GREAT WESTERN PETROLEUM CORPORATION

GEOLOGICAL AND GEOCHEMICAL REPORT GWP 13, 15, 17, 21, 22, 23 CLAIMS (GWP IV GROUP)

OMINECA MINING DIVISION

BRITISH COLUMBIA

NTS:	94E/6E 57 [°] 19'N: 127 [°] 7'W
	GREAT WESTERN PETROLEUM CORPORATION
AUTHOR:	L.K. ECCLES fucces JANUARY 1982
DATE:	JANUARY 1982

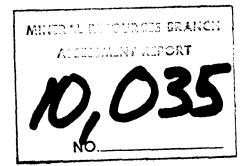


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TJV-81-39	Cu (ppm)	11	H	н	н	Ð	11
TJV-81-40	Pb (ppm)	Ð	II	н	11	14	n
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INTRODUCTION

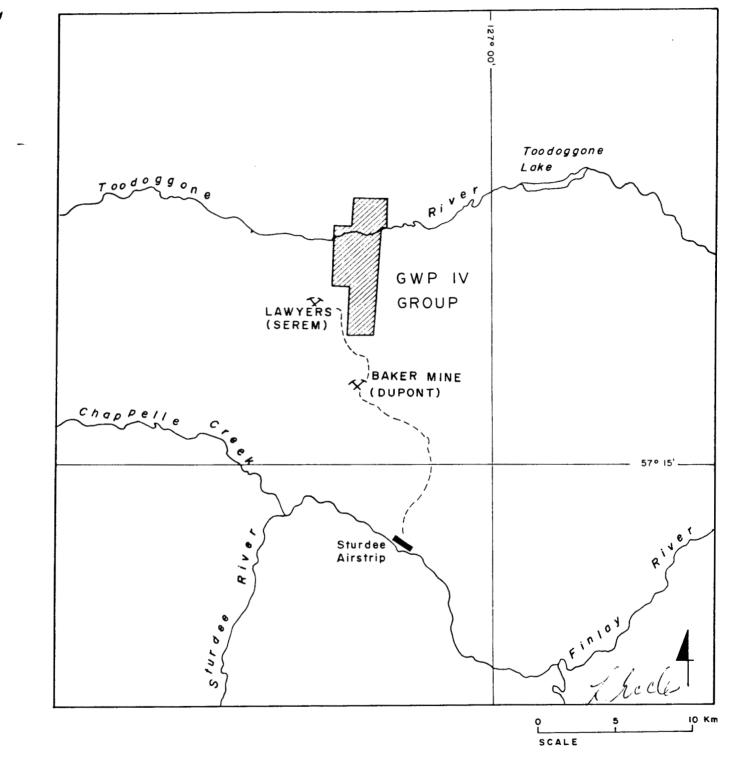
The GWP IV claim group is located 5 km. southwest of the confluence of McClair Creek with the Toodoggone River, approximately 300 kilometres due north of Smithers, B.C. (Figure TJV-81-34).

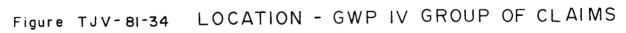
Access to the property is usually by fixed wing aircraft from Smithers or Terrace to Sturdee Valley airstrip and by helicopter from there.

Topography in the area varies between steep and mountainous to flat and gently rolling with elevations ranging between 1100 metres and 1900 metres. Cliffs cap most of the sidehills between elevations of 1400 and 1700 metres. The claims straddle both sides of the Toodoggone River.

Above 1700 metres the terrain is gently sloping and plateaulike. Alpine grasses and mosses are the only form of vegetation existing above this elevation. In the valley bottoms and sidehills vegetation consists of black spruce forests to buckbrush and grassy meadows.

Work done on the claims in the summer of 1981 consisted of sidehill and grid geochemical sampling and geological mapping.





PROPERTY DEFINITION

History

The area north of Toodoggone River has a history of gold placer mining dating back to the 1920's. In the 1960's interest in porphyry copper and molybdenum deposits spurred companies to explore the widespread gossan zones that exist over much of the region.

The claimed area bordering part of the GWP 13 claim on the south is owned by S.E.R.E.M. Ltd. who staked the ground to cover road access to the Lawyers property which is currently being explored on surface and underground. The property lies directly across the valley from the GWP IV Group.

Limited exploratory work was done in the area covered by the present claims which were staked in January 1981.

The configuration of Group IV claims is shown in Figure 2.

List of Claims

CLAIM NAME	RECORD NO.	UNITS	DATE RECORDED
GWP 13	3500	6	Jan. 12, 1981
GWP 15	3502	12	11 11 11
GWP 17	3504	12	11 II II
GWP 21	3508	15	11 11 11
GWP 22	3509	16	11 11 11
GWP 23	3510	16	D U U

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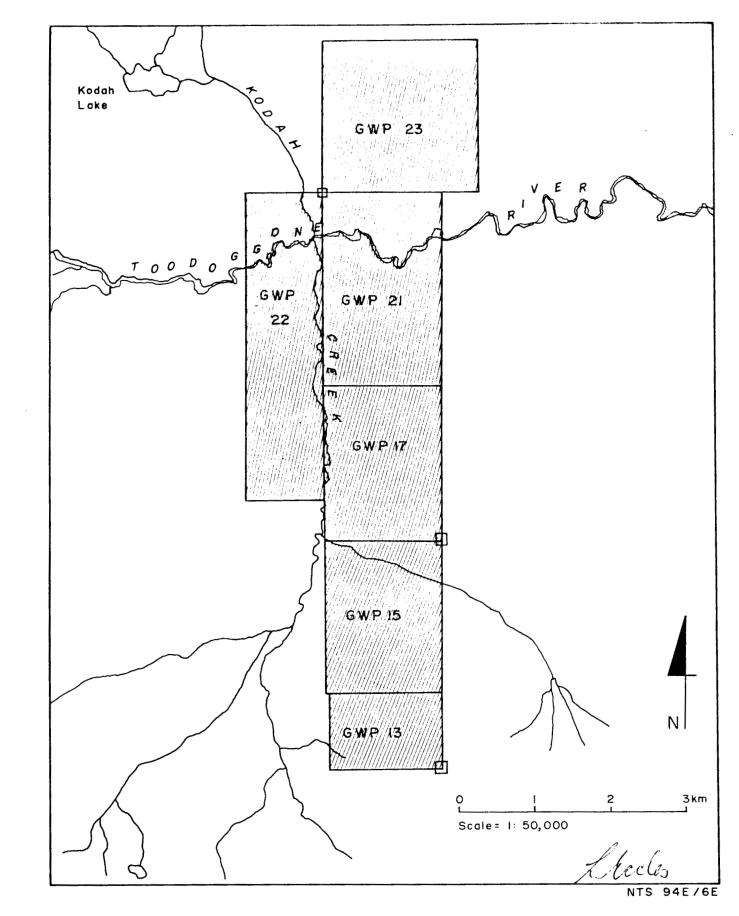


