UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

JOINT REPORT OF EXAMINATION BY EXAMINING TEAM
REGION XIX

ROSA ALAN

VITRO MINERALS CORPORATION

Sweetwater and Fur Claims

Fremont County, Wyoming

Uranium

Joint Engineering and Geologic Report

By

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DMSA 4182

VITRO MINERALS CORPORATION
GEORGE AND VER CLAIMS
FREMONT COUNTY, WYOMING

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DMEA 4152

Vitro Minerals Corporation
George and Ver Group
Fremont County, Wyoming

INTRODUCTION AND SUMMARY

Vitro Minerals Corporation, P. O. Box 67, South Salt Lake City, Utah, applied to the Defense Minerals Exploration Administration for assistance in the exploration of the George and Ver groups of unpatented mining claims for uranium. These claims occupy parts of Secs. 22, 26, and 27, T. 33 N., R. 90 W., Sixth Principal Meridian, Fremont County, Wyo. The company application requests participation in a three phase exploration program consisting of a total of 61,800 feet of rotary non-core and EX core drilling at an estimated overall cost of $85,657.00. The proposed program would explore potential ore horizons of the upper Wind River formation.

A field examination was made on April 10, 1956 by an examining team consisting of R. E. Davis and M. H. Bergendahl, geologists, Geological Survey, and H. F. Robertson and G. M. Harrer, mining engineers, Bureau of Mines. The team was accompanied by D. L. Welsh, Division Geologist for Wyoming Vitro Minerals Corporation.

Preliminary work by the applicant shows the possibility of uranium ore in significant quantities on the subject property. Four radioactive anomalies were reported by the applicant and verified by the examining team. Three drill holes, located on the George 1 and the George 2 claims, cut mineralized zones two to four feet in thickness and assaying from 0.11 percent to 0.14 percent U_3O_8. These indications and the presence of nearby ore bodies are encouraging signs that minable ore reserves may be developed on the property.

The possibility of finding significant bodies of uranium ore similar to those of the Lucky Mc mine and Vitro mine is good.

A three-stage exploration program consisting of 473 rotary drilled near-ore holes totaling 76,130 feet is recommended at an overall cost of $64,494.50.

Government participation at 75 percent would be $48,120.88.

ACKNOWLEDGMENTS

The examining team was accompanied by Dave Welsh, geologist for Vitro Minerals Corporation. Various other employees of Vitro Minerals Corporation and the nearby Utah Construction Co. (Lucky Mc properties) were contacted for additional information concerning the area.

LOCATION, TOPOGRAPHY AND PHYSICAL FEATURES

The property included in the application consists of 18 unpatented claims in sections 22, 26, and 27, T. 33 N., R. 90 W., Sixth Principal Meridian, Fremont County, Wyoming (see Figure 1). They are reached from Riverton by traveling 1.5 miles southeast on paved State Highway 320; thence 1.5 miles south on paved County Sand Draw Road; thence 55.0 miles southeasterly on dirt Hudson-Pipeline Road to mining camp of Vitro Minerals Corp.

The claims are situated on a northerly trending slope at a mean altitude of 6,480 feet above sea-level and a relief of 120 feet over approximately one mile. The surface is cut by a few shallow, sandy washes.

Vegetation is limited to sagebrush, native grasses, and cacti. Temperatures range from below freezing in the winter to around 90° F. in the summer. Heavy rainstorms occur in the spring and summer. Winters sometimes accompanied by constant winds result in considerable drifting.

