REPORT

on the

CEDARS PROPERTY

KAMLOOPS MINING DIVISION

NTS 921/10E

Lat. 50° 43' N Long. 120° 31' W

for

SALOR SCIENTIFIC INC.
Operator

by

JAY D. MURPHY, P.ENG.
Consulting Geological Engineer

1987-04-06

Amended 1987-06-25

CLAIMS
NA2 M.C., RN 6403(10)
Cedars R.C.G. RN 5472(01) Lot 5381

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

ADDENDA

INTRODUCTION

The NA2 Mineral Claim forms a square one kilometre on a side, containing four Modified Grid units with a total area of 100 hectares. This claim overstakes the original Cedars Reverted Crown Grant containing 17.62 hectares. The property is situated on the south side of Kamloops Lake 17 km straight line distance west-northwest of downtown Kamloops and 3 km west of the city limits (Plate No. 1). The claim area is easily accessible from Kamloops via Trans-Canada Highway west to Cherry Creek Ranch, a distance of 25 km, then by a secondary paved road and ungraveled track running north and east another 3 km to the Salt Lake deposit. This lake is subsequently referred to as Cedars Lake in this report.

The subject claim covers a relatively narrow southeast trending basin containing Cedars Lake and the salt deposits of interest, and the bordering ridges to the north and south. Topography within the claim is gently rolling with a maximum relief of approximately 250m. The elevation of Cedars Lake was determined by altimeter as 550 $^{+}$10m. The southern claim boundary reaches 750m in elevation. Immediately north of the claim the ground drops steeply to Kamloops Lake having a low water elevation of 336m. The claim area is well drained, except for Cedars Lake which has no outlet.

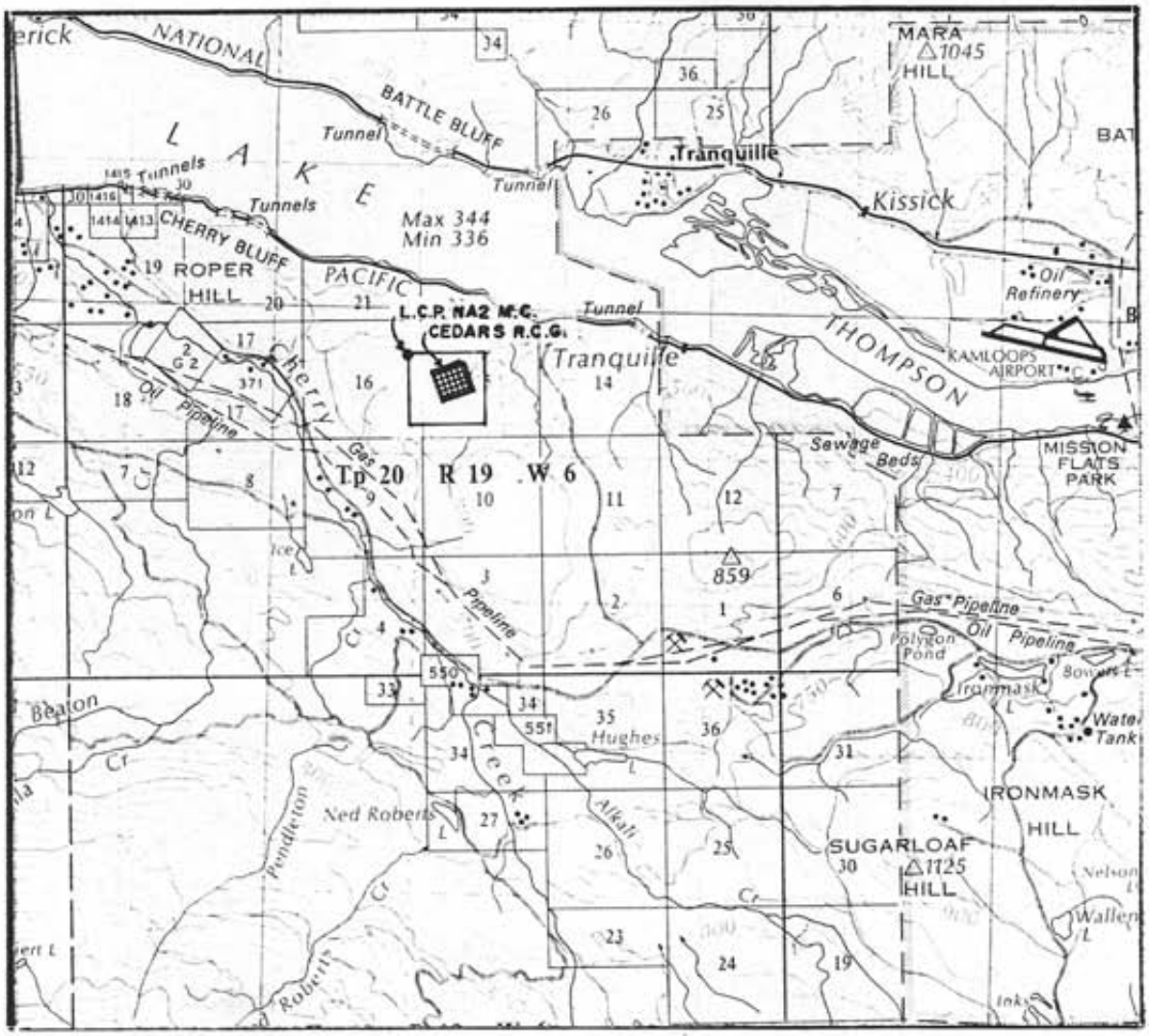
Vegetation is typical of the dry belt, consisting mainly of sagebrush and bunchgrass with small, widely scattered stands of fir and the occasional isolated Ponderosa pine. No evidence of previous logging was noted. The area is used for cattle grazing but is limited in this capacity by the lack of potable water. The nearest fresh water supply is Cherry Creek, about 2 km to the south and across the Trans-Canada Highway.