Figure. TJV-81-35 LOCATION OF GWP 13, 15, 17, 21, 22, & 23

MINERAL CLAIMS

(GWP IV GROUP)

Owner and Operator

The claims are currently owned and operated by Great Western Petroleum Corporation under a joint venture agreement with E & B Explorations Ltd.

Economic Assessment of the Property

This property lies directly east of the Lawyers goldsilver prospect and an access road to that property from the Sturdee airstrip parallels the western boundary of the GWP IV group.

The northern half of the claim group, along the south side of the Toodoggone River, has the most interesting geology and geochemistry. Rocks from the Middle Toodoggone Volcanic Division outcrop in a creek canyon and gold values run as high as 2250 ppb.

The property shows some potential for hosting a precious metal deposit and combined with the relatively good road access makes it a feasible exploration target.

GEOCHEMICAL SURVEY

Sample Collection and Preparation

Because of the steep nature of the terrain in the southern half of the claim group, sidehill soil sampling was undertaken on the GWP 13, 15 and 17 claims. The GWP 21, 22 and 23 claims offered low relief and so grid sampling at 100 metres x 200 metres sample spacing was undertaken. Along the steep slopes in the southern area contour sampling was undertaken at two different elevations separated vertically by 300 metres on each hillside. Contours were sampled every 100 metres.

For control, all sampling was done using hip chains, compasses, altimeters and 1:10,000 scale topographic maps.

Soil horizons are poorly developed in the south on the steeper slopes but well developed in the north where lower relief prevails. Where possible, samples were collected from the 'B' horizon using stone mason hammers, from a depth of 5 to 20 centimetres and placed into gussetted, high strength, kraft paper sample bags.

Most of the samples were dried in ovens and seived to minus 80 mesh before being sent to Min - En Laboratories in North Vancouver for analysis.

Sample locations were plotted on a topographic map at a scale of 1:10,000. Total area sampled was about 18 square kilometres.

Silt samples were collected from creeks and dry gullies whenever they were encountered on the sidehills or grid. Rock chip samples were collected from areas where there was no soil cover and by geologists during the course of mapping.

A total of 223 soil, 1 silt and 108 rock samples were collected and geochemically analyzed for copper, lead, zinc, silver and gold. Refer to "Appendix A" for analytical procedures.

Interpretation

Values for gold, silver, lead, zinc and copper are plotted on Figures TJV-81-37 to 41, located in the back pockets of this report.

In the southern half of the claims (GWP 13, 15, 17), precious and base metal values for rock and soil samples were low. Rocks in the same area were unmineralized and unaltered. No major structural discontinuities were observed. This area apparently has low potential for hosting a precious metal deposit.

To the north, however, on the GWP 21, 22 and 23 claims, soil geochemistry showed isolated and small clusters of anomalous precious and base metal values. Exposures of rock were mostly seen in creek canyons and consisted of unaltered porphyritic rocks of the Middle Toodoggone Volcanic Unit which is considered by Schroeter (1981) to be more amenable to mineralization than the Lower Unit rocks found to the north.

Follow-up 25m. x 25m. grids were established over the anomalous areas but failed to extend the anomalous zones or, in most cases, duplicate the original anomalous values.

The erratic nature of the geochemical results is probably due to the fact that at lower elevations (close to the Toodoggone River) the geochemical results do not reflect mineralization close to the sample site but are simply "transported anomalies". The concentration mechanism may be due to various factors; swamps, historic glaciers, acidity of the soil, creeks and types of vegetation to name a few. The Toodoggone area has been glaciated so that overburden occuring in the valley is likely to have been transported many miles.

The following table gives background, weakly, moderately and highly highly anomalous soil sample results obtained from the GWP 13, 15, 17, 21, 22 and 23 claims.

Element	Background	Weakly Anomalous	Moderately Anomalous	Highly Anomalous
Au (ppb)	5	10-20	21-40	40
Ag (ppm)	0.8	1.6-3.2	3.3-6.4	6.4
Zn (ppm)	62	124-248	249-498	498
Pb (ppm)	17	34-68	69-136	136
Cu (ppm)	10	20-40	41-80	80

GEOLOGICAL FIELD WORK

Geological mapping was done in conjunction with the soil geochemistry. Topographic maps, and geochemical grid lines served as controls for the mapping. Geology was plotted at a scale of 1:10,000 and is shown on Figure TJV-81-42, in the back pocket of this report. Total area mapped was about 18 square kilometres.

Rock exposure in the creek canyons and along steep sidehills is good, but in the low benchland along the Toodoggone River it is nonexistent.

GENERAL GEOLOGY

The GWP IV group lies within the eastern margin of the Intermontaine Belt and is entirely underlain by volcanic rocks of the Upper and Middle Units of the Toodoggone Assemblage of Jurassic age.

Outcrops of the Upper Unit were seen only in the southern area of the claim group on GWP 13, 15 and 17 claims where they form prominent cliffs.

Middle Unit Toodoggone rocks outcrop in the main creek disecting the GWP 21 and 22 claims. No outcrop was seen on the GWP 23, claim, north of the Toodoggone River.

A total of 5 distinct phases have been mapped within the claim group. They are Lavender, Grey to Green and Black Crystal Tuffs of the Upper Unit and Green Groundmass porphyry and Pink Feldspar porphyry of the Middle Unit.

