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Nevada Bureau of Mines and Geology
University of Nevada Reno
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RECONNAISSANCE MINERAL ASSESSMENT
MOAPA INDIAN RESERVATION
CLARK COUNTY NEVADA

Prepared by J. Quade, J. V. Tingley

Prepared for:
Desert Research Institute
University of Nevada System

This information should be considered preliminary.
It has not been edited or checked for completness
or accuracy.

NEVADA BUREAU OF MINES AND GEOLOGY

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John Schilling, Director/State Geologist
December 1985

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INTRODUCTION

A mineral resource assessment of the Moapa Indian Reservation, Clark County, Nevada, was undertaken in November and December of 1985. The work was done as part of the process of preparing and environmental assessment on behalf of Hi-Shear Technology Corp.

The minerals assessment was conducted by the Nevada Bureau of Mines and Geology through the Desert Research Institute, the prime contractor for preparation of the environmental assessment. The field work and report preparation were done by Jack Quade and Joe Tingley with laboratory analysis by Paul Lechler.

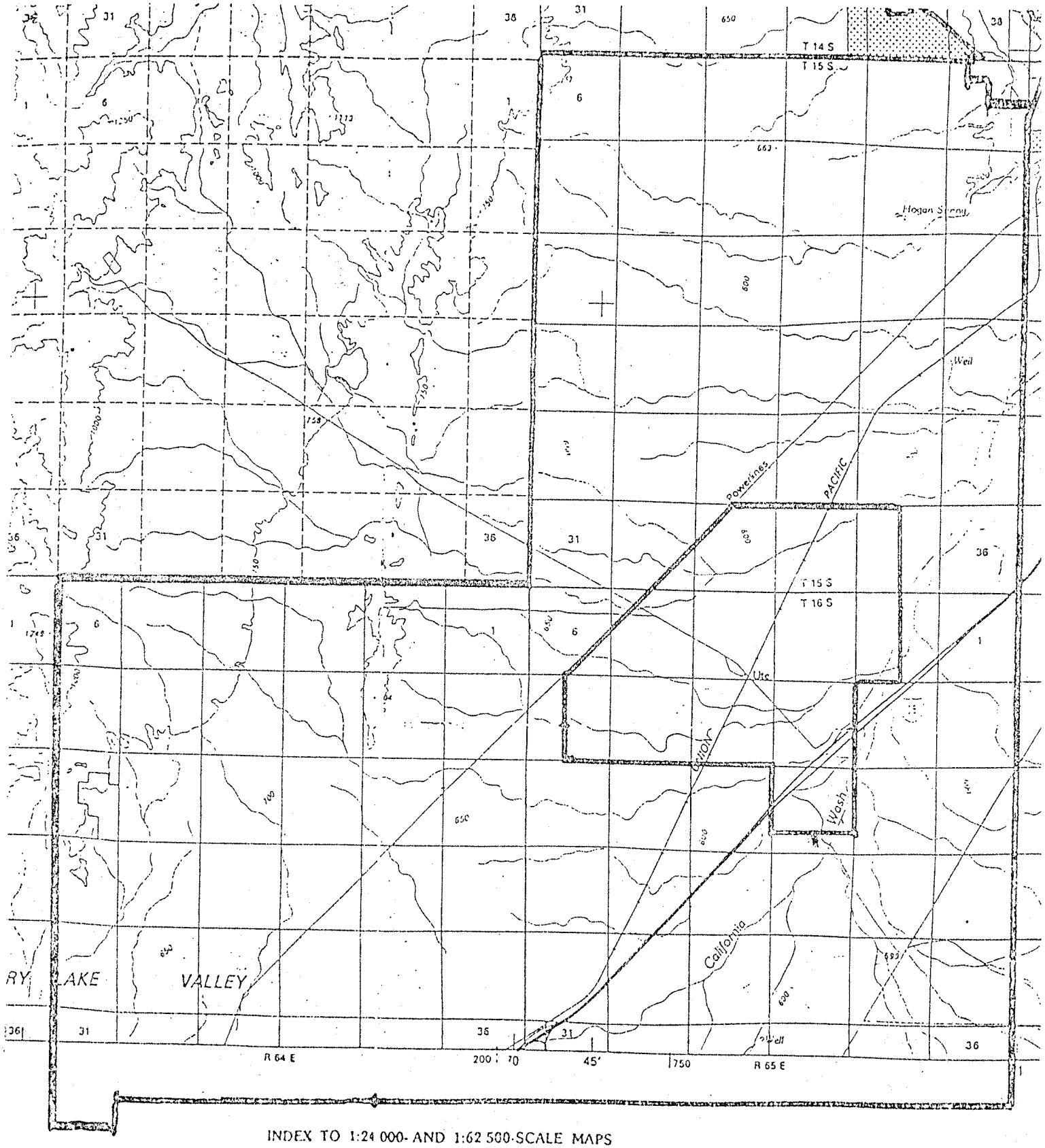
LOCATION

The study area covers three townships in northeastern Clark County, Nevada (See Figure 1). The southern boundary of the area is approximately 33 miles northeast of Las Vegas while the northern boundary includes, in part, the older Moapa Indian Reservation land along the Muddy River. Interstate Highway 15, major powerlines and the Union Pacific Railroad traverse a large protion of the area in a northeasterly direction. Several east-west trending dirt roads provide limited access to the adjacent mountains.

GEOLOGICAL SETTING

Approximately ninety percent of the area within the three townships is covered by a thick accumulation of Quaternary alluvial, fluvial and lacustrine rocks of various lithologies as well as Tertiary basin sediments of the Horse Spring and Muddy Creek Formations (Longwell,et al. 1972). A source for much of the basin sediments has come from the Arrowhead Canyon Range which borders the western margin of the study area (See Figure 2). The Arrowhead Canyon range forms a north-south highland over 5000 feet high, 35 miles long, and 5 miles wide. The eastern flank of the range is a series of low hills that extend into the study area townships and from which stream drainages form that carry large quantities of clastic materials to the east. These low hills consist of a 10,000 foot accumulation of Ordovician through Permian rocks which now outcrop in a southeasterly tilted block bounded by a major fault to the northwest.

The stratigraphic section of the Arrowhead Canyon Range is dominated by limestones and dolomites of the Pogonip Group and Ely Springs, Laketown, Crystal Pass, Monte Cristo and Bird Springs Formations. A notable exception to this largely carbonate sequence is a 100 foot section of Eureka Quartzite that caps the Pogonip Group.