There are no houses within the Cedars claim, the nearest habitation being about 1 km west of the boundary. The land is subdivided in this area and may eventually become a small residential subdivision.

The main line of the Canadian Pacific Railway, following the south shore of Kamloops Lake, passes within a kilometre of the claim. The Trans-Canada Highway, oil and natural gas pipelines and a B.C. Hydro powerline all pass within 2 kilometres to the south of the property.

Geologically, the Cedars claim is underlain by a mafic sill of the Eocene Kamloops Group and intermediate rocks of the Triassic Cherry Creek pluton. The two units appear to be in faulted contact along a southeast trending structure coincident with the narrow basin containing Cedars Lake salt deposit.

The claim area is predominantly covered by a thin sheet of Pleistocene drift. Bedrock is poorly exposed as small outcrops on ridges and scarps.



PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
JAY D. MURPHY

SALOR SCIENTIFIC INC.

CEDARS PROPERTY
KAMLOOPS M.D. 921/10E

LOCATION MAP

J.D.M	87-04-03	PLATE NO. 1

Cedars Lake contains a deposit of hydrous sodium sulphate ($Na_2 SO_4$-10 H_2O) referred to variously as mirabilite, sodium sulphate decahydrate and Glauber's salt. In this report the industrial term "Glauber's Salt" will be used exclusively. The anhydrous form of this mineral ($Na_2 SO_4$) will also be referred to by the industrial term "salt cake".

Salt cake has numerous uses in the chemical and manufacturing industries. The uses of Glauber's Salt are more restricted, but it has some medicinal applications and is used in dyeing and printing textiles. A more recent use for Glauber's Salt has been developed as a heat exchange medium in heating systems. It is this particular application that has sparked current interest in the Cedars Lake deposit.

The legal corner post of the NA2 claim was located in the field. Both this claim and the Cedars Reverted Crown Grant (Lot 5381) are held by Ken Ellerbeck. The Cedars R.C.G. is in good standing until 1990-01-31, the NA2 M.C. until 1988-10-28.

The original report dated 1987-04-06 was amended 1987-06-25. Additions were items 3 to 6 inclusive under "RECOMMENDATIONS", items 3 to 6 inclusive under "COST ESTIMATE - TIME SCHEDULE", paragraph three under "SUMMARY AND CONCLUSIONS" and the section, "PROPOSED DEVELOPMENT WORK". Purpose of these amendments was to provide one comprehensive report containing a recommended work programme that would bring the Cedars property to the stage where a feasibility study can be carried out as the logical next step to a production decision.

The writer wishes to thank Gordon Miller, P. Eng., Saskatchewan Minerals Ltd., and Dr. Roy McElroy, B.C. Research, for their kind co-operation and assistance.

SUMMARY & CONCLUSIONS

The Cedars property represents a good grade Glauber's Salt deposit relatively low in chemical impurities. Estimated tonnage is small (100,000 tonnes) but a modest expenditure on exploration could easily double or triple this figure.

The clay material overlying and intermixed with the salt crystals may have value as ceramic material and may also have cosmetic and therapeutic applications. This possibility should be explored, because, if the clay is marketable, it would greatly enhance the economic viability of the deposit.

Solution mining is not a practical option for Cedars deposit.

RECOMMENDATIONS

Exploration

1. Drain Cedars Lake using one of three methods detailed in the following cost-time schedule.

2. Prove the tonnage of Glauber's salt contained in the deposit by a series of vertical holes drilled on a predetermined pattern to recover representative cores of deposit material. Assay samples for Na_2SO_4 content. Calculate total tonnage and average grade of the deposit.

3. Assuming the results of the previous recommendations warrant further work, strip the layer of surface clay from the salt deposit and stockpile this material. Determine whether the clay has any commercial value.

Development

4. Have B.C. Research conduct a laboratory process development study on a small composite sample of Cedars deposit material, as recommended by Gormely (3).

5. Using the data from 4. above have B.C. Research conduct a laboratory scale mill test to treat 20 or 30 tonnes of run of mine material from Cedars deposit.

6. Test mine approximately 1,000 t on Glauber's salt from the deposit to determine the most appropriate mining methods and equipment for future production.

COST ESTIMATE - TIME SCHEDULE

1. Cedars Lake Drainage

(a) Using a siphon system starting 1987-06-01.
Capacity: 360,000 litre/day
Drainage time: 84 days

- 1 day level & stadia survey @ $500/day	$ 500.00	
- 700 ft. 3" plastic pipe in 20' sections @ $1.50/ft.	1,050.00	
- Unions, fitting cement for above pipe	150.00	
- Pipe installation (burial)	500.00	
- Periodic inspections	400.00	
Sub-Total	$2,600.00	
15% Contingencies	390.00	
TOTAL	$2,990.00	say $3,000

(b) Using a 40-50 H.P. farm tractor with P.T.O. driven pump and spray irrigation system, assuming pipe and 30 sprinkler heads are available at no cost. Starting 1987-08-01.
Capacity: 1,000,000/litre/day
Drainage time: 30 days