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DETAILED GEOLOGY

Toodoggone Volcanic Assemblage

MIDDLE UNIT

Only two phases of the Middle Unit Toodoggone Volcanic rocks were seen on the property, the most abundant being the Green Groundmass Toodoggone Porphyry. Only a few small outcrops of the Pink-Feldspar Porphyry were seen and this was in close association with the Green Groundmass Porphyry. The phases are probably derived from the same parent magma and are transitional with one another.

<u>Green Groundmass Toodoggone Porphyry</u> - This rock is easily identifiable by its dark green groundmass being dotted with phenocrysts of feldspar which are often pink or orange in colour. Phenocrysts of feldspar, hornblende and minor biotite measure up to 3 mm across. Mafic minerals are commonly seen altering to epidote and chlorite. Often the rock contains quartz eyes and grey to green lithic fragments that blend in well with the fine grained green groundmass and are often hard to distinguish.

The rock is usually slightly magnetic and weathers to a dark grey colour.

<u>Pink-Feldspar Porphyry</u> - Only two small areas of this Middle Unit phase occur on the property and they are closely associated with the Green Groundmass Porphyry. The rock is pink and siliceous with sparse phenocrysts of feldspar up to 2 mm. across.

Hornblende phenocrysts altering to chlorite and epidote stand out against the pink groundmass.

UPPER UNIT

The Upper Unit of the Toodoggone volcanic assemblage is composed of 3 different phases of Lavender, Grey to Green and Black Crystal Tuffs. Usually these rocks can be easily distinguished from one another, however, they are often transitional and should be regarded as a single unit.

<u>Lavender Crystal Tuff</u> - These rocks have a fine grained lavender groundmass with phenocrysts of hornblende up to 2mm. long altering to chlorite. White feldspar phenocrysts up to 3 mm. long are scattered throughout the rock. Often the rock appears "welded" with banded textures in the fine grained groundmass bending around individual, aligned feldspar phenocrysts.

The rocks often show limeonite staining on the weathered surface with some finely disseminated reddish crystals that are probably hematite-stained feldspars. <u>Green to Grey Crystal Tuff</u> - Crystals and fragments of potassium feldspar, biotite and hornblende, up to 3 mm. across are set in a fine grained grey to green groundmass. Occasionally quartz eyes are also green. The mafic minerals and parts of the groundmass can sometimes be seen to be altering to chlorite and epidote but these rocks appear unaltered. The rock weathers pink to dark grey.

<u>Black Tuff</u> - This rock is darker than the Grey to Green Crystal Tuff due to the abundance of hornblende, biotite and dark grey to black quartz eyes. The Black Tuff has the same characteristics as the Green to Grey Crystal Tuff and it always occurs closely associated with it on scree slopes and outcrop areas.

STRUCTURE

No major structures were observed disrupting the moderately dipping interbedded crystal tuffs and volcanic rocks within the claim boundaries.

MINERALIZATION

One small area measuring about 30 metres across within the Green Toodoggone porphyry showed intense silicification, disseminated pyrite and arsenopyrite, and limonite staining. This exposure was found along the canyon wall of the creek that bisects the claims on the south side of the Toodoggone River.

CONCLUSIONS AND RECOMMENDATIONS

Follow-up work over anomalies found by the original geochemical grids failed to extend the anomalous zones or duplicate original results. Geochemistry is a poor method of detecting subsurface mineralization in the lower elevations of these claims where overburden is thick and glacially transported. Geophysical methods could perhaps be used to locate structural discontinuities which may exist on the claims and which are an important factor in channeling potential mineralizing fluids.

Rock exposures that do exist on the claims are unmineralized and show no anomalous geochemical response.

COST STATEMENT - GWP 13, 15, 17, 21, 22 and 23

(GWP IV GROUP)

Geochemical Surveys and Geological Mapping

1. WAGES

Name	Per Diem Rate	Specific Dates	No. Days	Amount
N. Carter (geologist)	\$200.00	August 21	1	\$200.00
D. Forster (geologist)	93.73	July 8, 9, 11-13	5	\$468.65
N. Caira (geologist)	83.51	June 27, July 9, 13, 28, Aug. 4.	5	\$417.55
R. Green (sampler)	52.85	June 26, 27	2	\$105.70
K. Hudson (sampler)	52.85	June 27, July 8, 9, 14, 25, Aug. 2, 8, 11	8	\$422.80
C. Leupold (sampler)	57.96	July 9, 10, 12-14, 28, 29	7	\$405.72
R. Riedel	57.96	June 27	1	\$ 57.96
L. Tamaki (sampler)	63.06	July 13, 14, 22	3	\$189.18
I. Hribar (cook)	66.38	(Proportioned amongst other claims: 11.28% x 61 days)	6.88	\$456.69
C. Carter (Lab. Technician)	52.85	(Proportioned amongst other claims: 11.28% x 38 days)	4.28	\$226.54
Proportion of Ge To This Group:			28.88	\$2255.96
			71.96	\$5206.75

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2. TRANSPORTATION

A. Mobilization

	Charter aircraft Smithers-Sturdee Strip (total \$6970.60 - Kelowna Flight Craft Aircharter, Invoice No. 4723B and Transprovincial Airlines, Invoice No. 67308, split between properties)	\$786.28
Β.	<u>Demobilization</u>	
	Charter aircraft Sturdee Strip-Smithers	\$83.92
	(part of Aviar Aviation Invoice No. 0450) Air Fares (5 crew, Smithers-Vancouver @ \$510.25 - proportioned)	\$57.55
		\$141.48
C.	<u>Helicopter Support</u> <u>Viking Helicopters</u> - Total 95.25 hours split	
	between properties = 10.74 hrs. @ \$428.00/hr. including fuel: June 26, 27, July 8-14, 25, 28, 29, Aug. 2, 4, 8, 11 and 21.	\$4598.52
	ALC Aircraft Corporation - Total 12.18 hours split between properties = 1.37 hrs. @ \$415.00/hr.	568.55
	including fuel: Between July 30 - Aug. 1	\$5167.07
		<u></u>

- 3. CAMP COSTS
 - A. Room and Board

71.96 man days @ \$50.00/day (including all or parts of June 26, 27, July 8-14, 25, 28, 29, August 2, 4, 8, 11, 21):

\$3598.00

B. Expediting

Total \$1411.13 (split between properties) Bema Industries Invoice Nos. 0990 - July 15/81 " 0934 - June 30/81 0852 - June 15/81 0805 - May 31/81