INDEX TO 1:24 000- AND 1:62 500-SCALE MAPS

Figure 1. Location Map

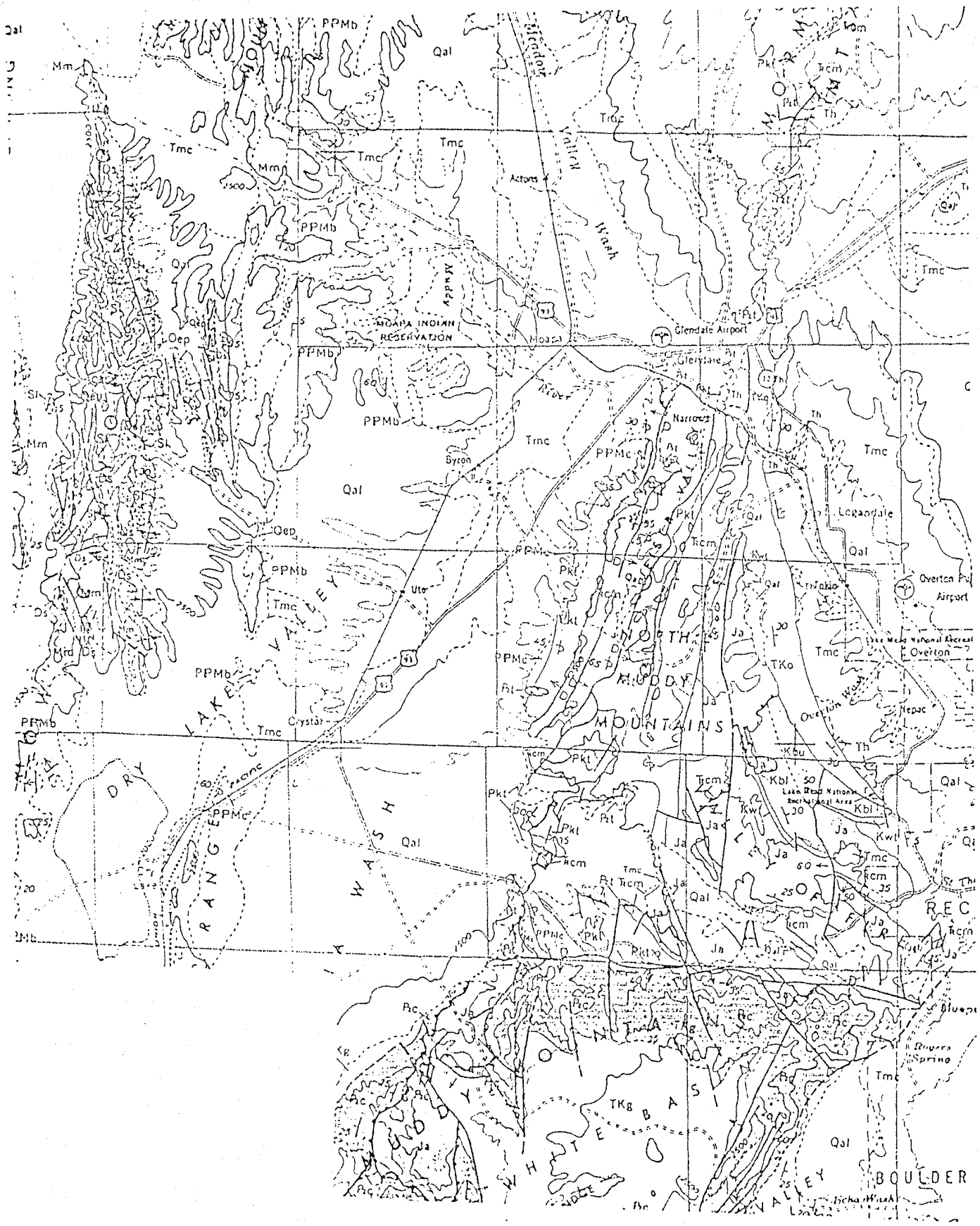


Figure 2 Geological Map at a Scale of 1:250,000

DESCRIPTION OF MAP UNITS

Qal	Alluvium
Ql	Las Vegas Formation
Tv	Volcanic rocks
Tb	Volcanic rocks
Tmc	Muddy Creek Formation
Th	Horse Spring Formation
TKgr	Intrusive Rocks
Tki	Intrusive Rocks
Tkci	Intrusive Rocks
Tkg	Gale Hill Formation
TKo	Overton Fanglomerate
Kt	Thumb Formation
Kbu	Baseline Sandstone
Kbl	Baseline Sandstone
Kwt	Willow Tank Formation
Ja	Aztec sandstone
Trcm	Chinle and Moenkopi Formation
Pkt	Kaibab, Toroweap and Coconino Formations and red beds, undivided
PPMb	Bird Spring Formation
PPMc	Calville Formation
Mr	Roger Spring Limestone
Mm	Monte Cristo Formation
MD	Rogers Spring Limestone and Muddy Peak Limestone undivided
Ds	Sultan Limestone
Pzc	Paleozoic carbonate rocks undiffer
Pzt	Remmants of thrust plate
Dmp	Muddy Peak Limestone
Oep	ElySprings Dolomite, Eureka Quartzi and Pogonip Group, undifferentiatec
Dcg	Goodsprings Dolomite
Cdl	Dolomite and Limestone Undiffer.
Cu	Quartzite shale and Limestone undif
Ꞓsj	Stirling Quartzite and Johnnie Formation undivided

Contact

Fault

Thrust Fault

Low-Angle Fault

Anticline

Syncline

TABLE I

The Arrowhead Canyon syncline is the major structural feature of the range. It is a north trending syncline with its axis along the eastern flank of the main Arrow Canyon Range. A more detailed description of the geology of the Arrowhead Canyon Range is available from the work of R. L. Langenheim, Jr., et al. (1962).

There is a significant difference between the rocks of the Arrowhead Canyon Range and the rocks which crop out in northern Muddy Mountains that border the study area to the east. Rocks of the Arrowhead Range were formed in a miogeosynclinal environment while the rocks in the northern Muddy Mountains are characteristic of a shelf-like environment.

The northern Muddy Mountains form a low elevation, triangular mass 17 miles long that is bounded along its widest point to the south by the Arrowhead fault. To the north the range tapers to 4 miles in width where it terminates in the Muddy River Valley. Along the southern boundry a thin sequence of limestones and dolomites of Paleozoic age have survived along the margin of a thrust. Further to the north a series of Permian through Triassic rocks form a narrow deformed belt that trends to the northeast. The belt is composed of large folds overturned to the east leaving Kaibab limestones at the top forming ridges and red beds of the Moenkopi formation at the bottom of the folds (Longwell, C. R. 1949).

Along the western margin of the Northern Muddy Mountains and extending into and over large reas of the three townships in the study area are units of the Muddy Creek Formation (Longwell, C. R. 1962).

MINERAL RESOURCES

Numerous mining claims for borate or gypsum were staked in and around the three townships included in the study area during the 1920's and 1930's. None of these claims are active at this time.

The White Star Mine and its related milling operation was located in Sections 2-11, T15S, R66E at the northwest corner of the Muddy Mountains, about one mile southeast of Glendale. The rail siding and loading dock used for this operation are still intact. According to Papke (in press) the White Star Plaster Co. produced plaster from 1919 until 1923 at a mill in the northwest corner of section 11. Initially, the gypsum was mined at or near the mill site which includes the area in section 2 near the Union Pacific right-of-way. The largest of these gypsum workings is a pit about 75 feet in diameter. The gypsum deposits occurred in flat lying sediments in the Muddy Creek Formation of Tertiary age. The beds ranged in thickness from several feet to more than 20 feet and were underlain by clays and silt. Papke described the outcrop area as being uneroded parts of an old pediment surface, bounded by Highway 15 on the west and on the east by older sediments. The outcrop area is about 500 feet wide and 4000 feet long and extends north of the Union Pacific right-of-way (see figure 3).