- 1 month tractor rental @ 1,000/month	$1,000.00	
- 1 month pump rental @ $1,000/month	1,000.00	
- Operating costs to irrigate 12 hectares @ $62.50/Ha	750.00	
- Installation labour - 2 man days @ $100/day	200.00	
- Tractor Operator - 30 days @ $100/day	3,000.00	
- Transportation - 30 days @ $25/day	750.00	
Sub Total	$6,700.00	
15% Contingencies	1,005.00	
TOTAL	$7,705.00	say $8,000

(c) Using portable, rented, gasoline driven pump. Starting 1987-08-01.
Capacity: (2 pumps) 1,000,000 litre/day
Drainage time: 30 days

- Pump rental (2) including hoses @ $1100/month	$2,220.00	
- Fuel & lubricants - 30 days @ $30/day	900.00	
- Pump Operator - 30 days @ $80/day	2,400.00	
- Transportation - 30 days @ $20/day	600.00	
Sub Total	$6,100.00	
15% Continencies	915.00	
TOTAL	$7,015.00	say $7,000

COST ESTIMATE - TIME SCHEDULE

2. Drillhole sampling of Cedars Glauber's Salt deposit with 20-25 vertical holes 6m deep.
Starting 1987-09-01
Time required: 20 days

- Purchase of piston sampler and accessories from Borros Canada Inc., Toronto	$2,420.00		
Sales Tax	170.00		
Shipping	130.00		
	$2,720.00	$2,720.00	
- 1 month Pionjar gasoline rock drill rental		700.00	
- Labour - 10 man days @ $100/day		1,000.00	
- Technical supervision, drill hole layout, core logging, sampling, etc. 5 days @ $350/day		1,750.00	
- Transporation		400.00	
- Assaying 150 samples @ $10/sample		1,500.00	
Sub Total		$8,050.00	
15% Contingencies		1,207.00	
TOTAL		$9,257.00	say $9,500

3. Removal of clay layer from surface of deposit with caterpillar type bulldozer.
Starting 1987-10-01.
Time required 7 days

- 40 hrs. D-6 (or equivalent) bulldozer rental including operator @ $110/hr.		$4,400.00	
- 2 days technical supervision @ $350/day		700.00	
Sub Total		$5,100.00	
15% Contingencies		765.00	
TOTAL		$5,865.00	say $6,000

TOTAL COSTS for recommended exploration programme:

- Minimum $18,500

- Maximum $23,500

COST ESTIMATE - TIME SCHEDULE

4. Anhydrous sodium sulphate process testing
by B.C. Research on 50 kg composite sample.
Starting 1987-10-15
Time required: 28 days
(cost estimate by Gormely)

- 7.5 days consulting (L.S.G.) @ $500	$3,750.00	
- Communications	50.00	
- Drafting, Printing, Covers	100.00	
- B.C. Research testwork	3,500.00 *	
TOTAL	$7,400.00	$7,400.00

* Half this amount may be recoverable through the Technical Assistance Program.

5. (a) From material mined from the deposit select one truckload, approximately 25 tonnes, of dry salt cake as a bulk sample and deliver to B.C. Research, Vancouver.

(b) Have B.C. Research conduct a laboratory scale mill test on this material.

Starting time (a) 1987-10-15
Time required: 28 days

- Mobilization and demobilization of "Gradeall" excavator from Kamloops	$ 250.00	
- 4 hrs (min) Gradeall rental @ $90/hr	360.00	
- 2 hrs dump truck rental @ $65/hr	130.00	
- Mobilization and demobilization front end loader from Kamloops	200.00	
- 2 hrs front end loader rental @ $75/hr	150.00	
- Flat rate truck rental Kamloops to B.C. Research, Vancouver	800.00	
- 1 day engineering supervision @ $350/day	350.00	
Sub Total	$2,240.00	
15% Contingencies	336.00	
TOTAL	$2,576.00	say $2,600

COST ESTIMATE - TIME SCHEDULE

Starting time (b) 1987-11-15
Time required: 42 days
(Cost estimate by McElroy, B.C. Research)

- Set up laboratory scale processing equipment and run 20 to 30 tonne bulk sample $25,000.00

6. Test mine approximately 1000 tonnes of Glauber's salt and stack for air drying.

Starting time: 1987-10-20
Time required: 15 days

- 1000 t @ $5.00/t including equipment rental and supervision $ 5,000.00
- TOTAL COST for recommended development $40,000.00
- TOTAL COST combined exploration and development program