\$ 159.17

4. GEOCHEMICAL ANALYSIS

223 soil samples and <u>1</u> silt sample analyzed for Cu, Pb, Zn, Ag and Au @ \$10.55 per sample (Min-En Laboratories Invoices)	\$2363.20
108 rock samples analyzed for Cu, Pb, Zn, Ag and Au @ \$11.95 per sample (Min-En Labs. Invoices)	\$1290.60
Sample shipment costs and supplies (Min-En Invoices) - Total \$1431.45 proportioned between properties	\$161.47
	\$3815.27

5. REPORT PREPARATION

Writing and Drafting	\$400.00
Airphoto Mosaics and Maps - Burnett Resource Surveys Ltd. - Total \$4242.11 (proportioned)	\$478.51
	\$878.51

SUMMARY OF COSTS

1. 2.	Wages Transportation - A. B. C.	Mobilization Demobilization Helicopter Support		\$5,206.75 786.28 141.48 5,167.07
3.	Camp Costs - A. B.	Room and Board Expediting		3,598.00 159.17
4. 5.	Geochemical Analysis Report Preparation	:		3,815.27 878.51
		TOTAL	-	\$19,752.53

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APPENDIX "A"

Analytical Procedures

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APPENDIX 'A'

ANALYTICAL PROCEDURES

Samples are processed by Min-En Laboratories Ltd. in North Vancouver employing the following procedures:

After drying the samples at 95°C soil and stream sediment samples are screened by 80 mesh sieve to obtain the minus 80 mesh fraction for analysis. The rock samples are crushed by a jaw crusher and pulverized by ceramic plated pulverizer.

1.0 gram of the samples are digested for six hours with HNO_3 and $HClO_4$ mixture.

After cooling samples are diluted to standard volume. The solutions are analyzed by Atomic Absorption Spectrophotometers.

Copper, Lead, Zinc and Silver are analyzed using the CH_2H_2 - Air flame combination on these sample solutions.

For gold geochemical samples, a suitable weight 5.0 or 10.0 grams are pretreated with HNO_3 and $HC1O_4$ mixture.

After pretreatments the samples are digested with <u>Aqua</u> <u>Regia</u> solution, and after digestion the samples are taken up with 25% HCI to suitable volume.

At this stage of the procedure copper, silver and zinc can be analyzed from suitable aliquot, by Atomic Absorption Spectrophotometric procedure.

Further oxidation and treatment of a least 75% of the original sample solutions are made suitable for extraction of gold with Methyl Iso-Butyl Ketone.

With a set of suitable standard solutions, gold is analyzed by Atomic Absorption instruments. The obtained detection limit is 5 ppb.

QUALIFICATIONS

I, LOUISE K. ECCLES, do hereby certify that:

- 1. I am a geologist residing at 782 West 22nd Avenue, Vancouver, British Columbia and am employed by Great Western Petroleum Corporation.
- 2. I am a graduate of the University of British Columbia with a B.Sc. (Honors) degree in geology.
- 3. I have practised my profession in geology continuously for the past five years in British Columbia, Ontario, Yukon and Northwest Territories.
- 4. In July and August, 1981, a field program of soil and rock sampling, mapping and prospecting was carried out on the GWP IV Group of claims on behalf of Great Western Petroleum Corporation.

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L.K. Eccles

ATTESTATION

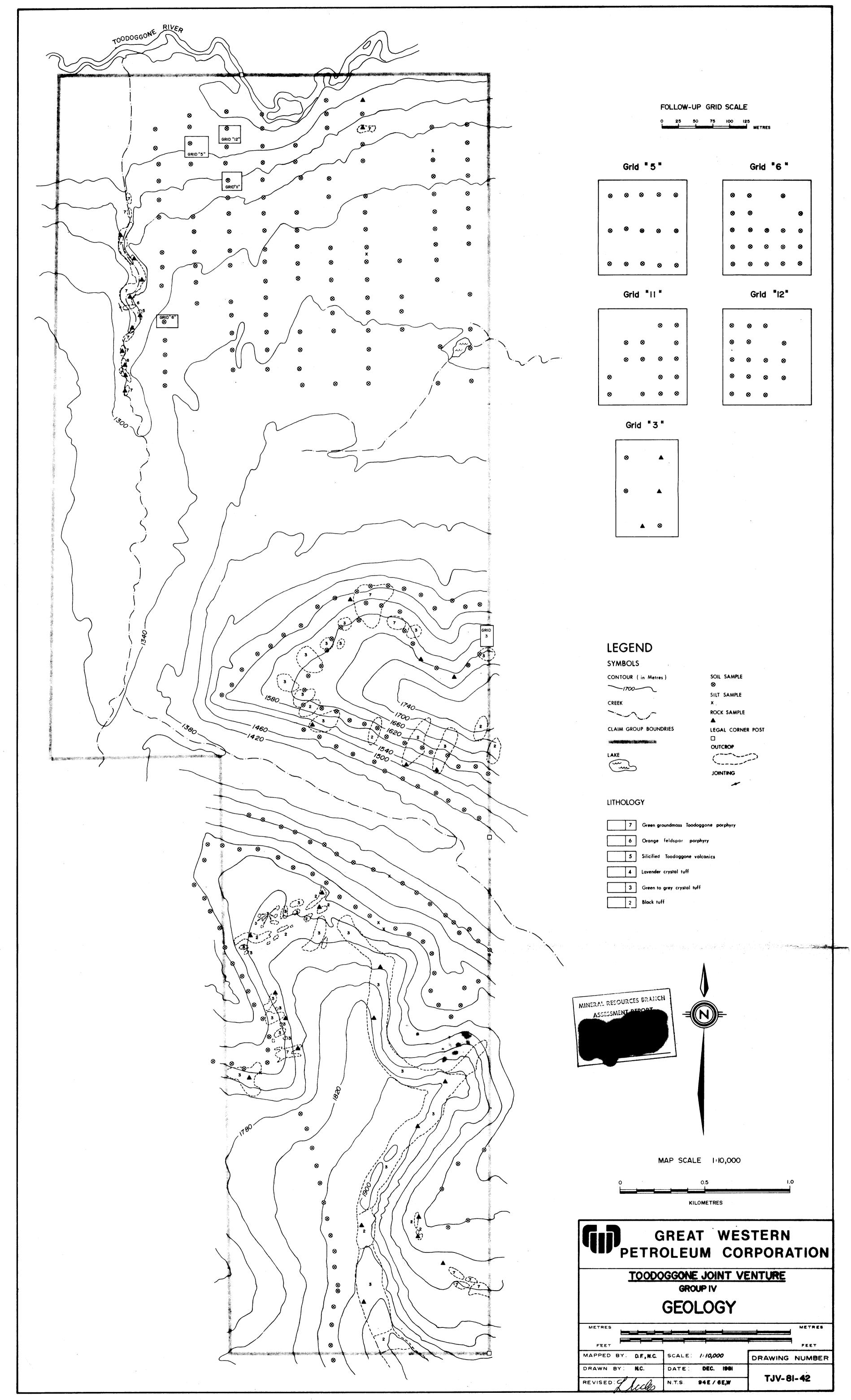
I, Nicholas C. Carter of Victoria, British Columbia, do hereby certify that:

- 1. I am a practising geologist, registered with the Association of Professional Engineers of British Columbia since 1966.
- I am a graduate of the University of New Brunswick with B.Sc. (1960); Michigan Technological University with M.S. (1962); and the University of British Columbia with Ph.D. (1974).
- 3. I have practised my profession in British Columbia and Eastern Canada and the Western United States for the past 21 years.
- 4. I personally oversaw the geological and geochemical program carried out on the GWP IV Group of claims and will attest to the authenticity of data contained in this report.

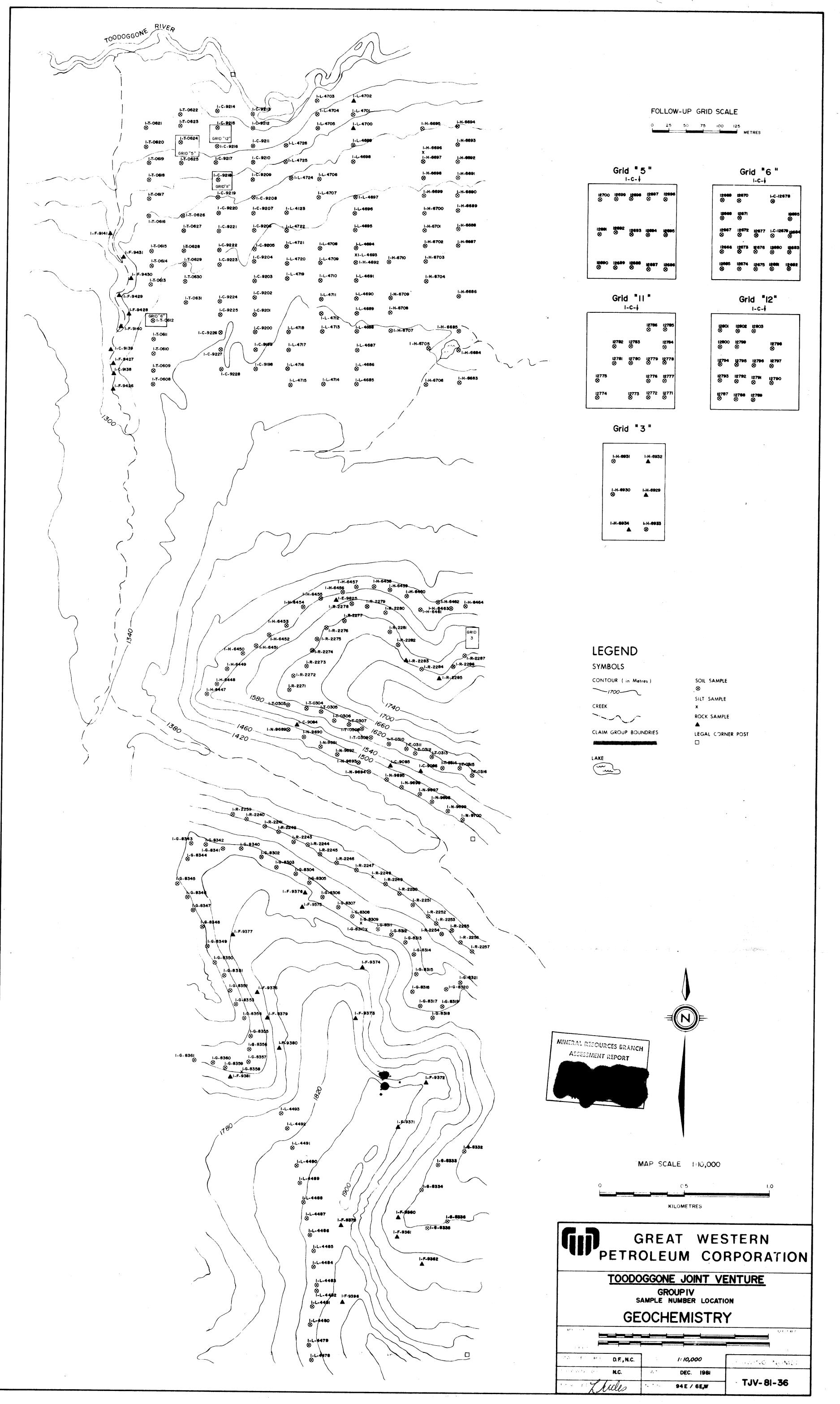
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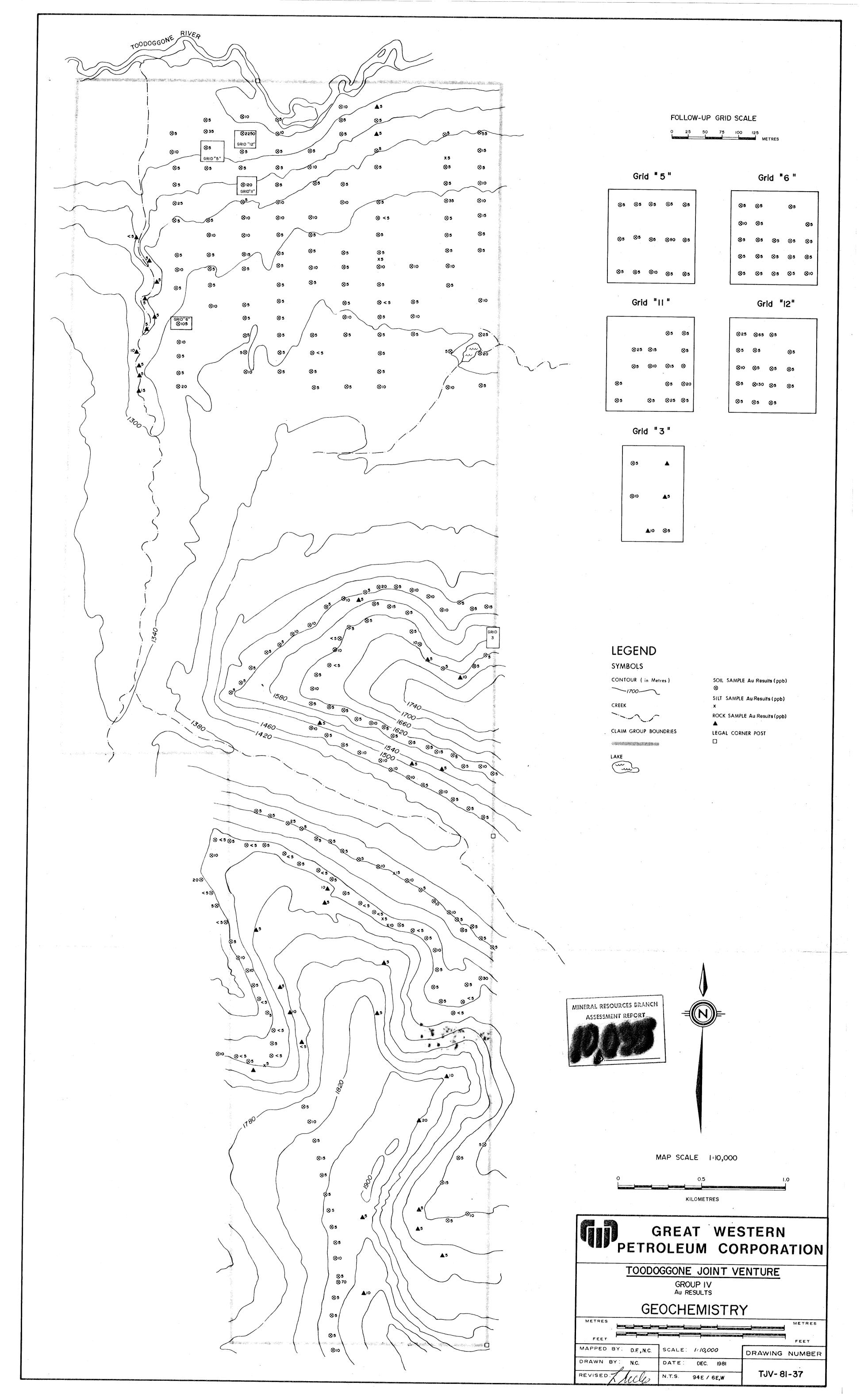
N.C. Carter, Ph.D., P.Eng.





