

# MAR 19680036: FOX LAKE

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ECONOMIC MINERALS

FILE REPORT No.

S-AF-020(1)

REPORT ON FIELD WORK

OF CORE DRILLING

IN THE

FOX LAKE SULPHUR PROSPECT AREA

OF

ALBERTA, CANADA

FOR

GREAT PLAINS DEVELOPMENT COMPANY OF CANADA LTD.

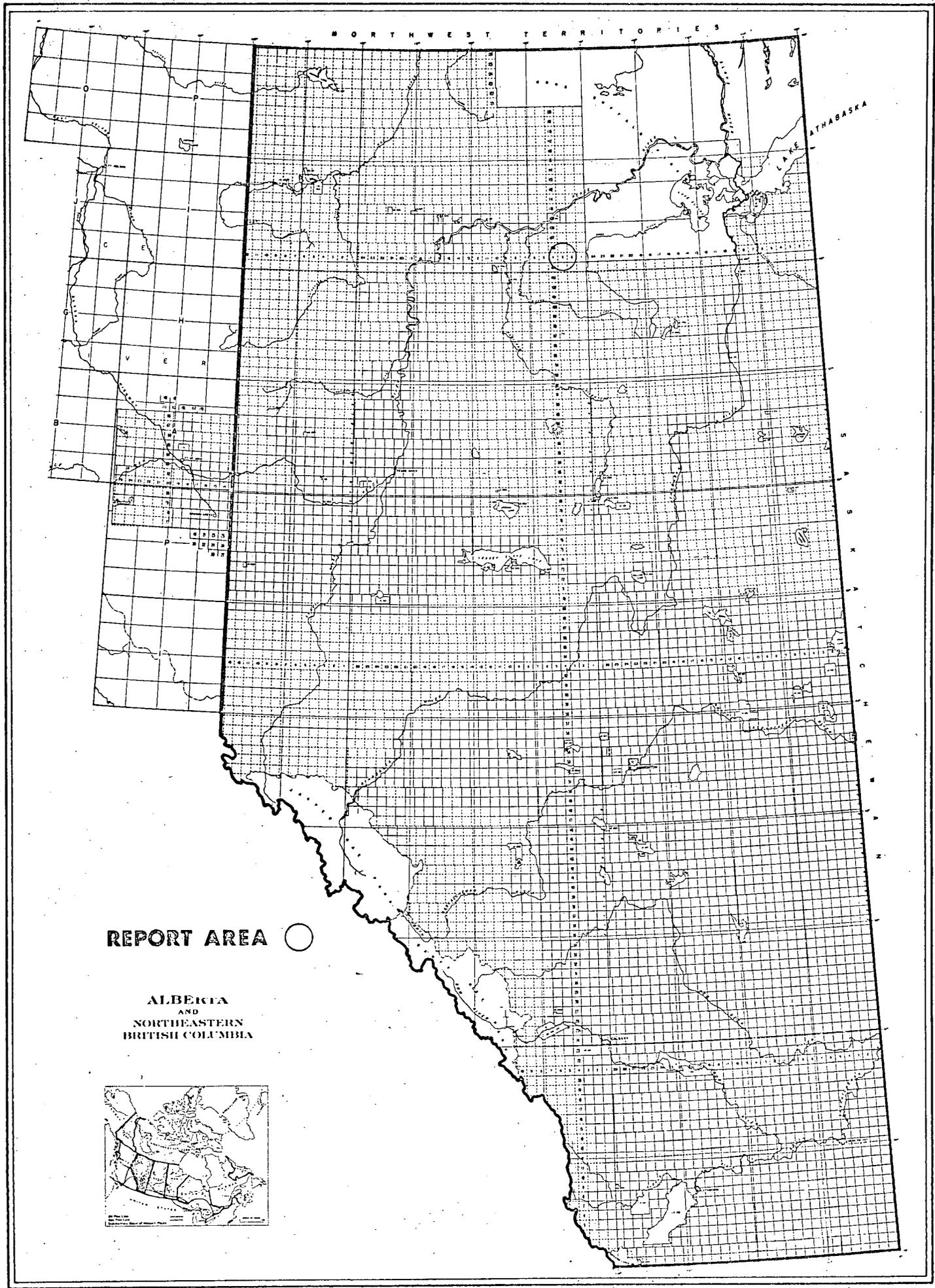
BY

SIGMA EXPLORATIONS LTD.