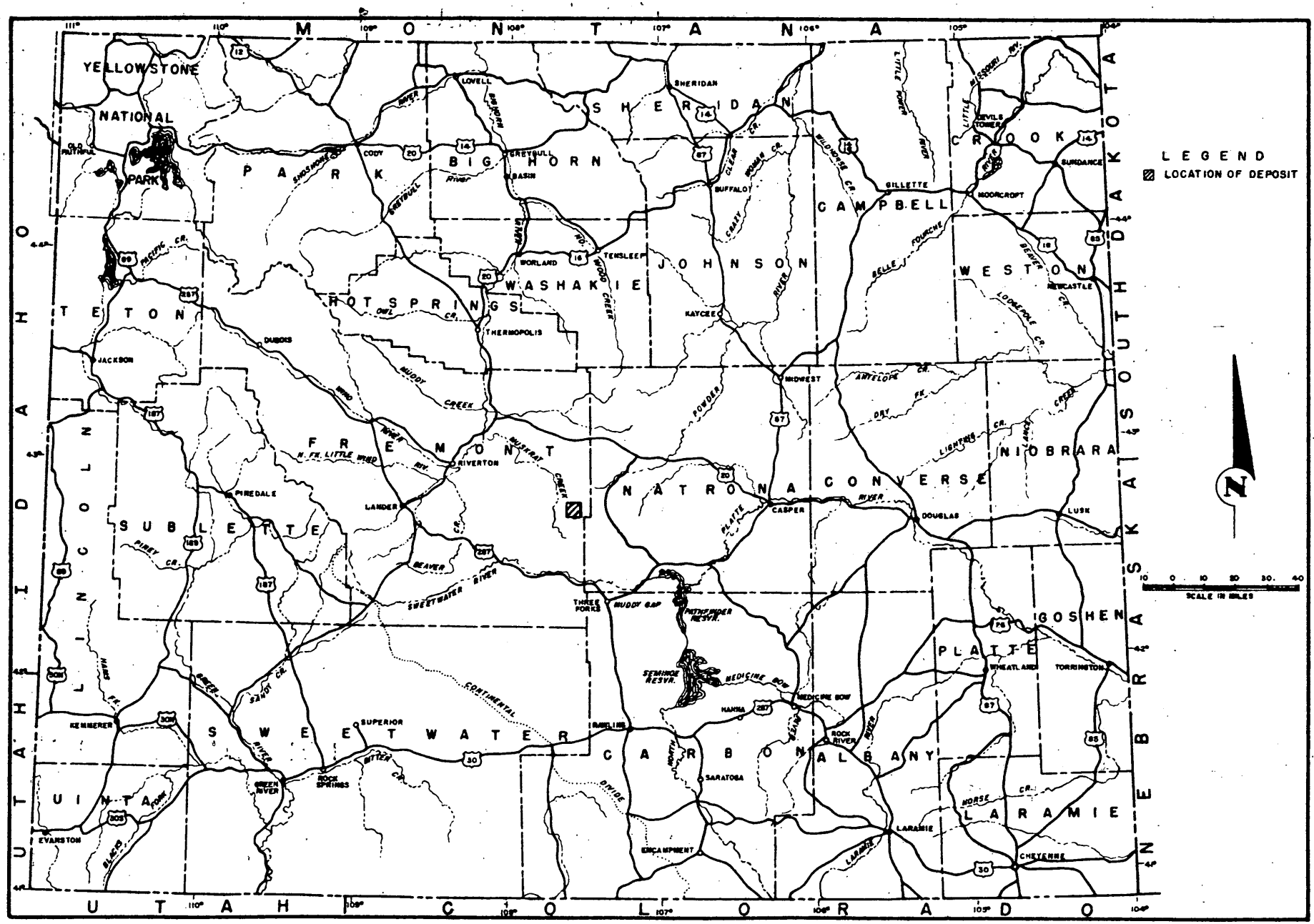

FIGURE 1 - LOCATION MAP, GEORGE AND VER CLAIM GROUPS, VITRO MINERALS CORPORATION, FREMONT COUNTY, WYO. DMEA 4182

Water for drilling and mining purposes can be obtained locally from sumps and pits in the adjoining workings. There are no power facilities locally. Power needed for the applicant's operations is generated by diesel or gasoline engines. Supplies and equipment can be obtained in Riverton. The AEC buying station is located at Riverton on a siding provided by the Chicago Northwestern Railroad and is 55 miles from the applicant's property.

HISTORY, PRODUCTION AND OWNERSHIP

The first discovery of commercial uranium ore in the Wind River formation in the Gas Hills district was made in September 1953 near the site of the present Lucky Mc Mine. There has subsequently been extensive exploration by both the U. S. Atomic Energy Commission and private companies. The exploration programs have developed several important producing mines. There has been no production, however, from the subject claims.

The location records of the George and Ver claim groups were checked in the County Recorder's office at Lander and the following information was obtained:

TABLE I

	Original Filing					Amended			Further Amended		
Claim		Book	Page	Re-located	Dis-covered	Book	Page	Date	Book	Page	Date
George	1	57	1	11/2/53	10/3/53	58	213	8/16/54	147	438	12/3/55
"	2	57	2	"	"	58	214	"	147	439	"
"	3	57	3	"	"	58	215	"	147	440	"
"	4	57	4	"	"	58	216	"	147	441	"
"	5	57	5	"	"	58	217	"	147	442	"
"	6	57	176	11/12/53	11/5/53	65	73	"	147	443	"
"	7	60	553	5/3/54	4/21/54	65	82	"	147	444	"
Ver	1	57	96	11/9/53	11/8/53	65	109	8/18/54	147	463	12/5/55
"	2	57	97	"	"	65	110	"	147	464	"
"	3	57	98	"	"	65	111	"	147	465	"
"	4	57	99	"	"	65	112	"	147	466	"
"	5	57	100	"	"	65	119	"	147	467	"
"	6	57	101	"	"	65	113	"	147	468	"
"	7	57	102	"	"	65	114	"	147	469	"
"	8	57	103	"	"	65	115	"	147	470	"
"	9	57	104	"	"	65	116	"	147	471	"
"	10	57	105	"	"	65	117	"	147	472	"
"	11	60	552	5/3/54	4/21/54	65	118	"	147	473	"

The field check and the examination of the records in the Fremont County Courthouse at Lander indicate that the 16 claims are valid and without conflicting claims. A map of the claims by Geo. J. Saylor, registered surveyor, was submitted by the applicant and correctly shows the claims as staked on the ground. George No. 7 and Ver No. 11 are fractional claims staked to cover a gap between the two groups of claims.