After 1921, gypsum was supplied to the White Star Mill by the White Star #2 Mine that is located in the northwest corner of section 18, T15S, R67E., about 2.5 miles southeast of the mill. Production from the #2 mine continued until 1923 when the mill closed. During that time the mine produced more than 100,000 short tons of gypsum.

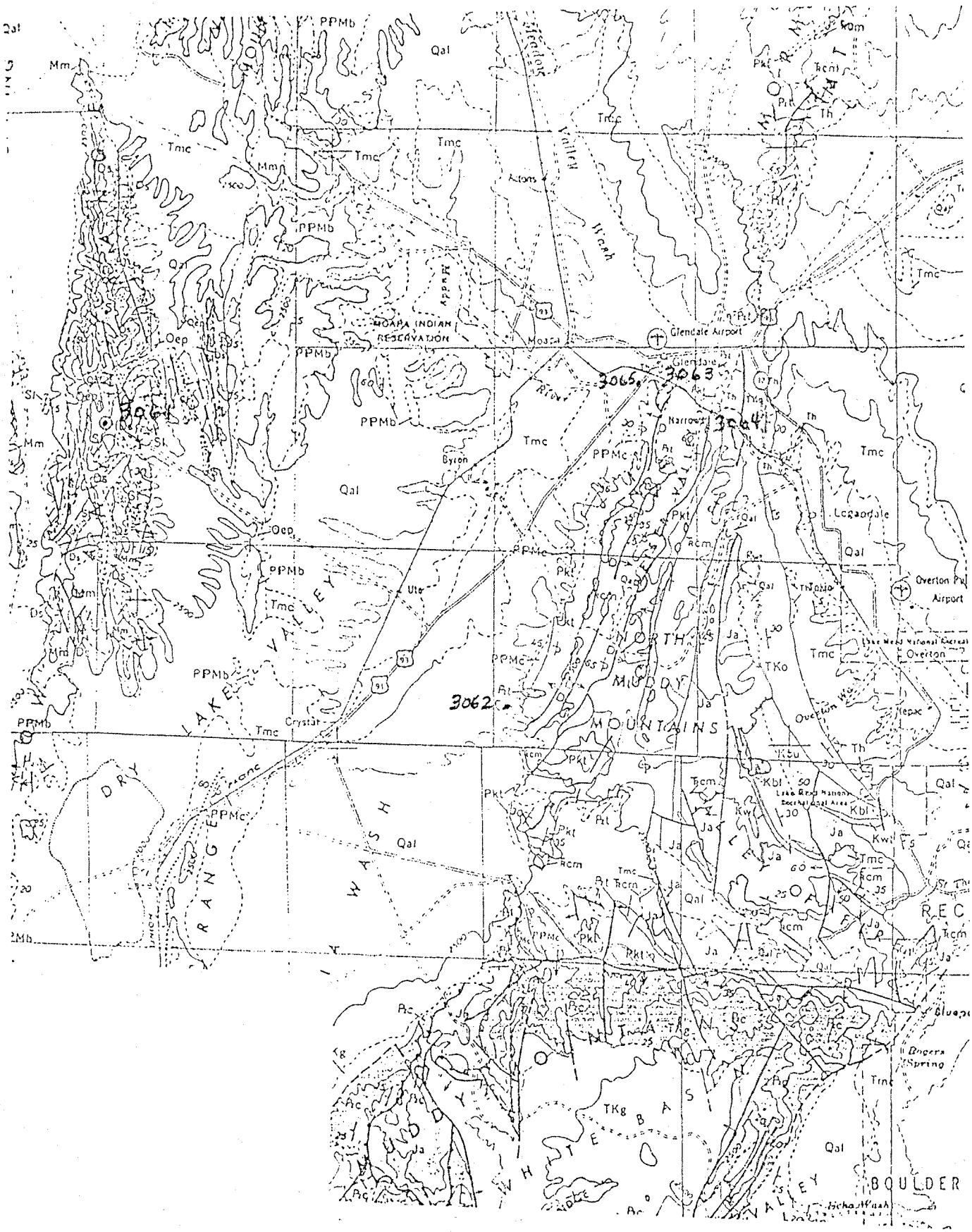


Figure 3. Sample location sites.

The mine workings are along a N-S trending gypsiferous bed in the Lower Permian Kaibib Formation that is exposed by open stopes for about 1500 feet along the strike length and 100 feet down the dip slope. The bed dips at about 20 to 30°E.

The footwall near the stopes consist of reddish brown sandstone while the hanging wall is composed of sandstone capped by a massive gray limestone. Approximately half of the gypsum bed is left in place serving as ore pillars within the open-stopes. In the years since mining ceased the ceilings in the stopes have been subjected to extensive spalling and huge slabs now litter the stope floor. Papke (in press) reports the gypsum to be fairly pure with only small amounts of quartz, montmorillonite and a trace of anhydrite in the grayish-white material (see figure 3). This was a sizeable operation and must have been the major source of the gypsum for the local mill and probably accouted for most of the 3000 tons per month produced at the White Star mill in 1922 (Vanderburg, W. O., 1937).

To the south in section 30, T16S, R66E a series of prospect-pits and dozer cuts along the western edge of the northern Muddy Mountains mark other sites of gypsum exploration during the 1920's. The prospects are along the contact with the upper protion of the Muddy Creek Formation in loosely consolidated sediments, portions of which have massive translusent clusters of gypsum up to several inches in length. The deposits appear to be restricted to narrow horizons that are discontinuous in length and are therefore not economic (see figure 3).

In early 1970, a wildcat oil well was completed a little over 2 miles northeast of the Ute rail crossing in the NE1/4, NE1/4 of section 35, T15S, R65E (see figure 4). The log reported 6 feet of hard cement rock (caliche) at the top of the hole and then from 6-95 feet an interval of "white gypsum formation." From 95-100 they encountered sand and some water and thereafter the section was brown clay and mixed sand to a total depth of 1625 feet. The gypsum appears to have been an upper portion of the Muddy Creek Formation.

It seems fair from the aformentioned data that there exists a strong likelyhood that other gypsum deposits associated with the Muddy Creek Formation could be located within the boundaries of the study townships. The best localities would be along the eastern margins of T15S, and T16S Range 65E.

The Ute railcrossing is also the location of a mill site that processed quartzite for silica during the early 1940's. The mill was owned by the Tiffany Minerals Co. who operated a mine about 10 miles to the northwest. The mine workings are restricted entirely to the Eureka Quartzite which is exposed along the eastern margin of the Arrowhead Canyon Range. At the mine, the quartzite is lowest formation exposed and is very near the contact with the stream bed. Limestones, dolomite and siltstone form thin beds above the quartzite. The formations strike N15W and dip about 25°E (see figure 3).