Minimum $58,500.00

Maximum $63,500.00

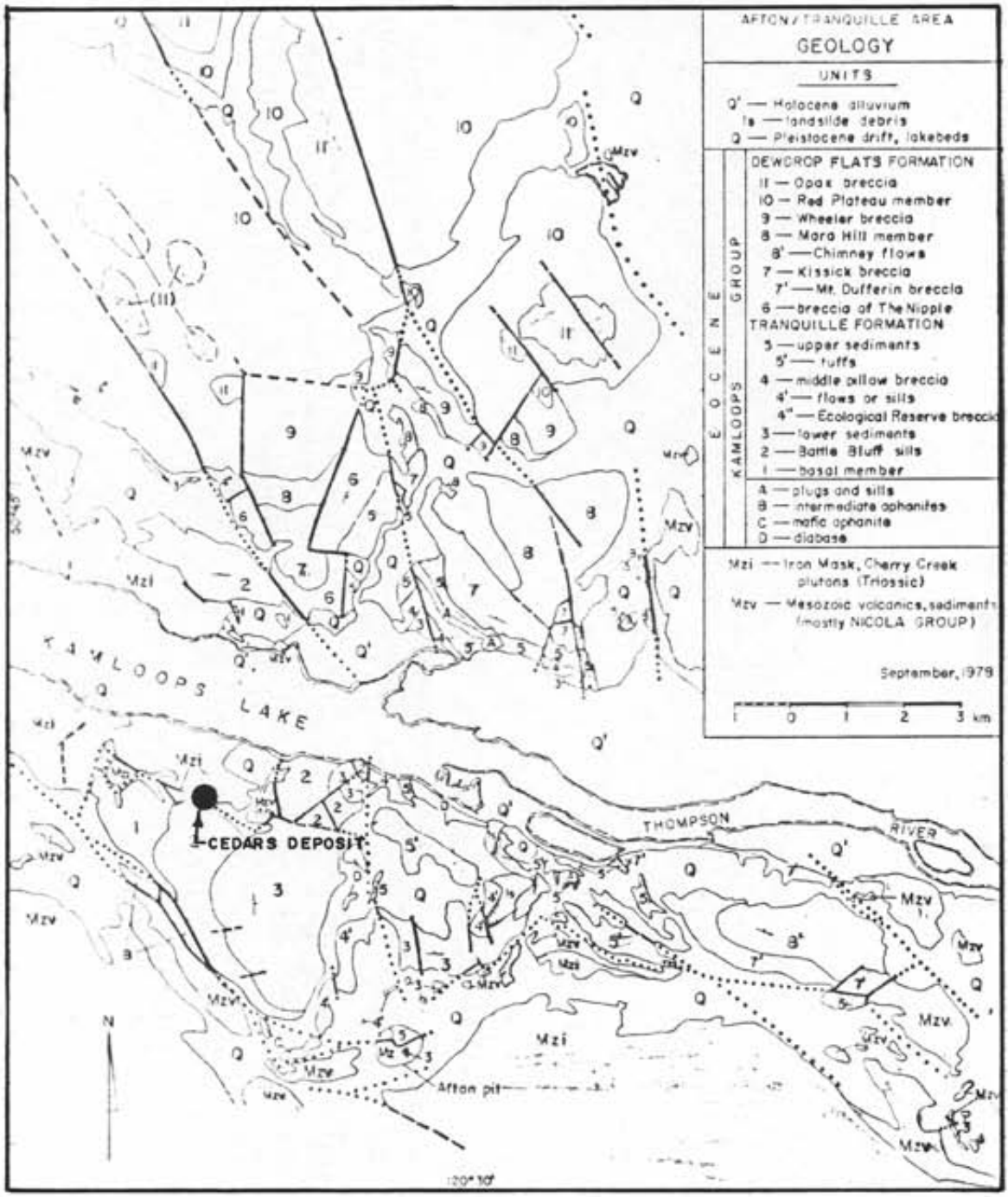
HISTORY

Previous work on the Cedars Glauber's salt deposit dates back to at least 1930. The property was apparently held by one owner from 1930 to 1949. Known exploration consisted of sporadic attempts to evaluate the deposit by pitting, auger drilling, sampling and assaying. No significant exploration work has been documented since 1949.

GEOLOGY

The Cedars claim is located on the faulted contact between intrusive rocks of the Cherry Creek pluton to the north, and an intrusive sill of the younger Kamloops Group, to the south (Plate No. 2).

The Cherry Creek pluton varies lithologically from diorite to syenite and includes brecciated and porphyritic phases. This small pluton, having dimensions of roughly 6 km by 6 km, is equivalent in composition and genesis to the late Cherry Creek phase of the Iron Mask batholith. This large multiple intrusive starts 6 km southeast of the Cherry Creek pluton, and extends for 20 km to the east southeast. The Cherry Creek phase of the Iron Mask batholith hosts several important copper deposits, including the Afton orebody. Both plutons are considered Triassic in age and are closely related in time and space to the Nicola Volanic rocks which they intrude.