PRESENT STATUS

Exploration and Development

A total of 106 holes were drilled by the applicant on the subject property. Of this total, 102 holes were on the Ver group and 4 on the George Group. The average depth drilled was 34 feet with holes ranging in depth from 18 feet to 106 feet. Three of the holes on the George 1 and George 2 cut mineralized zones, two to four feet in thickness, and assaying from 0.13% to 0.16% U_3O_8. The uranium content of the drill cuttings was determined by fluorimetric assay. The remainder of the holes were essentially barren. However, the applicant believes that most of the holes were too shallow to penetrate the potential ore horizon.

An insured survey, conducted by the applicant, disclosed three ground anomalies which had not been tested by drilling. The anomalies, ranging from two to five times the normal background, were checked by the examining team and found to exist as stated by the applicant. A P.R.I. Model 111B Scintillator was used by the team in checking the anomalies.

Mining and Milling Equipment and Other Facilities

There is no mining or milling equipment on the subject property. However, the Vitro Minerals Corporation is operating a nearby property and would use equipment from that property for development of any ore reserves discovered on the subject property.

The Vitro mining camp is within one mile of the claims and would serve as housing for personnel used on the project.

GEOLOGY

Stratigraphy. — The sedimentary rocks that underlie the George and Ver groups of claims and the immediately adjacent areas consist of sandstones, claystones, shales, and conglomerates belonging to the Wind River formation of Early Eocene age. The Wind River formation was laid down on the rough topography of a deformed and eroded sequence of rocks of Mesozoic age.

No exposures of bedrock were seen on the applicant's property, but, in the pits of Vitro Minerals Corporation and Utah Construction Company (Lucky Mo mine), respectively, about 2,500 and 600 feet east of the east edge of Ver 1 and Ver 2 claims, and on the north-facing slope about 2,000 feet north of the groups, good exposures of parts of the Wind River were observed. The Wind River formation has been described in some detail by Zeller and others of the U. S. Geological Survey (1955, p. 14-19), and their report has been drawn upon freely to supplement information obtained during the field examination of the property.

The Wind River formation has, in the Gas Hills area, been divided into two units — a lower fine-grained facies and an upper coarse-grained facies. Known uranium deposits in the area occur in the lower part of the upper coarse-grained facies.

In general, the lower fine-grained facies consists of fine-grained sandstone, siltstone, claystone, and carbonaceous shale. The color of the unit generally is some shade of gray or grayish green. Zeller records the average thickness of the unit in the Gas Hills area as about 125 feet. The unit is exposed on the north-facing slope in the northwest quarter of section 22 (fig. 3). The lower unit has been encountered in drill holes in the area,

but there appears to be differences in the criteria employed by the drillers and geologists in establishing the contact between the upper and lower facies, which apparently is gradational in the area. When "bentonite" is encountered in a drill hole, it generally is accepted as belonging to the lower facies.

As shown on the geologic map (fig. 3), which was compiled from Zeller's field sheets, the lower facies is not universally present. Because the eroded surface upon which the Wind River formation was deposited rises rapidly to the south and east, the lower facies pinches out in these directions to points beyond which the upper facies rests directly on Mesozoic rocks. It is doubtful whether any appreciable thickness of the lower facies underlies the applicant's claims.

The upper coarse-grained facies is the ore-bearing unit in the Gas Hills area. It consists predominantly of cross-bedded, medium- to coarse-grained arkosic sandstone, conglomerate, and lesser amounts of siltstone, claystone, and shale. The sandstone beds generally are weakly cemented and appear quite permeable. The lithology changes rapidly, both laterally and vertically; individual beds thus cannot be traced for distances of more than a few hundred feet, and correlations from one locality to another are virtually impossible. Zeller gives the thickness of the upper unit of the Wind River formation as 600 feet where the entire unit is present. According to Zeller's structure contour map of the pre-Wind River erosion surface, probably not more than a total of 150 feet of Wind River, including both the upper and lower facies, underlies the applicant's claims.

Structure. -- The major structure in the area is the Gas Hills anticline (Dutton Basin anticline). The Gas Hills anticline is an asymmetric, northwest-plunging fold, pre-Wind River in age, upon the flanks of which the sediments comprising the Wind River formation were deposited (fig. 3). Post-

Wind River normal faulting in the area south of the Gas Hills probably has modified the initial dip of the Wind River formation to some degree.

The applicant's property lies on the western flank of the Gas Hills anticline in an area where the lower Wind River sediments rapidly pinch out against the steeply dipping western limb of the anticline, and the upper Wind River sediments thin toward the crest of the anticline. Erosion has stripped the Wind River sediments from the crest of the anticline about one mile to the east. The Wind River beds dip at angles of less than 4° to the northwest and south-southeast, based on Keller's geologic map and on observations in the Lucky Mc pit, east of the applicant's property.