Mining was done from an elliptically-shaped bench cut into the side of the exposed quartzite. The bench was 250 feet long, 135 feet wide and had a

vertically cut back of 35-40 feet (see figure 3). Some crushing at the mine site is in evidence from tailings and cement foundations but the main milling was done near the Ute rail crossing. Large cement foundations mark the mill site located a few hundred yard west of the siding.

Longwell (1979) reported that the exact nature of the finished products produced from the silica rich quartzite was not known but he thought the chemical and physical properties of the material made it suitable for low-alumina silica refractories and metallurgical stone. He also reported the extreme hardness and abrasiveness of the rock resulted in such high cost that the operation was not economic. The possibility of additional sources of the silica in the Eureka Quartzite along the western margin of T16S, R64E was not tested to do limited access but should be considered as a possibility.

Approximately 1/3 of section 18, T16S, R64E within the study area is privately owned and is adjoined to 10 claims currently held by Genstar Cement Lime. The claims were previously held by the Flintkote Co. (See Appendix). The 10 millsite claims surround the south-eastern corner of the privately owned land and are currently valid. The privately held ground is reported to be situated on limestone that would make good quality cement. Similar conditions may also exist with the study townships as limestones crop out along the western and southern boundary of T16S, R64E and T15S, R65E.

The potential for sand and gravel is present in all three townships but seems particularly attractive along California Wash near Byron where large

scale deposits of good quality material are in close proximity to the junction of Highways 12, 15 and 93 and the Union Pacific Railroad.

A listing of mining claims filed inside the townships since 1957 is presented in the appendix. Many of the claims are no longer valid or active but they represent areas of previous interest and are presented here for historical reference.

There are no known metallic mineral deposits within the three study townships but there is one area of interest exposed in a road cut along Highway 15 about 1/2 mile southwest of Arrowhead. The road cut is thought to be in red beds of the Kaibab Formation of Mesozoic age. The exposed beds are altered claystones and limestones up to several feet thick forming a dome like structure that has been cut by a north-easterly, nearly vertical fault. The fault has served as a conduit for hydrothermal solutions high in silica, calcium, and iron. Hydrothermal brecciation is prominent along the fault trace and extends several feet into the adjacent rock. Extensive alteration extends for several hundred yards along the exposed road-cut. Similar rocks were seen east and west of the road-cut along what was thought to be the fault trace. The extent of the hydrothermal mineralization was not fully determined, but unidentified sulfides were present (see figure 3).

OIL AND GAS POTENTIAL

A search of the Bureau of Land Management records revealed active oil and gas leases on most of T16S and about half of T15S, R65E (see figure 4).

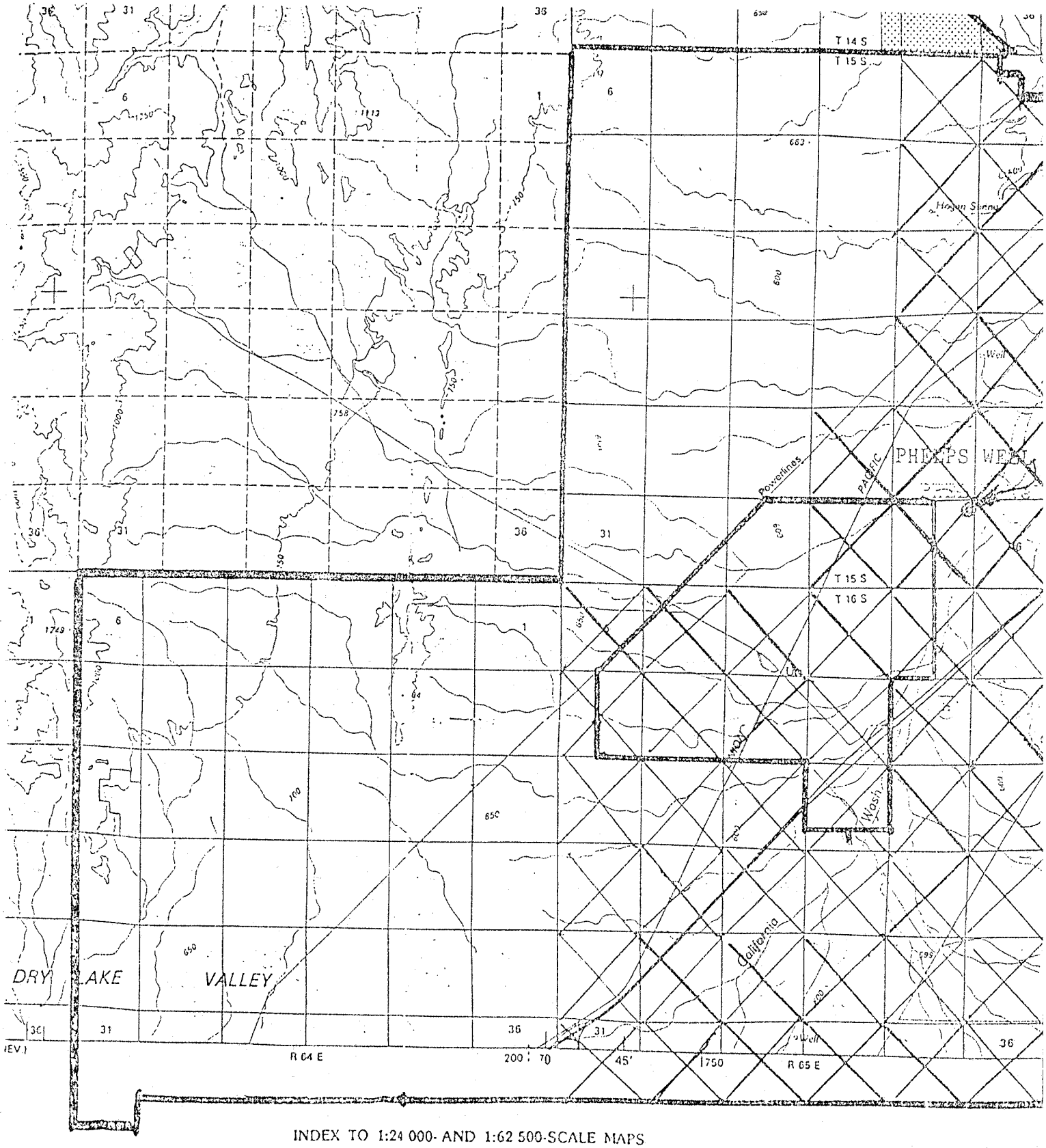


Figure 4. Active Oil and Gas Leases within the Townships

The contiued interest is part of the exploration along the Cordilleran overthrust belt, an important structural province in many western states. A number of wells have been drilled to the south and east but none have yet been productive. The entire area remains active however and exploration drilling is expected to continue.