PROJECT NO. 20

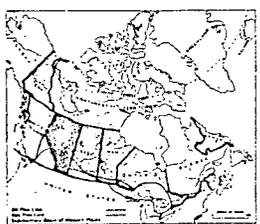
Calgary, Alberta, Canada

April, 1968.



REPORT AREA ○

ALBERTA  
AND  
NORTHEASTERN  
BRITISH COLUMBIA



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1	BORE HOLE LOCATION & NUMBERS MAP
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LOCATION OF AREA

The Sulphur Permit is located in Northern Alberta, Twp. 104 - 106, Rge. 2 - 3 W.5M., approximately 13 miles west of Wood Buffalo National Park, 20 miles south of the Fox Lake Indian Reserve No. 126 and 60 miles east southeast of the Village of Fort Vermilion.

Topography

Permit Number 20 is located on a very flat swamp and muskeg plain, south of the Peace River. The average surface elevation of the area is approximately 950 feet above sea level and no severe elevation changes were encountered over the area.

The general drainage pattern is toward the northeast. Harper Creek drains the North half of the permit with Lambert Creek flowing northeast through the central portion of the permit. Moose Lake is located at the north edge of the area.

Forest cover throughout most of the prospect area graded from very light to medium with some heavy stands of spruce and poplar occurring along the main creeks. The high ground in the area was covered with poplar while the lower swamps and muskegs were forested mainly with small spruce, tamarack and willow. No timber of commercial size or quality was noted anywhere in the area.

Access

Access to the area was gained by a winter road running east from Fort Vermilion along the south bank of the Peace River to the Fox Lake Indian Reserve Settlement. From the settlement southward, old seismic cut lines were used to travel into the permit area. The access road crossed two major rivers, the Wabasca River some 29 miles east of Fort Vermilion and the Mikkwa River 65 miles east. Crossings of these rivers were made on the ice. This road is not useable during the summer months.

A small airstrip is located at the Fox Lake Settlement and was used by chartered aircraft to deliver some supplies during the field operations.

Weather

The weather conditions encountered during the field operation were unseasonably warm with day temperatures of +40° to +50° general in the area. Thus some difficulty was encountered by vehicles travelling on roads and trails during this time and great care had to be taken with heavy equipment at all ice crossings.

FIELD OPERATIONS

Field operations were commenced on the permit on March 9, 1968, and concluded on March 16, 1968. During this period a total of 198 feet of core drilling were completed and five miles of line cleared or cleaned by bulldozers.

Other exploration programs were done by the crew and equipment in the vicinity of the Fox Lake Indian Reserve during the latter part of March. Thus the costs of moving the camp and equipment from Fort Vermilion to Fox Lake and return was divided between the operating companies.

Bulldozer operations were started on March 9 using two caterpillar D-7-A's. One shift was operated on each bulldozer during daylight hours to clean new lines, make two crossings on Lambert Creek and snowplow existing lines. No major problems were encountered by the bulldozers during this operation. During this period a total of 2.5 miles of new line were cut and cleaned and 2.5 miles of existing lines were snowplowed. A total of 45.0 bulldozer hours were utilized on this permit with the bulldozer averaging 9.6 hours per mile of new line cut. Higher than normal bulldozer hours were made necessary on this prospect because two crossings of Lambert Creek were necessary, each of which required

approximately ten hours of bulldozer time to complete.

### Drilling

Drilling operations were commenced with the Becker Hammer drill BMT-1 on March 12 and the prospect was completed March 16. A total of ten holes were drilled, holes number 1 to 6 being drilled in a circle around the sulphur spring and holes 7 through 10 were drilled along the northwest bank of the sulphur stream flowing into Lambert Creek.