Uranium deposits. — Uranium deposits in the Gas Hills area occur in the lower part of the upper facies of the Wind River formation and are of two common types and one infrequent type. The first type consists of lenses and pods of oxidized uranium minerals occurring as encrustations and interstitial fillings in the friable sandstone and siltstone in the zone of oxidation above the ground water table. The sandstones associated with the oxidized ore are tan to reddish-brown in color due to the presence of iron oxides, and they appear quite permeable. It is probably these near-surface deposits of uraniferous material that produce small areas of anomalous radioactivity on the surface. According to Keller, meta-autunite is the most common mineral in the oxidized deposits. The oxidized zone extends downward from the surface approximately to the present ground water level, which ranges from about 60 to perhaps 80 feet below the surface.

The second general type of deposit occurs as an irregular blanket of uraniferous material at or near the top of the unoxidized zone. In this horizon aggregates and disseminations of pyrite, uraninite, and perhaps some carbonaceous material are associated with weakly cemented dark-gray or blue-gray coarse-grained sandstone or claystone. The experience of the

applicant in the Vitro pit in Section 26 has been that the most favorable lithology and richest ore zone is a blue-gray claystone that occurs very close to the top of the unoxidized zone. This relatively impermeable bed, some 15 feet thick, probably controls the level of the ground water table and, consequently, the depth of oxidation at this locality. The impermeable nature of the bed has also provided an effective trap for the solutions that have leached uranium from the overlying permeable beds. Although this particular bed cannot be traced for any great distance, the same situation probably would exist any place where a claystone or siltstone bed controlled the level of the present ground water table.

In areas where the claystone does not coincide with the top of the unoxidized zone, ore has been found in the sandstone that occupies the same position with respect to the top of the unoxidized zone. This was discovered by the applicant in a number of holes that were drilled south of the main Vitro pit.

A third, less frequent type of ore occurrence was observed in one of the pits being operated by the applicant. The ore occurs in its unoxidized habit in a claystone lens close to the surface within the oxidized zone. This lens is completely surrounded and doubtless underlain by oxidized sandstone beds. The clayey lens presented a barrier to the downward-moving solutions and perhaps held up a very local "perched" water table. Reducing conditions prevailed within the relatively impermeable claystone lens, and uranium was precipitated from the downward-moving water and concentrated within the lens.

Anomalies. -- The four anomalies outlined by the applicant's ioarad survey were checked with a P.R.I. Model 1113 scintillator. The degree of radioactivity was checked, but the outlines of the anomalous areas as shown on the applicant's Plate IV were not redelineated. Anomaly No. 1 showed a

maximum radioactivity of 0.15 MR/hr against a background of .03 MR/hr, or about 5 times background. Anomaly No. 2 showed a maximum of .06 MR/hr against a background of .03 MR/hr, or about twice background. Anomaly No. 3 showed a maximum of .06 MR/hr against a background of .03 MR/hr, or about twice background. Anomaly No. 4 showed a maximum of .07 MR/hr against a background of .03 MR/hr, or about 2-1/3 times background.

Anomalies Nos. 2, 3, and 4 appeared to be associated with surface concentrations of iron oxide nodules, which individually seem somewhat radioactive. Anomaly No. 1 was not associated directly with surface concentrations of the nodules, although some are present nearby. It appears likely that only anomaly no. 1 might be associated with near-surface concentrations of uraniferous material.

References:

Zeller, H. D., Swister, F.H., and Spden, H.J., 1955, Progress Reports on the Geology and Uranium Deposits of the Gas Hills area, Fremont and Natrona Counties, Wyoming: U. S. Geol. Survey, TEM 246.

MINABLE ORE RESERVES

There is no basis on which to estimate ore reserves on the property.

PROJECT PROPOSALS WITH COSTS

Vitro Minerals Corporation proposes to explore their George and Ver groups of claims by 61,000 feet of non-core and core drilling at an overall cost of $45,657.00. Their program is set up in three stages to explore the 18 claims involved. Stage I would consist of 150 holes spaced on 300-foot centers with an average estimated depth of 120 feet for a total of 18,000 feet. One-fifth of the footage would be core drilling. Stage II would be dependent upon the results of Stage I and would consist of approximately 240 holes totaling 28,800 feet. One-fifth of the footage in this stage would be core

drilling. Stage II is designed to localize areas in which possible ore bodies may be contained. Stage III, on 50-foot centers, with one-fourth of the footage cored, requires 150 holes, each 100 feet deep, for a total of 15,000 feet. This stage is for the purpose of determining whether or not a minable ore body is present. Mineralized holes, discovered in any of the three drilling phases would be offset by 50 feet for each new drilling location in Stage III. The number of holes proposed is adequate for testing six or seven mineralized areas of good promise.