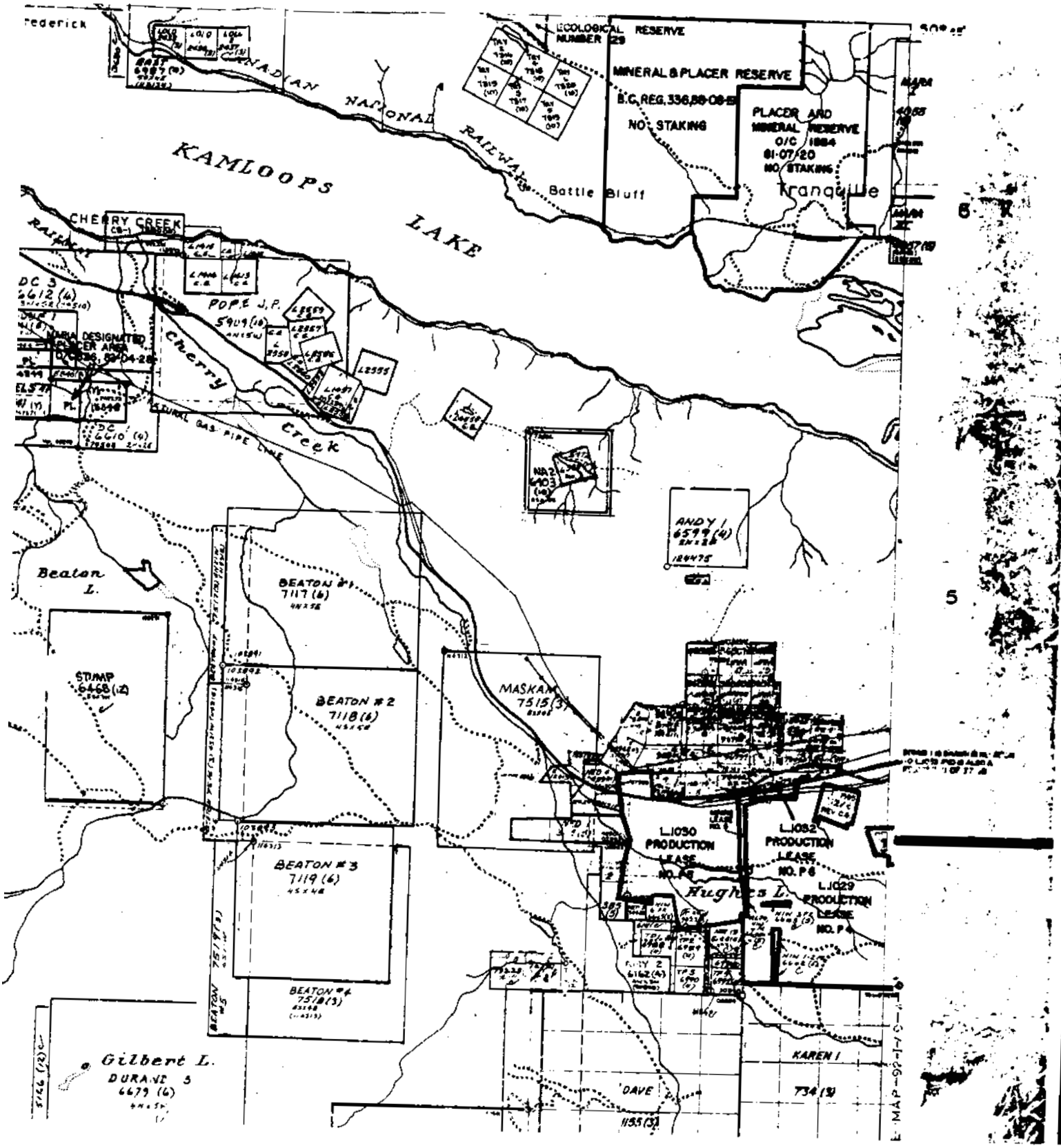


SCALE: 1:115000

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
JAY D. MURPHY

Geology by T.Ewing, 1979

SALOR SCIENTIFIC INC.		
CEDARS PROPERTY		
GEOLOGY		
J.D.M	87-04-06	PLATE NO. 2



CLAIM MAP

0 500 2000 M

Kamloops Group rocks are Eocene in age and comprise a dissected but wide spread sedimentary - volcanic sequence distributed throughout the area. The majority of Kamloops Group igneous rocks are volcanic flows and breccias, but include flat lying mafic sills. One such unit, the Battle Bluff sill, is widely distributed in the claim area. In the type area on the north side of the lake this unit has a thickness of 120m.

Both Triassic and Eocene rocks in the general area are cut by a northwest trending series of breaks, interpreted as normal block faults of Tertiary age. In the Cedars claim area a secondary series of faults trends west-northwest, related to the Cherry Creek and Iron Mask intrusives. These breaks may represent Triassic structures reactivated during Tertiary time.

One such structure, approximately 3 km in strike length, cuts through the subject claim, controlling the elongate basin containing Cedars Lake. The structural trap thus formed has collected and precipitated the soluble products from chemical weathering of the surrounding rocks. This process has been aided by the rapid rate of evaporation characteristic of the dry belt. The end result has been the formation of the Glauber's salt deposit in question.

SODIUM SULPHATE MINERALIZATION

The deposit underlies a small alkali lake (Cedars Lake) approximately 550m long and up 100m wide. When examined on 1987-02-17 the lake was completely thawed and covered with water. Reports by others (5) indicate that when the water level is sufficiently low, the Glauber's salt deposit is widely exposed or covered by only a thin layer of mud. Under such conditions, in October 1940, McCammon described the deposit as follows:

> "The lake was dry except for a few small circular areas near the centre of the south shore. The lake was covered with closely spaced, raised mud rings of the "crystal bowl" formation typical of these saline deposits. These rings varied from 3 to 40 feet in diameter."

Even under current high water conditions this ring structure was clearly evident. Apparently the salt crystals form discrete bowl shaped masses separated from one another by a wall of mud. These bowls are steep sided and thicken towards the centre. If this assumption is correct then the ratio of mud to salt crystal must increase with depth.

Previous work (5) indicated the overlying mud layer to average 30 cm deep, and the permanent crystal underneath to vary from 2 to more than 6m thick. Average depth is taken as 3m for tonnage calculations in this report. In plan the limit of permanent crystals closely parallel the shore line at a distance of 5 to 25m (Plate No. 3).

The surface area of the deposit was calculated at 23,600m^2. Using an average thickness of 3.0m and a specific gravity of 1.46, gives 103,368 tonnes of Glauber's salt containing 45,500 tonnes of salt cake.

Volume of clay overlying the deposit is calculated at 7,080 cubic metres or 18,250 tonnes.

Average water depth is estimated at 1.0m and the volume of water contained in Cedars Lake is calculated at approximately 30 million litres.

Cummings (5) estimated that the Cedars deposit contained 90,000 to 180,000 tonnes of raw salt representing 36,000 to 72,000 tonnes of salt cake.

Nine samples taken by McCammon in 1949 assayed 58.90 to 97.17% Na_2SO_4, nil to 7.35% Mg SO_4 negligible Ca SO_4, trace to 4.64% Ca CO_3 and trace to 1.94% Mg CO_3. Insoluable content varied from .4 to 27.31%.

PROPOSED EXPLORATION WORK

Exploration fieldwork is divided into three steps;

1) drain Cedars Lake,
2) accurately determine tonnage and grade by core drilling, sampling and assaying,
3) strip off the surface layer of clay capping the salt deposit.