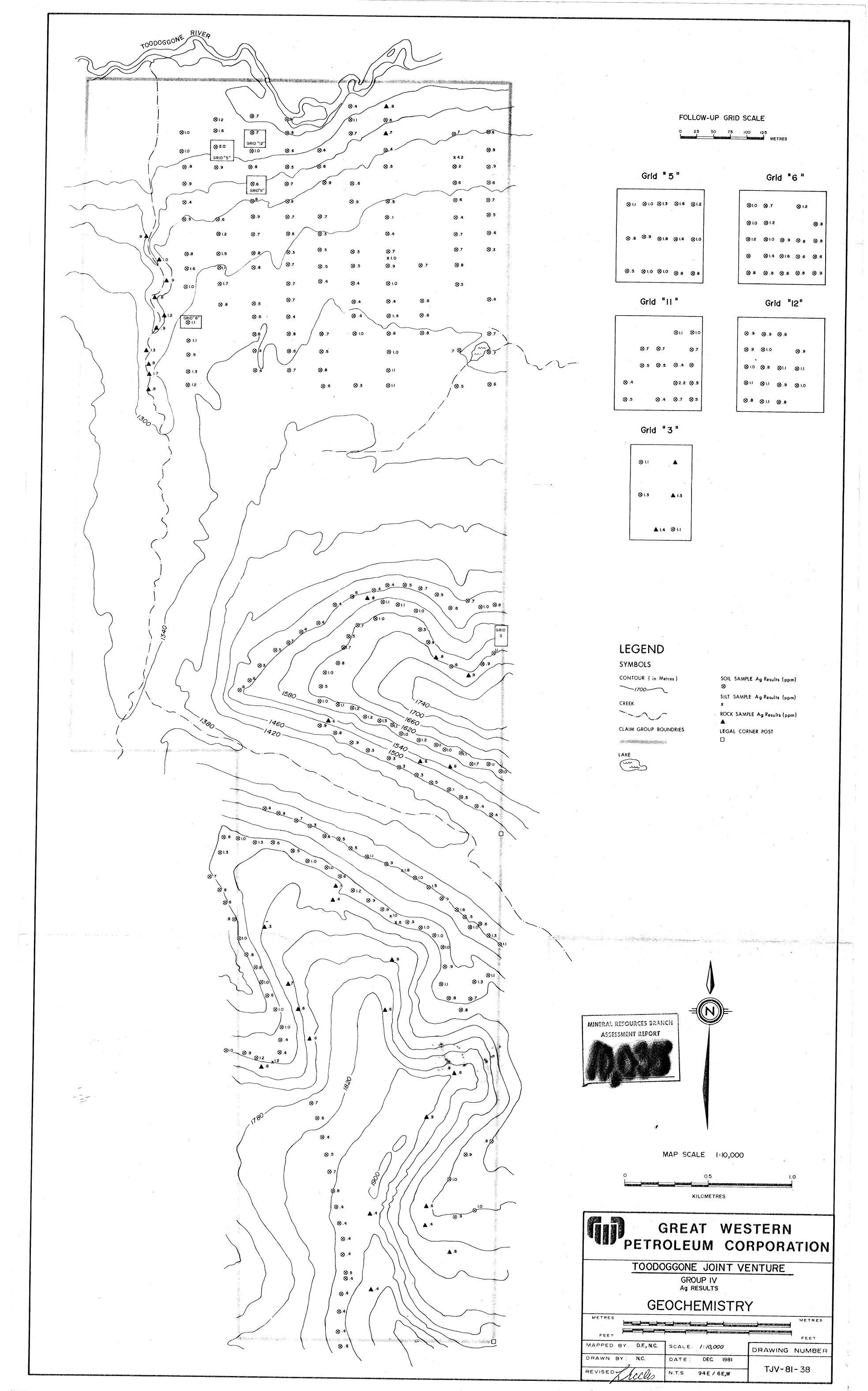
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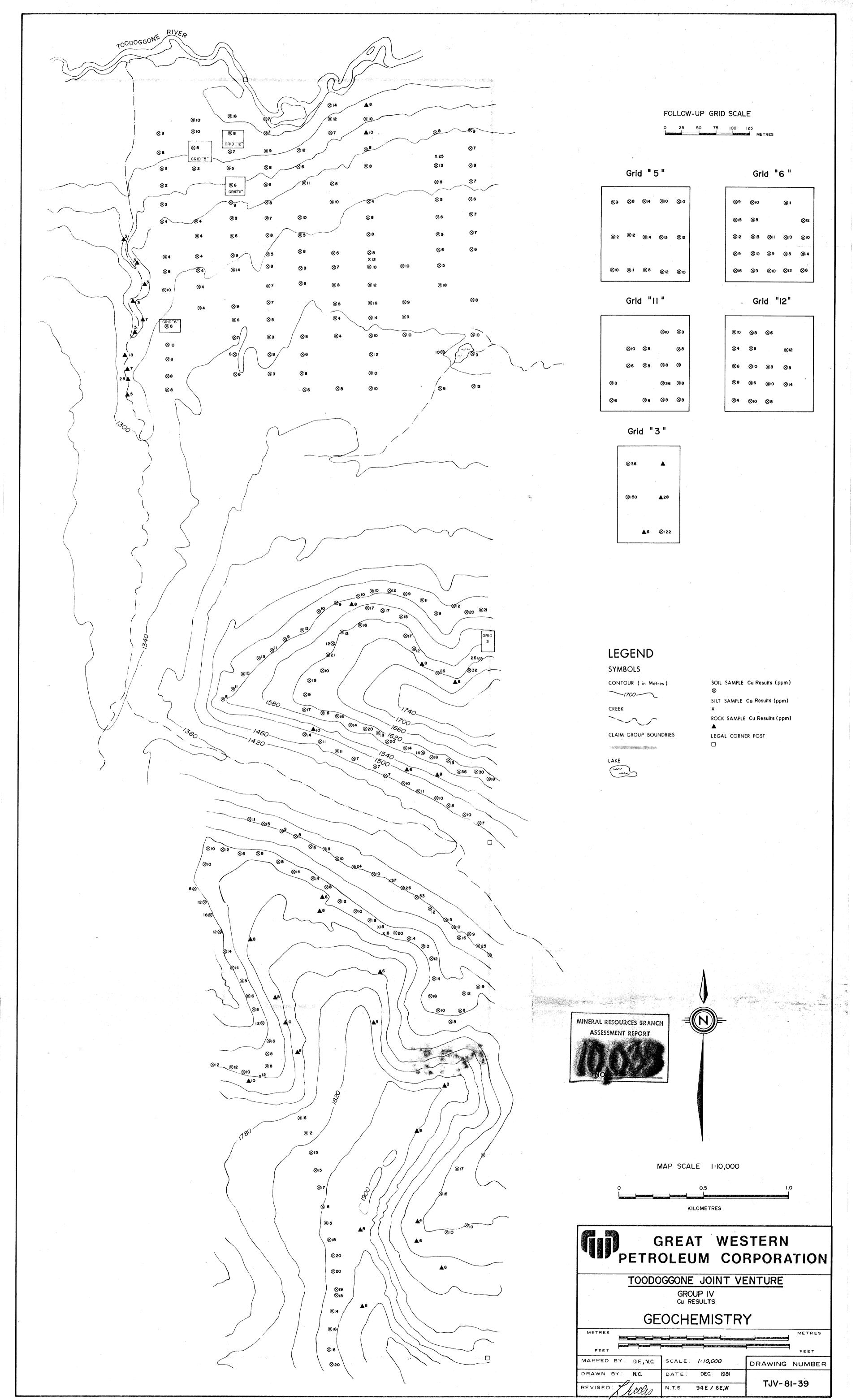