The applicant estimates that the entire program could be completed in four months. Their costs are distributed as follows:

<u>Independent Contracts</u>

Stage I	
Rotary drilling, 150 holes totaling 18,000 feet	
Non-core drilling 14,400 feet at $0.60 per foot	$8,640.00
Wet core drilling 3,600 ft. at $3.00 per foot	$10,800.00
Stage II	
Rotary drilling, 240 holes totaling 28,800 feet	
Non-core drilling 24,000 feet at $0.60 per foot	$14,400.00
Wet core drilling, 4,800 feet at $3.00 per feet	$14,400.00
Stage III	
Rotary drilling, 150 holes totaling 15,000 feet	
Non-core drilling, 12,000 feet at $0.60 per feet	$7,200.00
Wet core drilling, 3,000 feet at $3.00 per feet	$9,000.00
Total Cost, Independent Contracts for Stages I, II and III	$64,440.00

<u>Personnel</u>: estimated four months for completion of project

One Project Supervisor at $650.00 per mo.	$2,600.00
Two Project Geologists at $450.00 per mo.	3,600.00
Two Samplers at $350.00 per month	2,800.00
Bookkeeping at $50.00 per month	200.00
Total cost, Personnel for Stages I, II and III	$9,200.00

Operating Materials and Supplies:

Estimated total cost for Stages I, II and III	$400.00

Operating Equipment:

Two 4-wheel drive units for four months at $60.00/mo.	$480.00

Miscellaneous:

Maintenance on operating equipment at $100.00/mo. for 4 months	$400.00	
Fluorimetric Assays of 2200 samples at $1.25/sample	$2,750.00	
Total cost, Miscellaneous for Stages I, II and III		$3,150.00

Contingencies:

10% of all items above, for such contingencies as difficult drilling, bad weather, mechanical breakdowns. This will also include costs for Workman's Compensation, Insurance and Payroll taxes	$7,787.00

Estimated total cost of Project	$85,657.00
Cost per foot of hole, not including analyses ($81,507.00) / (61,800 ft.)	$1.34
Overall cost per foot of hole $85,657.00 / (61,800 ft.)	$1.39

REVISED AND RECOMMENDED EXPLORATION PROGRAM AND COSTS

The applicant's proposed exploration program is essentially sound but several changes were agreed upon during the field examination and discussion with the Company representative. The drilling pattern was adjusted to keep all but one of the holes a minimum of 200 feet from the boundary lines of the claims. One hole was placed within 100 feet of the boundary to test the strong anomaly on the northeast side of the George 1 claim. Recent work in the area has shown that the hole depth estimated by the applicant is too shallow. An increase to a depth of at least 160 feet is recommended by the examining team for positive exploration of the potential

ore horizon. It is also recommended that five holes in Stage I, located as shown on figure 2, be drilled to a depth of 250 feet for stratigraphic information.

Core drilling now in progress in the immediate area has been consistently poor in sample recovery. Expensive, time-consuming methods are necessary to maintain the percent recovery at an acceptable level. For example, the lucky bb operators use dry ice to freeze the core in the barrel before lifting it from the bottom of the hole. The applicant is presently doing non-core drilling on other Vitro property in the area and are satisfied with the results obtained. Therefore, Vitro's representative orally modified their proposed exploration program to substitute non-core drilling for core drilling. The examining team agreed with the applicant on this point and the recommended exploration program includes no core drilling.

All holes excepting the five deep ones, should bottom approximately 40 to 50 feet below the water table in order to test the potential zone of unoxidized uranium ore. Therefore, the following three stage exploration program is based upon dry and wet non-core drilling at a unit cost of $0.70 per foot.

Stage I will consist of 42 holes in the north half of the project area and 2 holes in the south half, as shown in figure 2. The holes are spaced on 300-foot centers in a diamond pattern with the exception of the special hole testing the anomaly in the northeast section of George 1 claim. The depth of these holes with the exception of the 5 holes, will be controlled by the position of the water table with an estimated depth of 160 feet. Exceptions to this are the five deep holes which will be drilled to a depth of 250 feet and are also a part of Stage I. The estimated total footage for Stage I is 10,690 feet. No bulldozer work for drill site preparation will be necessary. Any unused funds and drill footage assigned to Stage I should be made available for Stage II, if necessary and approved.

Stage II is dependent upon the results from Stage I and will require the approval of the DMEA Field Team before commencing. This stage will consist of:

(1) Drilling the 65 holes on the 300-foot grid spacing in the south section of the property.

(2) Drilling a pattern of an estimated 76 offset holes on 150-foot centers around Stage I holes, includes only 3 of the deep holes in the north section of the property which, by estimate, will encounter uranium in amounts considered significant by the Field Team.

(3) Drilling a pattern of an estimated 80 offset holes on 150-foot centers around Stage II 300-foot spacing and the 2 deep Stage I holes in the south section of the property which, by estimate, will encounter uranium in amounts considered significant by the field team.