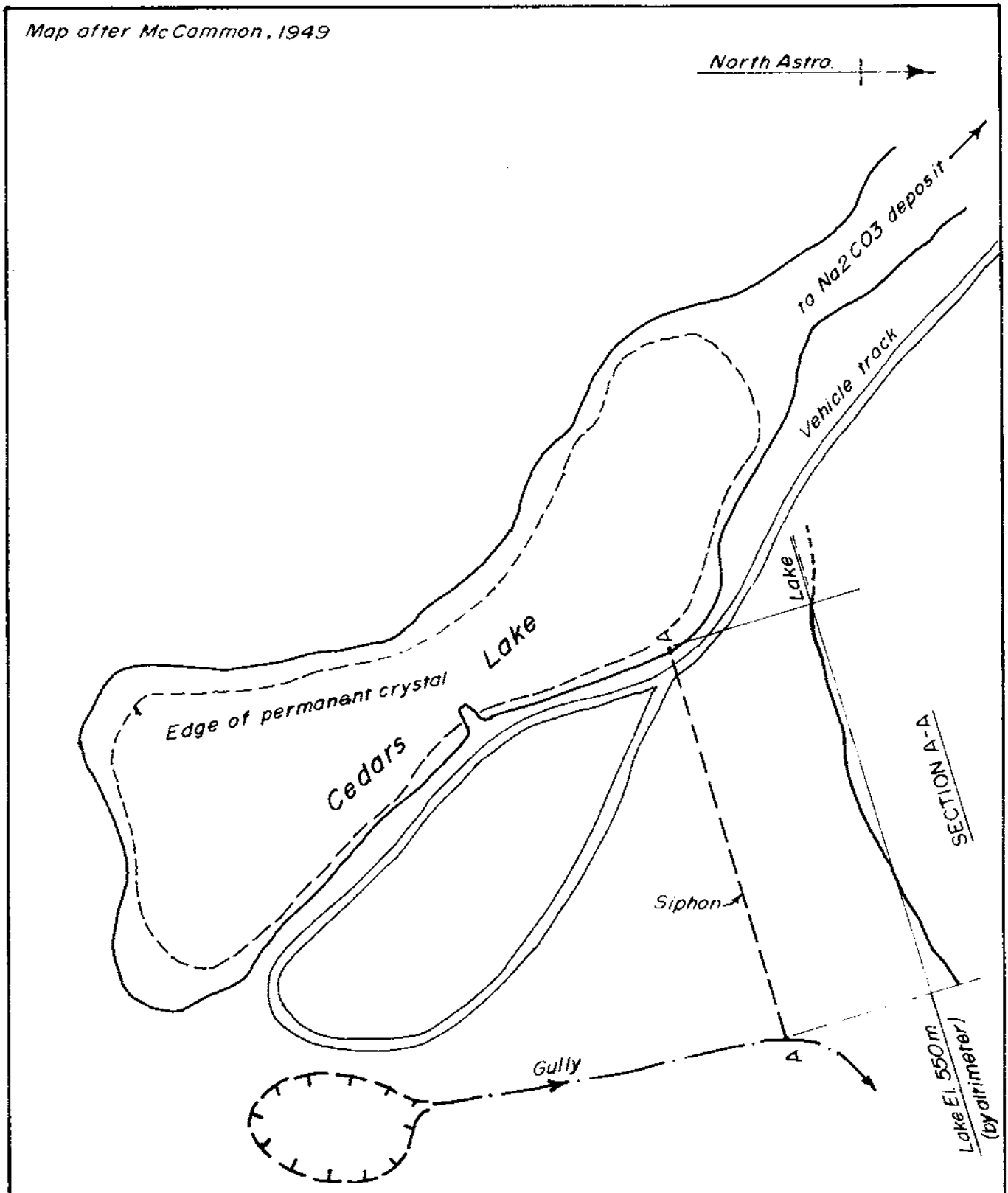
There are three recommended methods for dewatering the deposit, (a) siphoning the lake water to discharge into Kamloops Lake, (b) spray irrigation of a suitable area of natural or seeded grass and, (c) pump the lake water to discharge into a small salt lake to the west, to Kamloops Lake, or a combination of both. The selected method must be approved by the Ministry of Environment and Parks by obtaining an "Approval", a process that usually takes about 45 days. Certain preconditions will be set by the Approval that will consider both the ecological and technical aspects of the drainage procedure used.

Drainage by siphoning is considered the simplest and cheapest method. Once installed the system would require little additional labour, apart form periodic inspections. This method is fairly flexible regarding discharge capacity. Pipe size can be selected to give the required rate of flow, or more than one line could be installed. To obtain the required head, discharge water would have to be directed into Kamloops Lake. This should not be a problem since the water will have a nearly neutral pH value. The relatively low flow rate over a protracted time period might be advantageous ecologically.

Regarding spray irrigation, the B.C. Department of Agriculture advises that the calculated water volume in Cedars Lake would adequately irrigate approximately 12 hectares on a one time basis. The sodium would have no negative effect on plant growth or soil condition. This method is considered the best environmental solution to the water disposal problem, but would depend on the co-operation of the land owner and the availability of irrigation equipment.

The most straight forward drainage method would be gasoline driven pumps available from equipment rental agencies. This would provide maximum flexibility regarding flow rate and disposition of the discharge water. Cost is slightly less than for spray irrigation and more than double that of siphoning. Equipment would have to be inspected and serviced on a daily basis. Consequently it would be advantageous to use high volume pumps and reduce the time period to a minimum. This would present a problem only if there was some objection from the Ministry of Environment or other government agency.

