.	20.64	% " "
" " " +1-10" "	5,843	lbs.	53.56	% " "
TOTAL WEIGHT	10,909	lbs.	100.00	% " "

The head sample taken by Fred Saunders was taken from the belt prior to entering the trommel. Thirteen samples were taken and are presently being assayed.

Fred Saunders is presently doing the cone and quartering of the four sizes of material. Reports to follow as assays and screen analysis progress.

Wallace T. Boundy
Wallace T. Boundy

Dist: WJR
FS
WTB
WTB rf ✓
Group 26

MANHATTAN ORE BODY CHARTS

BIG PINE ORE ZONE

Type Rock of Structure	Description	Significance
Quartz-Mica-Schist	Hard, brittle, blocking unit with fracturing approximately 6" apart. Extremely fractured.	Host rock for hydrothermal solutions.
Phyllite	Soft, gummy, thin bedded rock. Slightly fractured.	Poor host rock for solutions.
Quartzite	Extremely hard and brittle, moderately fractured. Extremely porous and granular texture.	Acted as a partial barrier to solution. But solution able to penetrate unit.
Sandy Schist	Extremely fine-grained sand particles. Moderately fractured. Semi blocky.	In placer it's a good host and sometimes it's a poor host.
Faulting N-S	Little displacement and minor gouge. Mostly tensional features caused during folding. Premineralization.	Good solution channelways.
Faulting E-W	1' thick gougy faults with slight verticle displacements. Post mineralization.	Staggers ore zones vertically.
Faulting Compressional or Slip	Bedding planes faults 2" thick gouge. Occur at contact of quartz-mica and phyllite.	Acted as barriers to solution.
Folding	Recumbent folds extremely large in size, possibly represent slumping features during thrusting. Premineralization.	Ore cones fractured along the nose of these folds making possible penetration of solution.

Description of Mineralization

1st Episode	Oxidation of primary sulphides into present fractures leaving limonite on fractures.
2nd Episode	Introduction of comby calcite into these open fractures.
3rd Episode	Introduction of hydrothermal gold-bearing solution, causing replacement of calcite and deposition of druzy quartz and adularia with minor sulphides and gold.

2/17/76 FS

Dist: WJR
Gr. 26 Geology
FS rf

BIG FOUR SURVEY DATA

GROUP 26

Drill Hole No.	Elevation	Northing	Easting	Depth/ft.
128	7176	7433	8508	60
129	7175	7418	8555	60
130	7175	7386	8547	60
131	7175	7354	8538	60
132	7174.5	7324	8530.5	60
133	7174	7295	8525	60
150	7152	7102	8433.5	125
151	7149	7098	8402	80
152	7151	7100	8370	71
153	7151	7131	8342	130
154	7151	7134	8372.5	107.5
155	7142	7085	8334	120
156	7130	7110	8286	125
162	7154	7129	8407	122
163	7150.5	7164	8342.5	130
164	7148	7188	8300	125
165	7140	7193	8250	125
166	7147	7243	8238	125
167	7150	7279	8230	125
168	7157	7324	8212	125
169	7134.5	7163.5	8282	125
433	7170	7219	8453	150
434	7167	7196.5	8421	150
435	7171	7218	8422	150
436	7172	7241	8395	150
437	7166	7240	8367	150
438	7164	7242	8346	150
439	7162	7217	8360	175
440	7157	7220	8320	175
441	7155	7192	8315	175
442	7152	7167	8361	205
443	7147	7100	8390	85
444	7158	7130	8434	150
453	7153	7079	8431	25
454	7148	7073	8411	37
455	7145	7064	8394	48
456	7142	7055	8376	63
458	7177	7465	8486	80
459	7179	7461	8457	80
460	7180	7450	8427	80
461	7179	7440	8400	80
462	7180	7432	8372	80
463	7181	7406	8348	108
464	7178	7390	8318	80