It is estimated that 30 percent of the wide spaced (300 ft.) holes will be sufficiently mineralized to justify offsetting. Approximately 228 holes totaling 35,360 feet would be necessary for this stage. Any unused funds and drill footage assigned to Stage II should be made available to Stage III if necessary and approved.

Stage III is dependent upon the results of Stage II and will require the approval of the DMEA field team before commencing. This stage will consist of a pattern of holes drilled on 75-feet centers to offset Stage II holes or any other holes which contain uranium in amounts considered significant by the Field Team. This stage, based on the estimate that 30 percent of the 156 Stage II, 150-feet center drill holes will encounter sufficient mineralization to justify offsetting, would require approximately 188 holes totaling 30,080 feet.

Revised costs of the project are estimated as follows:

STAGE I

Estimated time for completion - 1/2 month

Basis - 2 drill-rigs - 1 shift per day per rig

25 days per month - 400 feet per day per rig

Independent Contracts		
Rotary drilling of 64 holes (including the 5 deep holes) 10,690 ft. at $0.70 per foot	$7,483.00	
Standby time for probing holes, 32 hours at $10.00 per hour	320.00	
Total Independent Contracts		$7,803.00
Labor, Supervision, and Consultants		
Two project geologists at $450 per month	$450.00	
Two samplers at $350.00 per month	350.00	
Total Labor, Supervision and Consultants		$ 800.00
Operating Materials and Supplies		
Sample bags, drill log forms and surveying supplies at $50.00 per month	$25.00	
Total Operating Materials and Supplies		$ 25.00
Operating Equipment		
Two - 4HD units at $60.00 per mo. per unit	$60.00	
Depreciation on 1 hole-probing unit at $10/mo.	5.00	
Total Operating Equipment		$ 65.00
Miscellaneous		
Fluorimetric Assays, 250 samples at $1.25 ea.	$312.50	
Direct Accounting costs at $50.00 per month	25.00	
Payroll taxes and insurance, 5% of $800.00	40.00	
Total Miscellaneous		$ 377.50
TOTAL COST OF STAGE I		$9,070.50

Cost per foot for drilling
Rotary drilling and standby time $\frac{\$7,803.00}{10,690 \text{ ft.}} = \$0.73$

Cost per foot for sample analyses $\frac{\$312.00}{10,690 \text{ ft.}}$ = $0.03

Cost per foot for equipment, supervision, supplies, and miscellaneous $\frac{\$[illegible].00}{10,690 \text{ ft.}}$ = $0.09

TOTAL COST PER FOOT $0.85

STAGE II

(1) Drilling 65 holes on 300-feet centers in the South section of the property

65 holes at estimated depth of 160 ft.= 10,400 ft.

Cost for drilling, 10,400 ft. at $0.73 per foot = $7,592.00

Cost for sample analyses, 10,400 ft. at $0.03/ft.= 312.00

Cost for incidental allowances, 10,400 ft. at $0.09/ft.= 936.00

Subtotal $8,840.00

(2) Drilling an estimated 76 offset holes on 150-feet centers around and estimated 30 percent of the 3 deep holes and 39 other Stage I holes in the north section.

76 holes at estimated depth of 160 ft. = 12,160 feet

Cost for drilling, 12,160 feet at $0.73 per foot =$8,876.80

Cost for sample analyses, 12,160 feet at $0.03/ft.= 364.80

Cost for incidental allowances, 12,160 feet at $0.09/ft.=1,094.40

Subtotal $10,336.00

(3) Drilling an estimated 80 offset holes on 150-feet centers around 65 item (1) 300-feet spaced holes and 2 deep stage I holes in the south section.

80 holes at estimated depth of 160 feet = 12,800 feet

Cost for drilling 12,800 feet at $0.73 per foot = $9,344.00

Cost for sample analyses, 12,800 feet at $0.03/ft.= 384.00

Cost for incidental allowances, 12,800 feet at $0.09/ft.=1,152.00

Subtotal $10,880.00

TOTAL STAGE II, 221 holes and 35,360 ft. of drilling
Cost for drilling 35,360 feet at $0.73 per foot= $25,812.80
Cost for sample analyses, 35,360 ft. at $0.03/ft.= 1,060.80
Cost for incidental allowances,35,360' at $0.09/ft.3,182.40
TOTAL STAGE II $30,056.00

STAGE III

Drilling an estimated 188 offset holes on 75-foot centers around 30 percent of the 156 Stage II 150-foot center drill holes.

188 holes at estimated depth of 160 feet = 30,080 feet

Cost of drilling 30,080 ft. at $0.73 per ft. =$21,958.40

Cost of sample analyses 30,080 ft. at $0.03/ft.= 902.40

Cost of incidental allowances, 30,080 feet at $0.09/ft.= 2,707.20

TOTAL STAGE III $25,568.00

SUMMARY OF COSTS

Stage I - 44 holes,	10,690 feet		$ 9,070.50
Stage II - 221 holes,	35,360 feet		30,856.00
Stage III- 188 holes,	30,080 feet		25,568.00
TOTAL	473 holes	76,130 feet	$64,494.50

Rotary drilling costs are based on the bid of J. W. Rupert Drilling Co. No maximum footage of drilling can be guaranteed.