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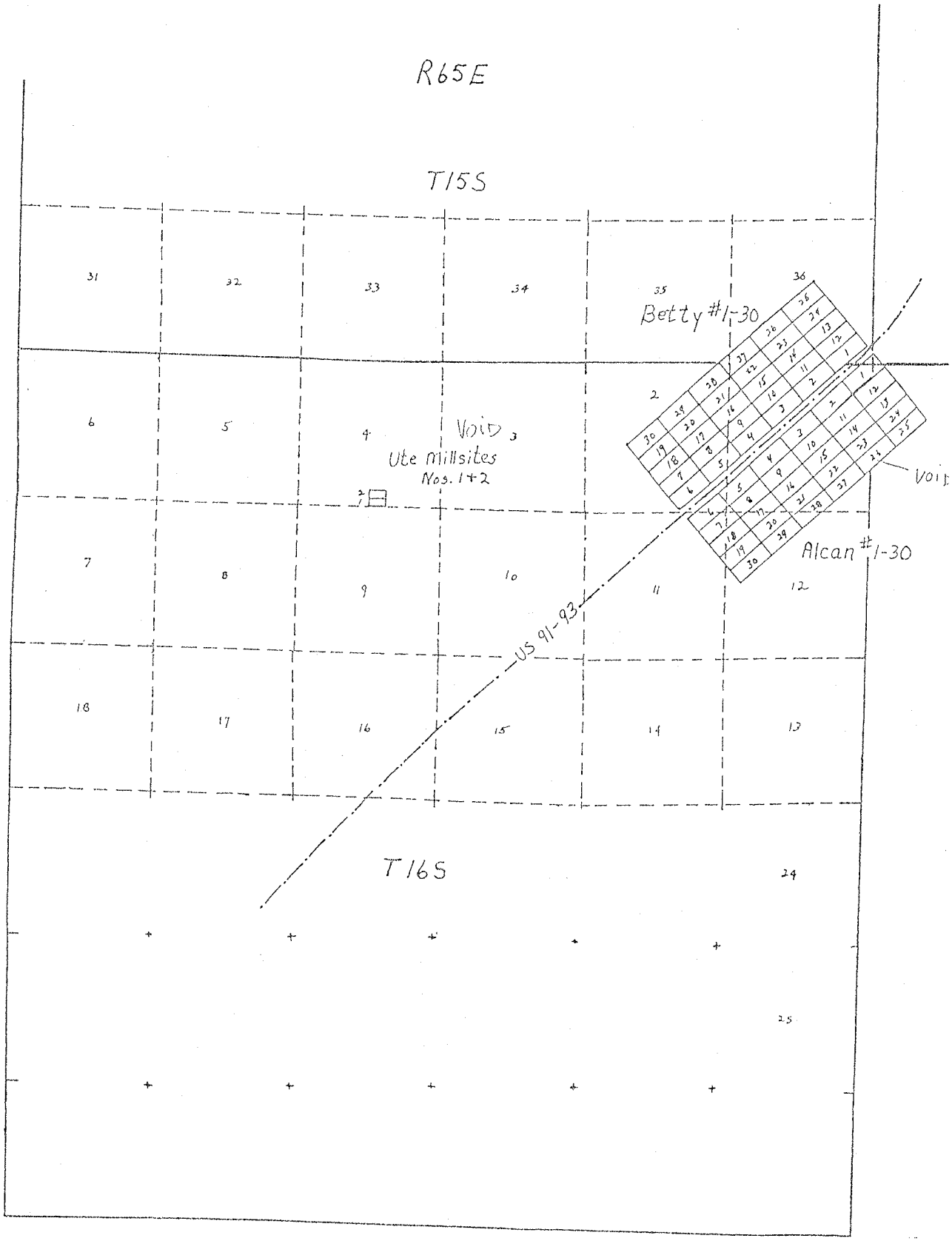
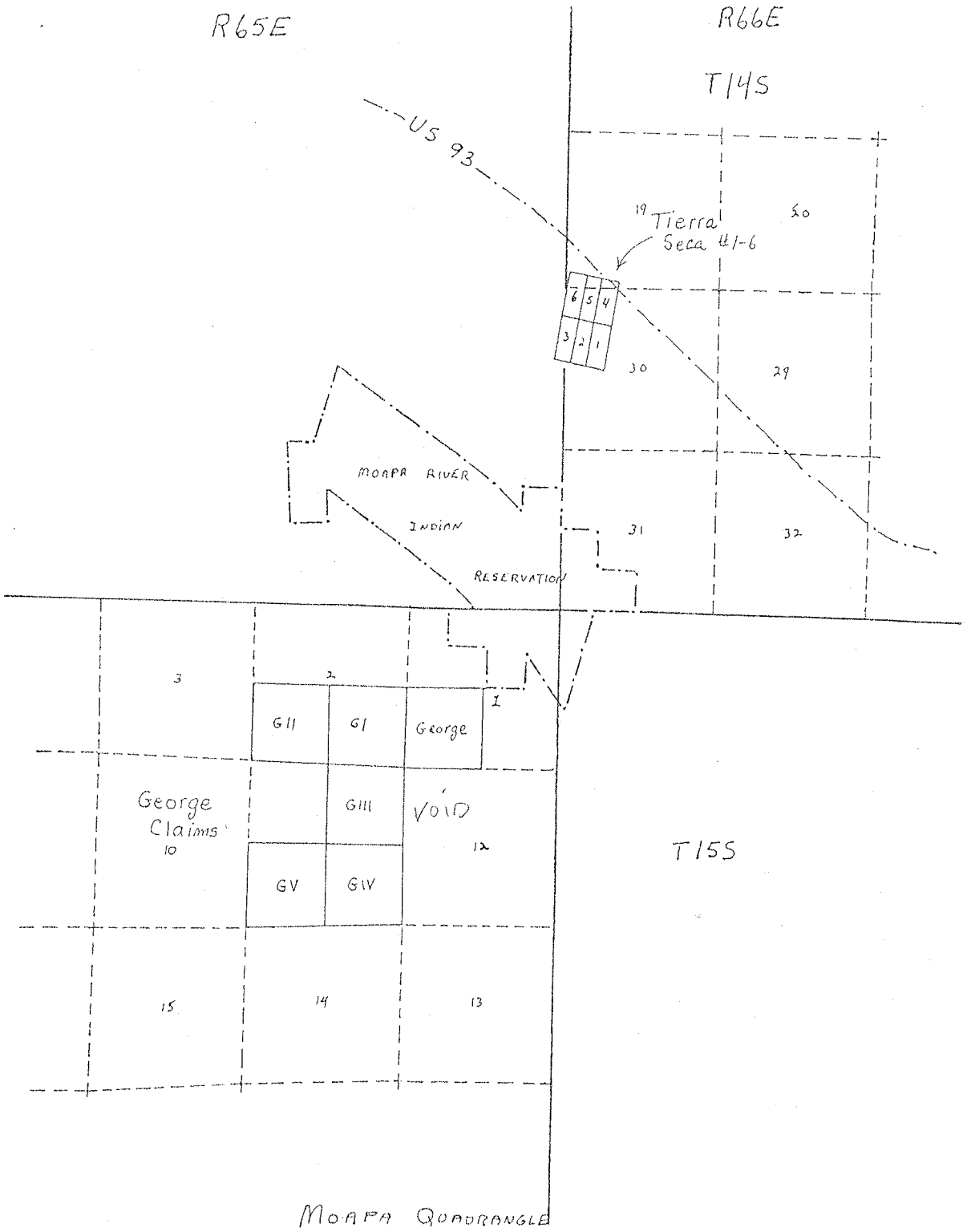