Distribution:
F. Saunders
N. Waddell
S. Mollison ✓

by: F. Saunders
revised 1-27-76

Big Four Survey Data - Group 26

Drill Hole No.	Elevation	Northing	Easting	Depth/ft.
465	7172	7390	8290	50
466	7166	7390	8254	50
467	7159	7390	8225	80
468	7153	7389	8193	80
469	7146	7391	8162	80
Assumed 505	7173	7242	8431	150
506	7172	7302	8545	150
508	7193	7366	8422	120
509	7191	7359	8392	84
510	7182	7418	8339	160
511A	7167	7251	8537	55
512	7192.5	7361	8440	60
513	7189	7312	8444	170
514	7189	7358	8465	90
515	7181	7310	8391	105
516	7179	7315	8366	175
517	7183.5	7288	8456	96
518	7178	7445	8302	130
519	7161	7302	8629	150
520	7165	7351	8627	150
521	7190	7383	8462	98
522	7190	7408	8463	150
523	7190	7416	8417	150
524	7159	7161	8430	150
542	7157	7200.5	8340.5	150
543	7166	7203	8398	125
544	7168.6	7196	8443	100
545	7167.4	7196	8475	125
546	7170	7224	8497	85
547	7173	7250	8511	100
548	7164	7255	8575	145
549	7161	7200	8366	150
604	7151	7068	8479	125
605	7156	7149	8403.5	150
606	7163	7161	8459	150
607	7158	7127	8458	150
608	7161	7167	8497	125
609	7160	7197	8525	125
610	7154	7205	8583	125
611	7174	7239	8474	150
612	7181.6	7293	8483	90
613	7159	7267	8621.6	125
614	7168	7303	8574	150
615	7173	7355	8572	125
Big Four Incline	7169.61	7275.18	8571.8	
Big Four Shaft	7197.88	7346.3	8398.42	
Big Pine Pit Edge	7143.94	7002.59	8384.89	
↑	7152.37	7025.22	8475.73	
	7156.76	7052.66	8458.19	
	7154.18	7076.77	8443.24	
	7147.71	7043.59	8395.51	
	7144.17	7026.93	8381.73	
↓	7149.69	6987.83	8399.37	
J.J. Fault Shaft #1	7159.84	7145.70	8477.75	
J.J. Fault Shaft #2	7156.05	7120.73	8478.65	

6000 0328 (2960)

summa

Internal Communication

Date: March 30, 1976

To: Walt Simmons

From: Wallace T. Boundy wTB

Subject: Big Pine Pit Screen Analysis #4 - Group 26

SCREEN SIZE	LBS. MAT.	TONS MAT.	ASSAY	OZ. OF Au	% MATERIAL	% Au
10" + 3"	1,072	0.5360	.1846	.0999	37.32	42.89
-3" +1"	678	0.3390	.0684	.0232	23.61	9.96
-1" + ½"	361	0.1805	.1369	.0247	12.57	10.61
-½" + ¼"	245	0.1225	.1077	.0132	8.53	5.67
-¼"	516	0.2580	.2785	.0719	17.97	30.87
	2,872	1.7140	.1359 (calc.)	.2329	100.%	100.%

SCREEN SIZE	% Au ACCUM.	% MAT. ACCUM.
-¼"	30.87	17.97
-½"	36.54	26.50
-1"	47.15	39.07
-3"	57.11	62.68
-10"	100.00	100.00

Dist: WJR
DKH
WTB rf
Gr. 26
FS

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summa

Internal Communication

Date: April 8, 1976

To: William J. Robinson

From: Fred Saunders

Subject: Reilley Pit Ore Zone

Original plane table survey in Reilley Pit area had a large bust in several directions, including an eight-foot vertical bust. All data that has previously been compiled on the Reilley Pit area had incorporated the bust within it. To get accurate results from data like this is impossible.

So, I decided that the area should be resurveyed and more ground control be established before a final analysis can be determined. I went to Manhattan on March 15, 1976, and with the help of Wally Boundy, we resurveyed and reestablished as much ground control as possible. This new data was then compiled and it was found that all Reilley data previous to this was useless to us.

I started drawing up new vertical cross sections and plan views to calculate accurate tonnage and grade figures for the Reilley Ore Zone. The results are as follows:

Reilley Pit vertical cross sections ore within 100' of surface

46,338 tons @ .0783 oz./ton = 3,628.399 oz. Au

Reilley Pit Plan Views ore within 100' of surface

53,058 tons @ .0761 oz./ton = 4,036.215 oz. Au

In addition, there exists another 11,448 tons @ .0703 oz./ton, equalling 804.429 oz. Au below 100' of surface. This data has only a few holes projecting this zone and could possibly be much larger.