PROPOSED FINANCING

Vitro Minerals Corporation is prepared to furnish its share of the cost of the proposed exploration in cash and equipment owned.

CONCLUSIONS AND RECOMMENDATIONS

The known uranium deposits in the Gas Hills area occur in the lower part of the upper coarse-grained facies of the Wind River formation, which underlies the applicant's property. Utah Construction Company, operating the Lucky Mc mines, is producing uranium ore from three pits northeast of and several hundred feet from the applicant's property. Samples taken from a hole drilled by Utah Construction Company on the east end line of the Ver 1 claim contained an average of 0.19 percent U_3O_8 from 89.4 feet to 182.4 feet below the surface. The top of the unoxidized zone, in which the largest and richest deposits of uraniferous material are found, was penetrated by this

hole at a depth of 66.5 feet. Three holes drilled by the applicant in George 1 and George 2 claims cut mineralized zones assaying from 0.11 percent to 0.14 percent U_3O_8, but these samples were of secondary ore in the oxidized zone.

Experience of the operating companies has shown that pods of oxidized ore may be penetrated at any depth but should not be expected in any specific stratigraphic interval at all places because of the irregular lithology in the upper Wind River formation. It also has been demonstrated that pods of unoxidized ore-grade material may be found associated with lenses of claystone within the oxidized zone. These more or less isolated pods within the zone of oxidation, either of oxidized or unoxidized ore, should not be the goal of the applicant's exploration program.

The ore horizon toward which the applicant's exploration program should be directed is the stratigraphic interval that occupies the upper 40 to 50 feet of the unoxidized zone of sandstone and claystone. The top of the unoxidized zone, which closely coincides with the level of the present ground water table, should lie within 60 to 100 feet of the surface anywhere within the boundaries of the applicant's groups of claims. It is marked by a change in color from tan and reddish-brown sandstone of the oxidized zone to dark-gray and blue-gray sandstone and claystone that may contain disseminated pyrite and black carbonaceous material. The top of the unoxidized zone doubtless is controlled to some extent by the presence of relatively impermeable beds, such as the blue-gray claystone found in the large pits of the Vitro and Lucky Mc mines.

Although the most favorable condition for ore concentration appears to be where the claystone marks the top of the unoxidized zone, drilling by the applicant in the area south of the main Vitro pit has shown that the claystone is not a prerequisite to ore concentration. It is believed, therefore, that

the drilling target should not be the claystone unit but, rather, the top 40 to 50 feet of the uranium zone.

It is recommended that the applicant's drilling program be approved in a modified form as outlined below.

Stage I: Drilling on 100 foot centers located as shown on figure 2, and confined to the northern segment of the property, north of a line extending from the southeast corner of Ver 2 approximately west to the northwest corner of Ver 11. In addition, one hole will be drilled 100 feet from the east side line of George 1 claim for the purpose of exploring the anomaly in this area. Three of the holes, located as shown on figure 2, plus two additional holes in the southern segment, the locations of which are also shown on figure 2, will be deeper than the others for the purpose of determining the pre-Wind River structure yielding information with respect to the lithology and thickness of the Wind River, and furnishing information regarding the extreme depths of mineralization in the formation. The average depth of Stage 1 holes, with the exception of the five deep holes, should be about 160 feet. This depth would allow for a 20 percent error in the anticipated depth to the top of the uranium zone and still allow the drill hole to penetrate the desired 40 feet into the uranium zone. The five deep holes should be deep enough to penetrate the entire thickness of the Wind River formation and bottom in the underlying formation -- probably the Cody shale.

The total drilling for Stage I will be 59 holes to an average depth of 160 feet and 5 holes to a depth of 250 feet, or a total of 10,690 feet. Drilling shall be air rotary to as great a depth as is practicable, then water rotary to the bottom. Samples should be collected every two feet.

Stage II: (All drilling will be contingent upon the results of Stage I drilling and at the discretion of the field team). Stage II drilling will consist of drilling on 300-foot centers in the southern segment of the property, offset drilling on 150-foot centers from Stage I holes found to contain uraniferous material of ore grade and thickness in the northern segment, and offset drilling on 150-foot centers from favorable holes in the southern segment. Locations of initial holes in the southern segment are shown on figure 2.

Number of holes and estimated footage shall be as follows:

1. Drilling on 300-feet centers in the southern segment, as shown on figure 2; 65 holes at 160 feet: 10,400 ft.
2. Offset drilling on 150-feet centers from approximately 30 percent of 62 original holes in northern segment; 76 holes at 160 feet: 12,160 feet
3. Offset drilling on 150-feet centers from approximately 30 percent of 67 initial holes in southern segment (2 holes from Stage 1 and 65 holes from Stage 2); 80 holes at 160 feet: 12,800 feet

Total Stage II drilling: 221 holes at 160 feet or 35,360 feet.