When conditions of Approval from the Ministry of Environment are known, the most appropriate drainage method can be selected.



METRES

0 25 50 75 100

SCALE 1:2400

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
JAY D. MURPHY

SALOR SCIENTIFIC INC.

CEDARS PROPERTY

CEDARS LAKE AREA SHOWING PROPOSED SIPHON

J.D.M	87-04-06	PLATE NO. 3

After draining the salt deposit it should be possible to work on the surface with light equipment to determine the depth and areal distribution of the deposit. The recommended method is to drill a series of vertical holes on a predetermined grid pattern to extract continuous samples from surface to the lower limit of the permanent crystal layer. The proposed sampling method would involve driving a small diameter (3-4cm) tube into the deposit with a lightweight gasoline rock drill and extracting a solid core for sample analysis. Sampling tubes can be purchased or fabricated. Some onsite testing will probably be required to select the most effective equipment.

The recommended drilling pattern would require an initial series of approximately 20 holes. Each hole would be located at the corner of an equilateral triangle 43.3m on a side, having an area of influence bounded by a hexagon 25m on a side as illustrated by Plate No. 4. This should be sufficient for tonnage and grade calculations, but if a closer pattern is required this could be accomplished by drilling fill in holes at each corner of the hexagon, resulting in a triangular pattern 25m on a side. Fill in drilling would require an additional 70 to 75 holes to complete the pattern.

Provided tonnage and grade calculations indicate the deposit has economic potential, the next step would be to remove the clay layer overlying the salt crystals. It is assumed the deposit will be solid enough to support the weight of a bulldozer and blade. After removal of the clay layer the deposit will be ready for bulk sampling preparatory to production.

PROPOSED DEVELOPMENT WORK

Work recommended consists of (a) laboratory testing of a small composite sample of salt cake from the deposit (b) collecting a bulk sample of approximately 25 t and running a bench scale mill test on the material and (c) test mining approximately 1000 t of Glauber's salt from the deposit.

The proposed salt cake process testing by B.C. Research is detailed in Appendix 4 of the reference by Gormely (3). Cost estimates are also given and have been incorporated unchanged into this report as item 4 under the heading "COST ESTIMATE - TIME SCHEDULE". Half of the charges by B.C. Research, $1,750, may be recoverable through the Technology Assistance Program (TAP).

The objectives of laboratory test work is to determine the physical and chemical parameters of the deposit material, and apply this data to determine and recommend the optimum methods to be used in an operating mine treatment plant.

Purpose of the laboratory bench test of the 25 t bulk sample is to confirm the efficiency of the recommended treatment procedures under simulated mine operating conditions. Procedures can then be modified if necessary before scaling up to an actual mine treatment plant. This test phase may be particularly important in light of the modifications to the conventional flow sheet suggested by Dr. McElroy of B.C. Research (3), involving the addition of a heat pump and removal of water of hydration in the liquid phase, rather than as a vapour. An important corollary of the test would be the ability to make an accurate determination of cost per tonne in a full scale treatment plant.

Two methods have been suggested for developing the Cedars deposit; (1) solution mining and (2) conventional open pit mining.

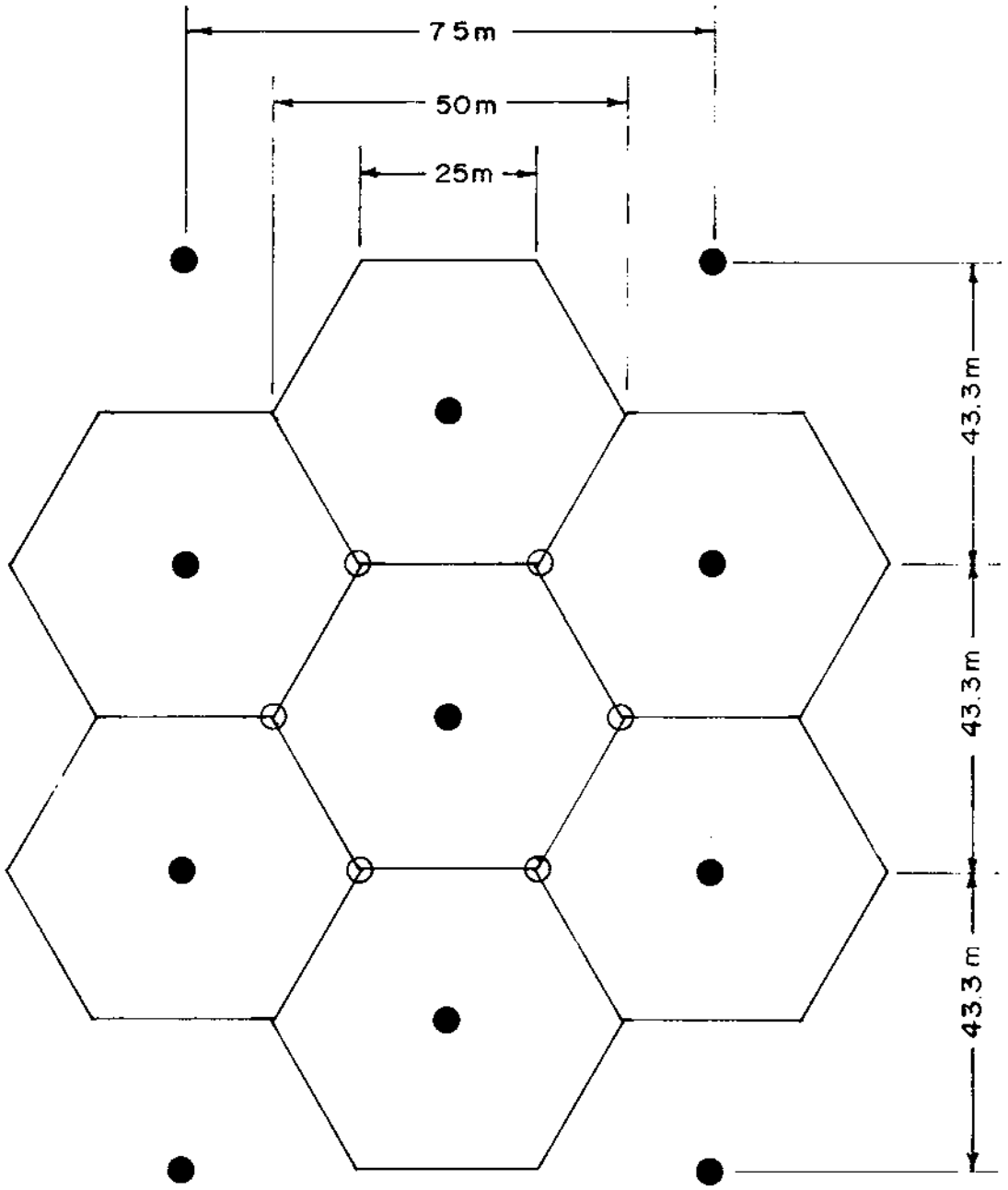
Solution mining involves flooding the Glauber's salt deposit with a shallow layer of water during the warm summer months. The salt deposit minerals are dissolved by the water which is then pumped to a settling pond when the solution reaches an appropriate degree of saturation, usually abour 20% by weight of dissolved salts. In winter, decreased ambient temperatures cool the solution. The precipitation of sodium sulphate is thus promoted, while most of the soluble inpurities, such as calcium and magnesium remain in solution, which is finally allowed to flow by gravity back to the mineral deposit. The relatively pure Glauber's salt accumulated in the settling pond is harvested by mechanical excavators during the winter months and stockpiled as feed for the treatment plant. The final product is dry salt cake containing at least 98% Na_2SO_4.