All drilling was actually completed on March 13, but mechanical difficulties on the drill truck kept the rig on the permit until March 16. A total of 25 hours drill time were spent moving in and out of the area and drilling the required holes.

Holes 1 through 6 were drilled a total of ten feet into the bedrock while the other four were drilled to the top of the bedrock. With the exception of hole 20-1 the average depth drilled was approximately 16 feet in each of the holes, however, hole number 1 penetrated to a total depth of 54 feet.

Bedrock was encountered on all the holes at depths varying from four feet to 44 feet. This bedrock appeared to be mostly a light-coloured, well-cemented sandstone lying directly under the clay and few shales were encountered in any of the samples.

The surface materials found above bedrock were mostly brown sandy clays and no gravel was encountered in the area. No difficulties were encountered in completing the holes and samples were obtained at all drill locations.

### Sampling

Approximately 12 samples were taken at each location; samples being caught every two feet down the hole to 15 feet and at five foot intervals to a total depth. Assays were taken by batching the samples over pre-determined intervals and the results of these assays are contained in the back of this report. On Hole number 1, the sampling rate was increased below the 15 foot level in order to determine the thickness of the bituminous sands which were encountered.

### Assaying

The results of the assays are listed at the back of this report. These samples were personally delivered to the office of Mr. Guy Allen, P. Geol., of Great Plains Development Company of Canada Ltd. by Mr. W. N. Rabey. Mr. Allen selected the sample interval for all assays to be done and these assays were conducted by Chemical & Geological Laboratories Ltd., who tabulated the results and delivered the data to Sigma's office to be included with this report.

Plugging

Holes were plugged with metal Trojan hole plugs or four foot wooden hole plugs in accordance with the required geophysical regulations.

Surveying

No vertical control was carried over the permit, but horizontal control was maintained by chaining. A transit was used to turn off angles for the new cut lines and to check angles at intersections of existing lines. Control was established from maps made from aerial surveys showing existing seismic cut lines, or identifiable topographic features on the ground. A transit and chain survey was run from a known point on the existing cut line into the sulphur spring after it had been located, so as to accurately determine its location.

Bore hole locations were permanently marked by blazing trees a few feet from the cut-line and marking the hole number on the tree with ink pens and metal tapes nailed to the tree. Thus each of the hole locations could be easily re-established for future reference.

RESULTS & RECOMMENDATIONS

As the existing survey is localized around a single geologic occurrence located on Permit Number 20, it is not within the scope of this report to discuss the entire permit area.

Because of the frost-free conditions existing near the sulphur spring, it would be recommended that any additional drilling programs conducted in this immediate area be carried out with light tracked drills. With such equipment a complete evaluation could be made of the low area north and east of the spring. Because of its relationship to the spring, and its low elevation, this area should be the most favorable for the accumulation of enriched sulphur materials.

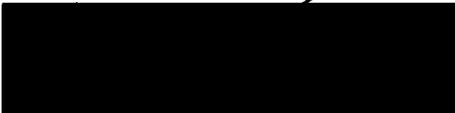
Measurements for radioactivity were also conducted around the spring and a definite rise in the scintillometer readings were noted right at the spring. A series of five readings were taken, out to about 400 feet from the source spring, and a fairly definite increase in the radioactivity level was noted as the spring was approached.

As the geologic age of the spring is not known, additional geological work should be done to determine this age, and also to examine the balance of the permit area for other similar features. As this spring is thought to be associated

with near surface faulting or fracturing in the area, attention should be given to other possible features of this nature in the area which may not be as clearly defined. If such features are located in other areas on the prospect then additional sample drilling would be warranted to examine potential commercial deposits of sulphur near the features.

It would also be suggested that additional samples of the surface drift be taken from holes drilled on existing cut-lines located throughout the permit area on a reconnaissance basis. Such a program may disclose other sulphur rich areas in the area which may not be discovered by any method other than drilling.