Stage III: (All drilling will be contingent upon the results of Stage II drilling and at the discretion of the field team). Stage III drilling will consist of offset drilling on 75-feet centers from Stage II holes found to contain uraniferous material of ore grade and thickness. Assuming 30 percent of the 156 Stage II, 150-foot offset holes to be favorable, Stage III drilling will total 188 holes at 160 feet, or a total footage of 30,080 feet.

Unused footage at the completion of each stage should be made applicable to the next following stage.

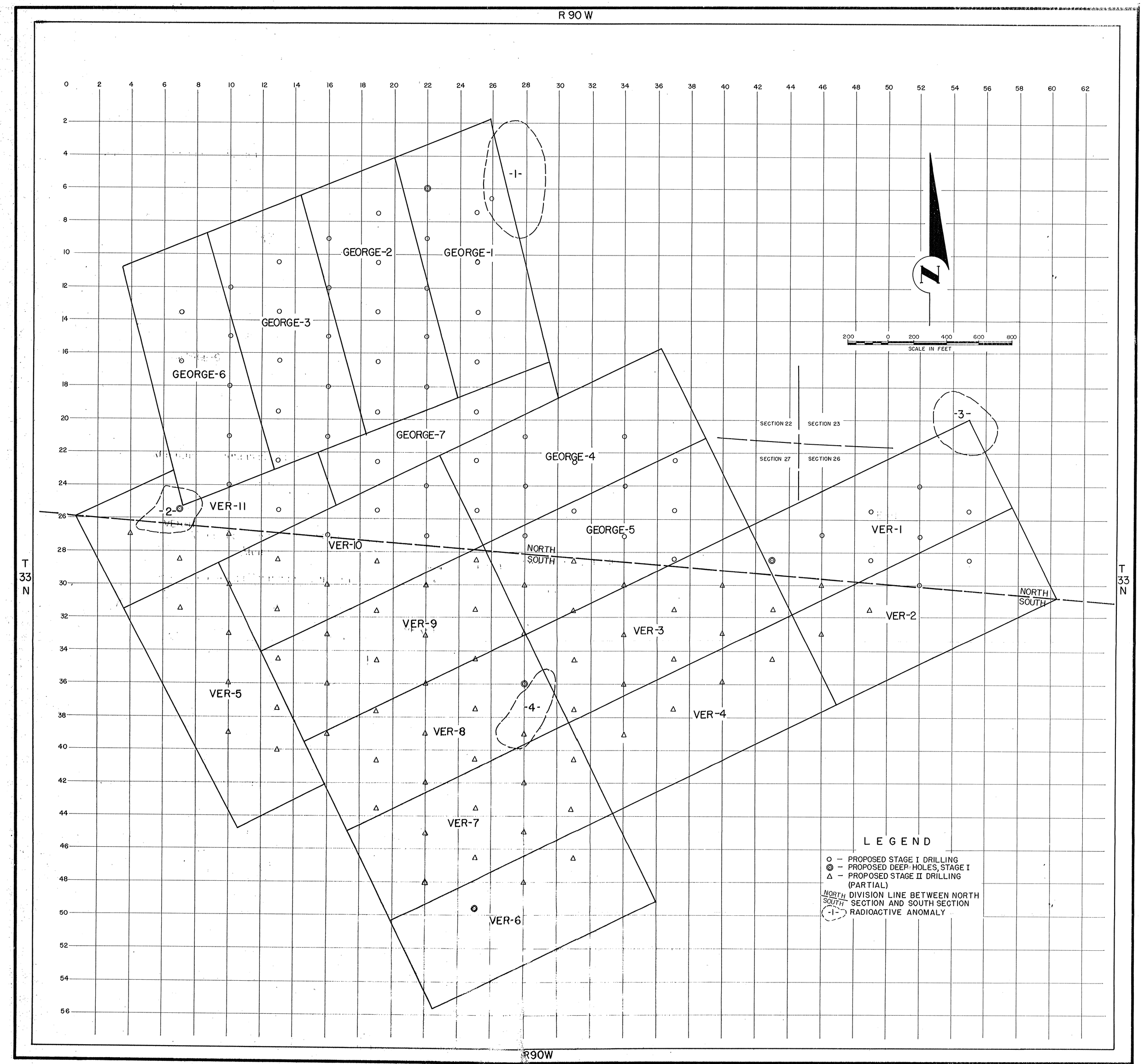

FIGURE 2 - MAP OF GEORGE AND VER GROUP SHOWING LOCATION OF PROPOSED STAGE I HOLES AND PART OF PROPOSED STAGE II HOLES, VITRO MINERALS CORPORATION, FREMONT COUNTY, WYO. DMEA 4182