MOAPA QUADRANGLE
15' SERIES



MOAPA QUADRANGLE
15' SERIES

15 S 64 E 3 ALL

B 02

REPORT DATE: SEP 13, 1985 — UNITED STATES DEPARTMENT OF THE INTERIOR — PAGE NO: 11624
STATE: NEVADA — PCN: L1892PP1 — BUREAU OF LAND MANAGEMENT

MERIDIAN: MOUNT DIABLO — GEOGRAPHIC INDEX

TWNSHP	RANGE	SEC	SUBDIV	GTY	DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK/PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
15 S	64 E	3	ALL	3	5	102695	PL	UTE # 5	RICHARDS WILLIAM D	102685		2/08/1958	1984	
		5	SE			146520	LD	ONEO # 3	TEXAS MINING CO	146519	0;95	3/04/1980	1980	
		8	NE			146519	LD	ONEO # 2		146519	0;78	3/04/1980	1980	
		10	SE			102693	PL	UTE # 3	J P SIMONS ASSOCIATE	102685		2/08/1958	1984	
									SIMONS JOHN P					
									THOMAS NELSON G					
									KEITH ROBERT E					
									RHOADES RICHARD E					
									RICHARDS WILLIAM D					
			ALL			102694	PL	UTE # 4	J P SIMONS ASSOCIATE	102685		2/08/1958	1984	
									SIMONS JOHN P					
									THOMAS NELSON G					
									KEITH ROBERT E					
									RHOADES RICHARD E					
									RICHARDS WILLIAM D					
		15	ALL			102692	PL	UTE # 2	J P SIMONS ASSOCIATE	102685		2/08/1958	1984	
									SIMONS JOHN P					
									THOMAS NELSON G					
									KEITH ROBERT E					
									RHOADES RICHARD E					
									RICHARDS WILLIAM D					
			NE,SW			102693	PL	UTE # 3	J P SIMONS ASSOCIATE	102685		2/08/1958	1984	
									SIMONS JOHN P					
									THOMAS NELSON G					
									KEITH ROBERT E					
									RHOADES RICHARD E					
									RICHARDS WILLIAM D					
		22	N2			102691	PL	UTE # 1	J P SIMONS ASSOCIATE	102685		2/08/1958	1984	
									SIMONS JOHN P					
									THOMAS NELSON G					
									KEITH ROBERT E					
									RHOADES RICHARD E					
									RICHARDS WILLIAM D					
16 S	64 E	17	SW			18861	MS	JORDAN # 1	GENSTAR CEMENT LIME	18861	875;0	1/10/1978	1985	
			SW			18862	MS	JORDAN # 2		18861	0;0 875;0	1/10/1978	1985	SE
			SW			18863	MS	JORDAN # 3		18861	0;0 875;0	1/10/1978	1985	SE
			SW			18864	MS	JORDAN # 4		18861	0;0 875;0	1/10/1978	1985	SE
			SW			18865	MS	JORDAN # 5		18861	0;0 875;0	1/10/1978	1985	SE
		19	NE			18868	MS	JORDAN # 8		18861	0;0 875;0	1/10/1978	1985	SE
			NE			18869	MS	JORDAN # 9		18861	0;0 875;0	1/10/1978	1985	SE

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16 S 64 E 19 NE

C 02

REPORT DATE: SEP 13, 1985 — UNITED STATES DEPARTMENT OF THE INTERIOR — PAGE NO: 11625
STATE: NEVADA — PCN: L1892PP1 — BUREAU OF LAND MANAGEMENT

MERIDIAN: MOUNT DIABLO — GEOGRAPHIC INDEX

TWNSHP	RANGE	SEC	SUBDIV	GTY	DIST	SERIAL NO.	CASE TYPE	CLAIM NAME/NUMBER	CLAIMANT(S)	LEAD FILE	COUNTY BOOK/PAGE	LOCATION DATE	LATEST ASSMT-YR	CASE CLOSED
16 S	64 E	19	NE	3	5	18870	MS	JORDAN # 10	GENSTAR CEMENT LIME	18861	0;0 875;0	1/10/1978	1985	SE
		20	NW			18866	MS	JORDAN # 6		18861	0;0 875;0	1/10/1978	1985	SE
			NW			18867	MS	JORDAN # 7		18861	0;0 875;0	1/10/1978	1985	SE
17 S	64 E	15	SW			28440	PL	LAS VEGAS PCC # 1	EI WORLDWIDE TRADING	28440	934;0	7/25/1978	1984	
		21	NE			28442	PL	LAS VEGAS PCC # 3		28440	934;0	7/25/1978	1984	
			SE			28444	PL	LAS VEGAS PCC # 5		28440	934;0	7/25/1978	1984	
		22	NW			28441	PL	LAS VEGAS PCC # 2		28440	934;0	7/25/1978	1984	
			SW			28443	PL	LAS VEGAS PCC # 4		28440	934;0	7/25/1978	1984	
		26	NW			28445	PL	LAS VEGAS PCC # 6		28440	934;0	7/25/1978	1984	
			NE			28446	PL	LAS VEGAS PCC # 7		28440	934;0	7/25/1978	1984	
			NW			28447	PL	LAS VEGAS PCC # 8		28440	934;0	7/25/1978	1984	
			SW			28448	PL	LAS VEGAS PCC # 9		28440	934;0	7/25/1978	1984	
			SE			28449	PL	LAS VEGAS PCC # 10		28440	934;0	7/25/1978	1984	
		33	NE			28450	PL	LAS VEGAS PCC # 11		28440	934;0	7/25/1978	1984	
			NW			28451	PL	LAS VEGAS PCC # 12		28440	934;0	7/25/1978	1984	
			SE			28452	PL	LAS VEGAS PCC # 13		28440	934;0	7/25/1978	1984	
			SW			28453	PL	LAS VEGAS PCC # 14		28440	934;0	7/25/1978	1984	
18 S	64 E	4	NE			28454	PL	LAS VEGAS PCC # 15		28440	934;0	7/25/1978	1984	
			NW			28455	PL	LAS VEGAS PCC # 16		28440	934;0	7/25/1978	1984	
			NW			28456	PL	LAS VEGAS PCC # 17		28440	934;0	7/25/1978	1984	
			SW			28457	PL	LAS VEGAS PCC # 18		28440	934;0	7/25/1978	1984	
			SW			28458	PL	LAS VEGAS PCC # 19		519769	934;0	7/25/1978	1984	
			SW			28459	PL	LAS VEGAS PCC # 20		519769	934;0	7/25/1978	1984	
		7	SE			91025	LD	VEGA # 15	US STEEL CORP	91025	916;0	10/12/1968	1984	
			SE			91026	LD	VEGA # 16		91025	916;0	10/12/1968	1984	
			SW			91032	LD	VEGA # 31		91025	916;0	10/13/1968	1984	
			SW			91033	LD	VEGA # 32		91025	916;0	10/13/1968	1984	
		8	NW			28468	PL	LAS VEGAS PCC # 33	EI WORLDWIDE TRADING	28440	934;0	7/25/1978	1984	
			SW			28469	PL	LAS VEGAS PCC # 34		28440	934;0	7/25/1978	1984	
			SE			28471	PL	LAS VEGAS PCC # 36		28440	934;0	7/25/1978	1984	
			NE			28472	PL	LAS VEGAS PCC # 37		28440	934;0	7/25/1978	1984	
		9	SE			28460	PL	LAS VEGAS PCC # 21		28440	934;0	7/25/1978	1984	
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			SW			28463	PL	LAS VEGAS PCC # 24		28440	934;0	7/25/1978	1984	
		16	SE			28464	PL	LAS VEGAS PCC # 25		28440	934;0	7/25/1978	1984	
			SW			28465	PL	LAS VEGAS PCC # 30		28440	934;0	7/25/1978	1984	
		17	SW			28466	PL	LAS VEGAS PCC # 31		28440	934;0	7/25/1978	1984	
			NW			28467	PL	LAS VEGAS PCC # 32		28440	934;0	7/25/1978	1984	
			NE			28470	PL	LAS VEGAS PCC # 35		28440	934;0	7/25/1978	1984	
		18	NE			91027	LD	VEGA # 17	US STEEL CORP	91025	916;0	10/12/1968	1984	
			NE			91028	LD	VEGA # 18		91025	916;0	10/12/1968	1984	
			NE			91029	LD	VEGA # 19		91025	916;0	10/12/1968	1984	