Respectfully submitted,



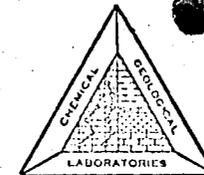
James D. Fowlie  
Supervisor

Approved:



W. N. Rabey, P. Eng.

## CHEMICAL &amp; GEOLOGICAL LABORATORIES LTD.



OPERATOR: Sigma Explorations Ltd.  
 KIND OF SAMPLE: Soil  
 Hole Permit No. 20 Line 1  
 Batch 6 21 Samples

REPORT NUMBER: C68-3444  
 Date Reported: March 27, 1968  
 Date Received: March 21, 1968

<u>SAMPLE NUMBER</u>	<u>ELEMENTAL SULPHUR (% by Weight)</u>	<u>SAMPLE NUMBER</u>	<u>ELEMENTAL SULPHUR (% by Weight)</u>
20-1-1 0-8	1.53	20-2-7 10-19	10.44
20-1-1 8-20	0.65	20-2-8 0-8	2.05
20-1-1 20-35	0.30	20-2-8 8-18	1.35
20-1-1 35-46	3.23 Not definite due to oil contaminant Mixture of sulphur and oil - Not enough sample.	20-2-9 0-8	2.78
		20-2-9 8-18	2.18
		20-2-10 0-10	4.13
20-1-2 0-10	0.28		
20-1-2 10-19	0.17		
20-1-3 0-8	0.75		
20-1-3 8-15	1.02		
20-1-4 0-8	3.28		
20-1-4 8-15	Trace		
20-1-5 0-8	6.04		
20-1-5 8-15	1.12		
20-1-6 0-7	3.09		
20-1-6 7-14	0.69		
20-2-7 0-10	1.49		