At this time all ore in Reilley Ore Zone is considered "probable ore". Further drilling and geological evaluation should be conducted before this will be considered "proven ore".

Fred Saunders

Fred Saunders
Staff Geologist

Group 26

MANHATTAN STOCKWORK ORE BODY CHART

	BIG PINE ORE ZONE		BIG FOUR ORE ZONE		REILLEY PIT	
Type Rock or Structure	Description	Significance	Description	Significance	Description	Significance
Quartz-Mica Schist	Hard, brittle, blocky unit with fracturing approximately 6" apart. Extremely fractured.	Host rock for hydrothermal solutions.	Same as Big Pine Pit.	Same as Big Pine Pit	Brittle, blocky. Extremely fractured. Major ore control.	Major ore controller.
Phyllite	Soft, gummy, thin bedded rock. Slightly fractured.	Poor host rock for solutions.	Same as Big Pine Pit.	Same as Big Pine Pit.	Thin-bedded, gummy, crumbly. No fracturing.	No ore.
Quartzite	Extremly hard and brittle, moderately fractured. Extremely porous and has a granular texture.	Acted as a partial barrier to solution. But solutions were able to penetrate unit.	Not fractured and finer grained.	No values in quartzite. Acted as barrier to hydrothermal solutions.	None.	None.
Sandy Schist	Extremely fine-grained sand particles, poorly cemented. Moderately fractured. Semi blocky.	In places it's acted as a good host; but normally, it's a poor host to mineralization.	Moderately fractured. Semi blocky.	In places makes ore; in places, doesn't.	Brittle, blocky and moderately fractured.	Moderate grade ore.

MANHATTAN STOCKWORK ORE BODY CHART

	BIG PINE ORE ZONE		BIG FOUR ORE ZONE		REILLY PIT	
Type Rock or Structure	Description	Significance	Description	Significance	Description	Significance
Faulting N-S	Little displacement and minor gouge. Mostly tensional features caused during folding. Premineralization.	Good solution channelways.	Premineralization. Extremely brecciated. Minor displacement.	Extremely good host. High grade mineralization. Coarse gold.	Same as Big Pine.	Same as Big Pine.
Faulting E-W	1' thick gougy faults with slight vertical displacements. Post mineralization.	Staggers ore zones vertically.	Lateral displacement. 30' maximum. Gougy post-mineralization.	No values. Displace ore zones.	Extremely gougy. Offsets and terminates ore zones. Lateral & vertical displacement.	Offsets and terminates ore zones.
Faulting Compressional or Bedding Slips	Bedding planes faults 2" thick gouge. Occur at contact of quartz-mica schist and phyllite.	Acted as barriers to solution.	Same as Big Pine.	Same as Big Pine.	Same as Big Pine.	Same as Big Pine.
Folding	Recumbent folds extremely large in size, possibly represent slumping features during thrusting. Premineralization.	Rock units fractured along the nose of these folds making possible penetration of solution.	Recumbent. Plunging with bedding. Major ore control.	Causes fracturing.	None visible.	

MANHATTAN STOCKWORK ORE BODY CHART

Description of Mineralization	BIG PINE ORE ZONE	BIG FOUR ORE ZONE	REILLEY PIT
1st Episode:	Regional thrusting, local faulting and folding of the Gold Hill formation, leaving rock extremely fractured.	Same as Big Pine only rock is less fractured.	Same as Big Pine.
2nd Episode	Oxidation of authenigenic sulphides leaving the rock brown in color.	Same as Big Pine.	Same as Big Pine.
3rd Episode	Introduction of comby calcite into open fractures (caused by folding and faulting).	Same as Big Pine.	Same as Big Pine.
4th Episode	Introduction of hydrothermal gold-bearing solution along these fractures, causing replacement of calcite and deposition of druzy quartz and adularia with minor sulphides and gold	Same as Big Pine except there is less dissemination of gold on fractures.	Same as Big Pine.

Group 25

MANHATTAN FEASIBILITY

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