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Sample Description

Sample Number	Location	Description
3061	Quad: Arrow Canyon 15' Sec: NW¼ 18 T: 15S R: 64E UTM: 4055500 N 0690800 E Tiffany Mine Moapa Reservation Area	Selected from a bench in a quar very white Prospect Mountain quartzite with only minor fe-ox coatings along fractures..fined grained..massive
3062	Quad: Ute 7½' Sec: 30 T: 16S R: 66E UTM: 4043240 N 0710520 E Prospect pits Moapa Reservation Area	Selected from beds in prospects Massive, translusent crystals o gypsum in loosely consolidated portions of the Muddy Creek For mation.
3063	Quad: Moapa East 7½' Sec: 2-11 T: 15S R: 66E UTM: 4059380 N 0716800 E White Star Moapa Reservation Area	Selected from open cuts in flat lying gypsite beds forming a ca rock..in Muddy Creek Formation clays including montmorillonite locally.
3064	Quad: Moapa East 7½' Sec: NW¼ 18 T: 15S R: 67E UTM: 4056940 N 0719725 E White Star #2 Moapa Reservation Area	Selected from inside open-stope of massive gypsiferous sandston approximately 25 feet thick.. white-grayish white, fine-grain clay particles Montmorillonite(
3065	Quad: Moapa East 7½' Sec: SW¼ 2 T: 15S R: 66E UTM: 4059085 N 0716240 E Road Cut Moapa Reservation Area	Selected from a road-cut.. silicified sediments from hydro thermally altered zone along fault..brecciated in vicinty of fault strong Fe-oxides
	Quad: Sec: T: R: UTM: N E	
	Quad: Sec: T: R: UTM: N E	
	Quad: Sec: T: R: UTM: N E	
	Quad: Sec: T: R: UTM: N E	

PROPERTY NAME: White Star Mine

OTHER NAMES: Sample site 3063

MINERAL COMMODITY(IES): Gypsum

TYPE OF DEPOSIT:

ACCESSIBILITY: Good dirt road east of Arrowhead one-half mile

OWNERSHIP: Unknown

PRODUCTION: From 1919-1923 according to Vanderburg

HISTORY: Mining and Mill site were combined originally in section #2..produced up to 3000 tons per month in 1922..much of the production comming from the White Star #2

County: Clark

Mining District: Moapa Res. Area

AMS Sheet: Las Vegas

Quad Sheet: Moapa East 7½'

Sec. 2-11, T 15S, R 66E

Coordinate (UTM):

North 4 0 5 9 3 8 0 m

East 0 7 1 6 8 0 0 m

Zone

DEVELOPMENT: Production and mine workings are in gypsiferous beds below a cap rock at or near the top of the Muddy Creek Formation

ACTIVITY AT TIME OF EXAMINATION: None

GEOLOGY: The gypsum deposits are in flat lying beds no more than 20 feet thick that have survived the erosion of the Muddy Creek Formation. Papkee (in pre described the gypsite deposits as lying between a cap rock and clay lenses in uneroded parts of an old pediment bounded on the west by Highway 5 and on the east by Northern end of the Muddy Mountains. Mine workings and prospects that supplied the old mill initially extend from section 2 south into sec.11 The largest of these workings is a pit 75 feet in diameter in section 11. The outcrop area according to Papke, forms an elongated wedge 500 feet wide at the southern end to 4000 feet long north-south, extending northward beyon the Union Pacific Railroad track. Besides remnants of the mill a loading platform is still intact on the southern margin of the railroad right-away.

Photo's 4 and 5.

REMARKS:

REFERENCES: Lincoln, C. F., (1923) Mining districts and mineral resources of Nev.
Papke K., (in Press) Gypsum deposits of Nevada.

EXAMINER: Jack Quade

DATE VISITED: 11-20-85

PROPERTY NAME: White Star NO. 2 Mine

OTHER NAMES: Sample Site 3064

MINERAL COMMODITY(IES): Gypsum

TYPE OF DEPOSIT: Sedimentary

ACCESSIBILITY: Approximately 3 miles southeast of Arrowhead via railroad right-away

OWNERSHIP: Formerly the White Star Plaster Co.

PRODUCTION: Produced in 1921 and 1922

HISTORY: Production estimated to be over 100,000 short tons

County: Clark

Mining District: Moapa Res. Area

AMS Sheet: Las Vegas

Quad Sheet: Moapa East 7½'

Sec. NW¼ 18 T 15S R 67E

Coordinate (UTM):

North 4,0,5,6,9,4,0 m

East 0,7,1,9,7,2,5 m

Zone

DEVELOPMENT: Several north-south open pits from which open inclined open stopes where driven down-dip along the strike length for approximately 1500

ACTIVITY AT TIME OF EXAMINATION: None

GEOLOGY: The mine workings are along a N-S trending gypsiferous bed in the Lower Permian Kaibab Formation that is exposed by open-stopes for about 1500 along the strike length and 100 feet down the dip slope. The bed dip a about 20 to 30°E. The footwall near the stopes consists of a reddish brown sandstone while the hanging is composed of sandstone capped by massive gray limestones. Approximately half of the gypsiferous bed is left in place serving as ore pillars in along the open-stopes. In the years since mining ceased the ceilings in the stopes have been subject to extensive spalling which litters the floor of the stopes as huge sla Papke (in press) reports the gypsum to be fairly pure with only small amounts of quartz, montmorillonite and a trace of anhydrite in the grayish-white material. This was a sizable operation and must have bee the major source of the gypsum for the local mill and must of accounted for most of the 3000 tons per month produced in 1922.