19680036

# SULPHUR PROSPECTING PERMIT No. 20

GREAT PLAINS DEVELOPMENT COMPANY  
OF CANADA LTD.,  
736 - 8th AVENUE S.W.,  
CALGARY , ALBERTA

DATE OF ISSUE - NOVEMBER 23, 1967  
AREA - 39,680 ACRES

TP. 106

TP. 105

TP. 104

R. 3

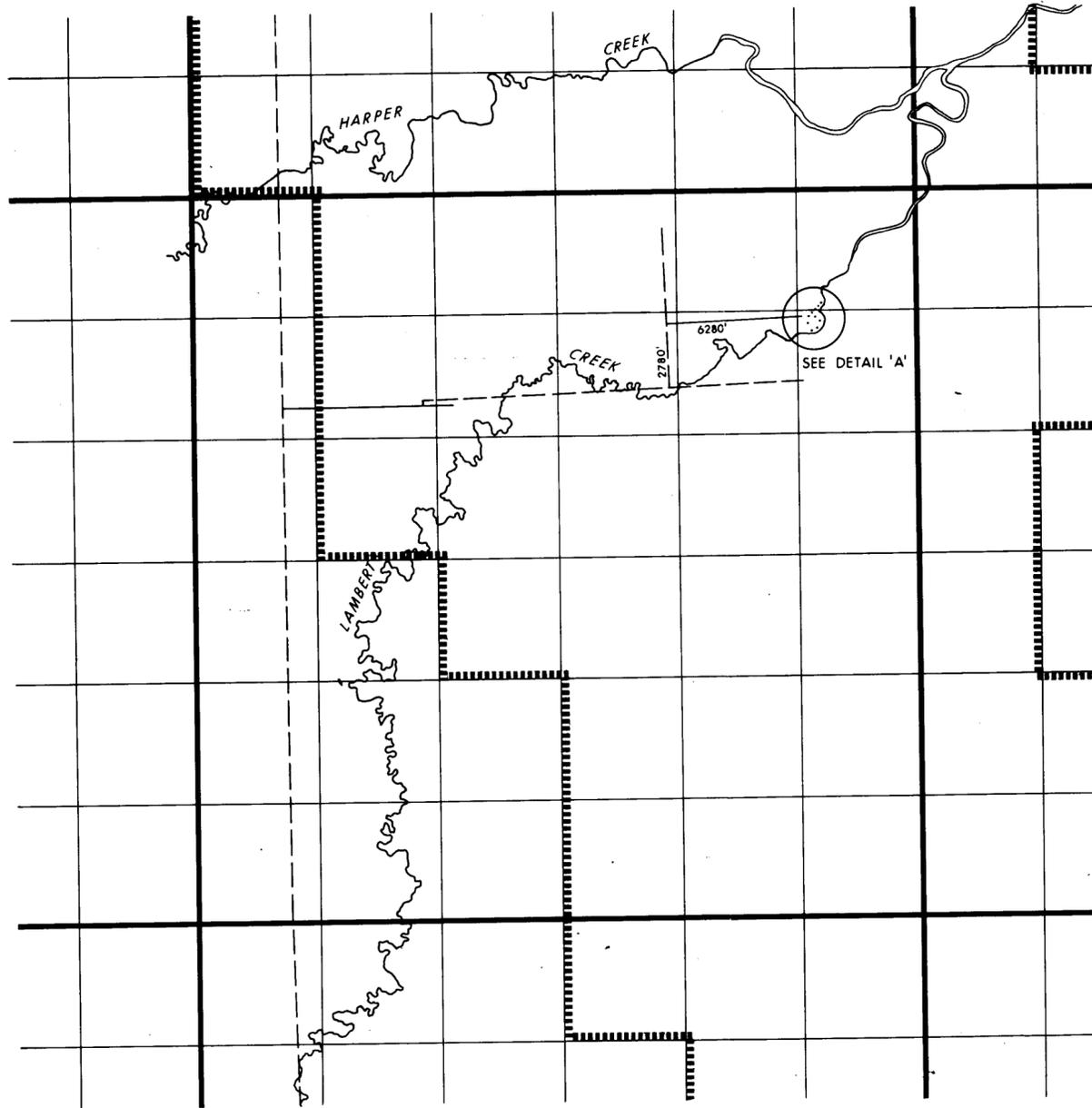
R. 2

R. 1 W. 5 M.

845/11

Rge. 3

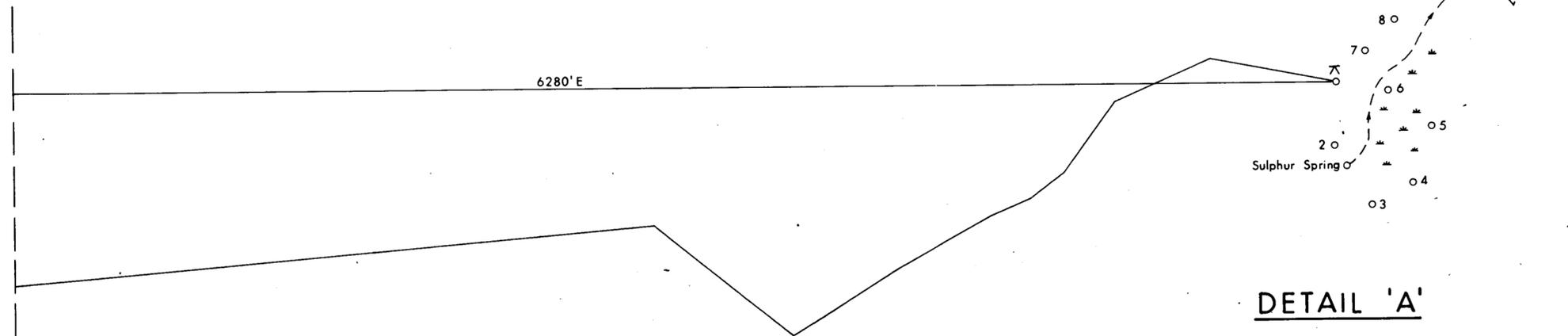
W.6 M.



Twp. 105

- NEW ACCESS LINES CUT
- - - EXISTING ACCESS LINES
- ..... PERMIT OUTLINE

SCALE: 1" = 1 Mile



DETAIL 'A'

SCALE: 1" = 500'

**SIGMA EXPLORATIONS LTD.**  
 300 8th Ave. SW. Calgary, Alberta Phone 264-7865

**SULPHUR EXPLORATION PROGRAM**  
**SULPHUR PERMIT No. 20**

SCALE: As Noted

MARCH/1968

19860036 - Map No. 1