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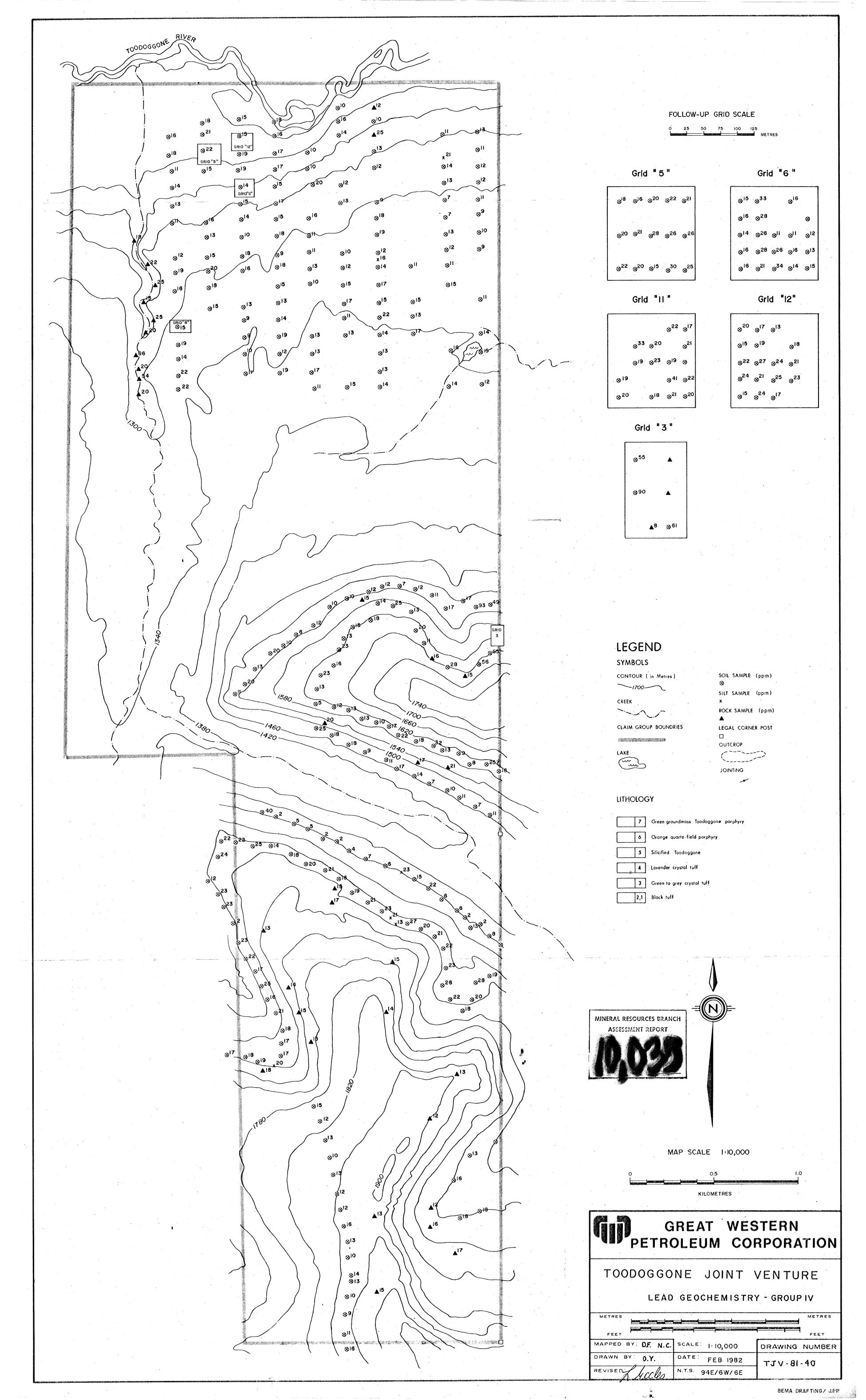
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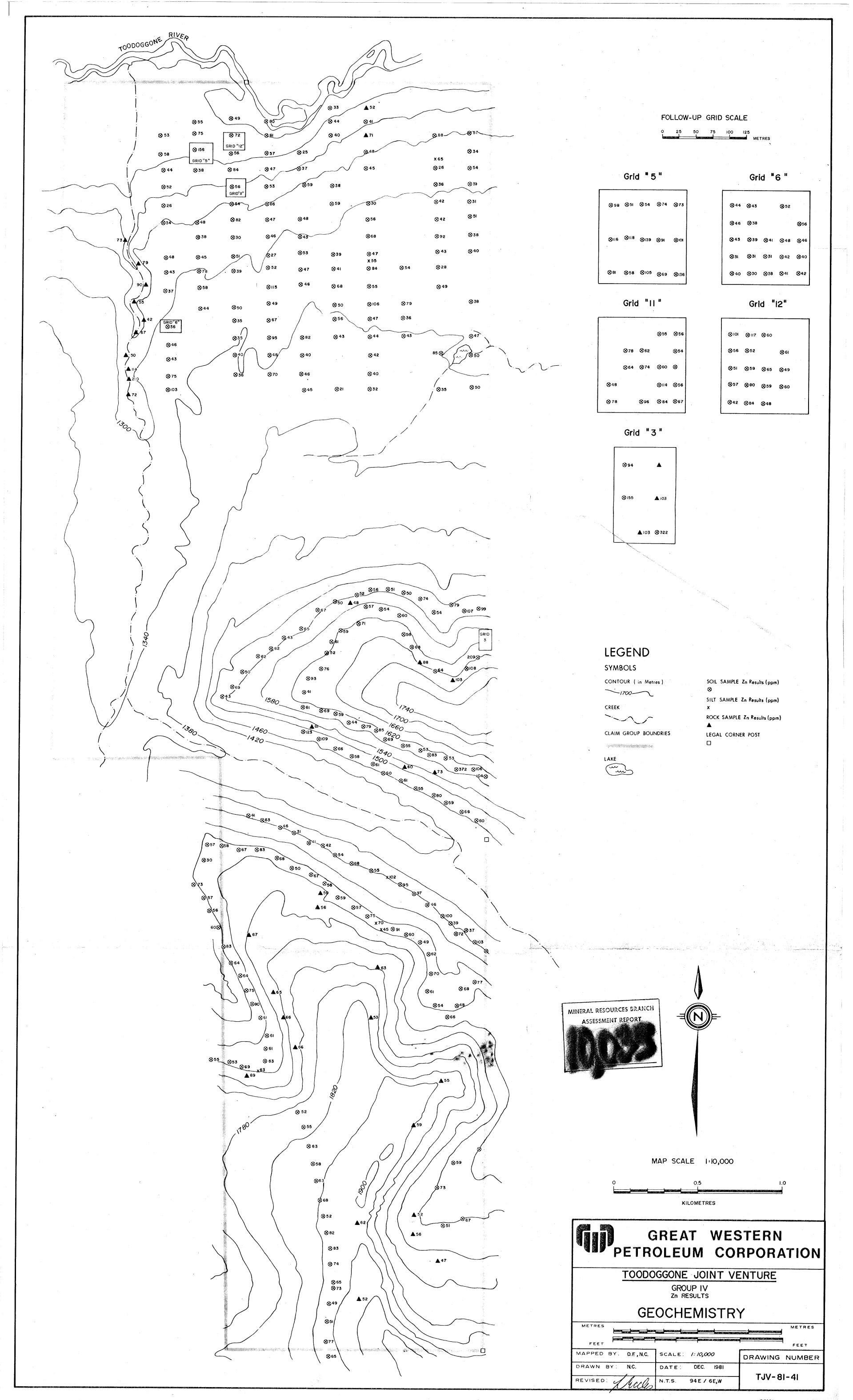
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BEMA DRAFTING / J.P.P.K.K



BEMA DRAFTING/ J.P.P.



BEMA DRAFTING / J.P.P.A.W.D.