Photo's 13, 14 and 15.

REMARKS:

REFERENCES:

Papke., K. G. (in press) Gypsum in Nevada)

Lincoln, F. M. (1923) Mining districts and mineral resources in Nevada

Vanderburg, W. O. (1937) Reconnaissance of Mining districts in Clark County Nevada: U. S. Bureau of Mines Information Circ. 6964.

EXAMINER: Jack Quade and Joe Tingley

DATE VISITED: 11-20-85

PROPERTY NAME: Gypsum Prospects

OTHER NAMES: Sample site 3062

MINERAL COMMODITY(IES): Gypsum

TYPE OF DEPOSIT: Sedimentary

ACCESSIBILITY: Five miles of poor dirt road east of Highway #15

OWNERSHIP: No longer active

PRODUCTION: Minor if any.

HISTORY: Appears to be over 30 years old.

County: Clark

Mining District: Moapa Res. Area

AMS Sheet: Las Vegas

Quad Sheet: Ute 7½'

Sec. 30, T 16S, R 66E

Coordinate (UTM):

North 4|0|4|3|2|4|0 m

East 0|7|1|0|5|2|0 m

Zone

DEVELOPMENT: Dozer-cuts and prospects in upper portion of the Muddy Creek Formatio

ACTIVITY AT TIME OF EXAMINATION: None

GEOLOGY: A series of prospect pits and dozer-cuts along the western edge of the Muddy Mountains range front near the contact with the upper portion of the Muddy Creek Formation of Tertiary age. The prospecting is in loose consolidated sediments that have massive translusent cluster of gypsum crystals up to several inches in length. The deposit appears to be restricted to narrow horizons that are discontinous in length and are therefore not economic.

Photo 9.

REMARKS:

REFERENCES: Longwell, R. L. Jr., 1965 Geology and Mineral Deppsits of Clark County, Nevada: Bureau of Mines and Geology., Bulletin 62.

EXAMINER: Jack Quade

DATE VISITED: 11-19-85

PROPERTY NAME: Tiffany Mine

OTHER NAMES:

MINERAL COMMODITY(IES): Silica

TYPE OF DEPOSIT: Massive bedded deposit

ACCESSIBILITY: Good dirt road west of Ute crossing

OWNERSHIP: Tiffany Minerals Co.

PRODUCTION: Is not known but bench-cut is considerable

HISTORY: Mining and milling was done in 1940's Some crushing was done at the mine but the main mill-site was next to the Ute rail crossing

County: Clark

Mining District: Moapa Reser. Are

AMS Sheet: Las Vegas

Quad Sheet: Arrow Canyon 15

Sec. NW¼ 18, T 15S, R 64E

Coordinate (UTM):

North 4|0|5|5|5|0|0 m

East 0|6|9|0|8|0|0 m

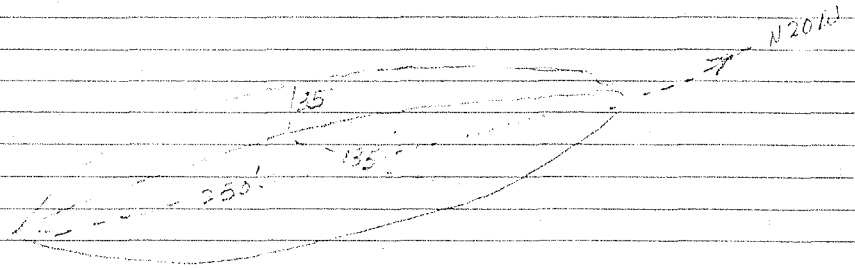
Zone

DEVELOPMENT: Mining was done from an elliptically shaped bench 250 feet long and 135 feet wide with vertically cut back of 35-40 feet.

ACTIVITY AT TIME OF EXAMINATION: None

GEOLOGY: The mine workings are restricted entirely to the Prospect Mountain Quartzite which is exposed along the eastern portion of the Arrow Canyon Range. At the mine the quartzite is the lowest fromation exposed and is very near contact with the valley fill. Limestones, dolomite and siltstone form thin beds above the quartzite. The quartzite stikes slightly west of north and d about 25°E.

Some crushing at the mine site is in evidence from tailings and cement foundations but the main milling was done near the Ute rail-crossing. Large scale cement foundations mark the mill site a few hundred yards to the west of the Union Pacific rail siding about 11 miles to the east of the mine.



Photo's 6, 7 and 8.

REMARKS: Longwell, C. R., (1979) reported that the exact nature of the finished products produced from the silica rich quartzite was not known but he thought the chemical and phyiscal proporties of the material make it suitable for low-alumina silica refractories and metallurgical stone. He also reported the extreme hardness and abrasiveness of the rock, resulted in such high preparation and maintenance cost that the operation was not economic.

REFERENCES: Murphy, T. D., 1954, Silica resources of Clark County Nevada: Nevada Bureau of Mines Bull. 55.

EXAMINER: Jack Quade

DATE VISITED: 11-19-85

PROPERTY NAME: Road Cut

OTHER NAMES: Sample Site 3065

MINERAL COMMODITY(IES): Gypsum

TYPE OF DEPOSIT: Hydrothermal

ACCESSIBILITY: Along Highway 15 about 1/3 mile southwest of Arrowhead

OWNERSHIP: None

PRODUCTION: None

HISTORY: Exposed during highway construction

County: Clark

Mining District: Moapa Res. Area

AMS Sheet: Las Vegas

Quad Sheet: Moapa 7½'

Sec. SW¼ 2, T 15S, R R66E

Coordinate (UTM):

North 4 0 5 9 0 8 5 m

East 0 7 1 6 2 4 0 m

Zone

DEVELOPMENT: None

ACTIVITY AT TIME OF EXAMINATION: None

GEOLOGY: The road cut is within the red bed of the Kaibab Formation of Mesœic age. The exposed beds are altered claystones and limestones up to several feet thick that have been cut by a northesterly nearly vertical fault. The fault has served as a conduit for hydrothermal solustions high in silica, calcium and iron. Hydrothermal brecciation is prominent along the fault trace and extends several feet into the adjacent rock. Extensive alteration extends for several hundred feet along the exposed road cut. Gypsum was the only recognizabel mineral but unidentified sulfides were also present.

Photo's 18 and 19

REMARKS:

Sample 3065

REFERENCES:

EXAMINER: Jack Quade

DATE VISITED: 11-20-85

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Nevada Bureau of Mines and Geology
University of Nevada Reno
Reno, Nevada 89557-0088
(702) 784-6691

13 Dec 85

GEOCHEMICAL LABORATORY: Analytical Report

Client: Joe Tingley

Sample #: 3065

Gold: 4 ppb

Silver: 3.4 ppm

Copper: 9.0 ppm

Lead: 46 ppm

Zinc: 23 ppm

Arsenic: 278 ppm

Antimony: nd

Mercury: nd

P. Lechler

Paul J. Lechler
Chief Chemist/Geochemist