Subsequent to telephone conversations with Gordon Miller, P. Eng., Saskatchewan Minerals Ltd, Chaplin, Saskatchewan, it was concluded that solution mining methods cannot be applied effectively to the Cedars deposit. The relatively small area (3.25 hectares) of the deposit means that the target annual production rate of 24,000 tonnes could not be achieved in practice. At the Chaplin operation, by comparison, annual production by solution mining is only 30,000 tonnes from a deposit 320 ha in area using a settling pond 8 ha in area. Simply put, the Cedars deposit is too small for solution mining.

● Original hole

○ Fill in hole

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
JAY D. MURPHY



METRES

0 10 20 30 40 50

SCALE 1:1000

SALOR SCIENTIFIC INC.

CEDARS PROPERTY

DRILLING PATTERN

J.D.M	27-04-04	PLATE NO. 4

Selecting the most effective methods and equipment for conventional open pit mining presents a problem because, until Cedars Lake has been drained it is impossible to predict the subsequent physical state of the deposit. Will it be possible to operate on the salt deposit with heavy equipment? Will it be necessary to drill and blast the salt crystals or can they be dug with standard excavating equipment? It is anticipated that considerable experimentation will be required to answer these and other questions pertinent to selecting appropriate mining methods and equipment. Once the selection has been made it is recommended that both method and equipment be tested by excavating a minimum of 1,000 t of Glauber's salt. This should also provide data to accurately determine mining costs for the actual production phase.

The material mined could be used to experiment with various methods of stockpiling to allow the Glauber's salt to dry under natural conditions preparatory to plant treatment. A bulk sample of the dried salt cake would be selected and trucked to Vancouver for the laboratory scale mill testing as recommended.

In summary, from the foregoing development recommendations it should be possible to select optimum mining and plant treatment methods for production from the Cedars deposit at a rate of 100 t salt cake per operating day, and to accurately predict the costs involved. This data is essential for subsequent feasibility studies to determine the economic viability of the Cedars project.

ECONOMIC CONSIDERATIONS

Salt Cake (Na_2SO_4) has a multitude of uses in the chemical and manufacturing industries. It is used in the manufacture of Kraft paper, paperboard, rayon and textiles. A high degree of purity is required, in excess of 98% Na_2SO_4.

Canadian production in 1985 was 354,000 tonnes of salt cake valued at $33,487,000. Saskatchewan accounts for 89.5% of production, the balance coming from Alberta. Current value of salt cake is approximately $100/tonne F.O.B. at the plant site.

Glauber's Salt (Na_2SO_4 -10 H_2O) the hydrous form of salt cake, is used for dyes and medicine. Heating systems have recently been developed using this material as the heat exchange medium, alternately storing and releasing heat energy as it melts and freezes around the

relatively low melting point of 32.4° C. It is this particular application that is of greatest interest to Salor Scientific Inc.

Recent work by Gormely (3) has sugggested several applications for Glauber's Salt in residential and industrial heating systems, which, if developed, could provide an important additional market for production from the Cedars claim.

Gormely has also researched mining and plant treatment methods applicable to the deposit. Suggested mining methods include a conventional dril-blast-haul system and a solution mining procedure with precipitation of clean Glauber's Salt crystal in a ponding area.

The essential function of a treatment plant for Glauber's Salt is to eliminate insoluables, chemical impurities and water of hydration, producing a dry finished product containing at least 98% Na_2SO_4. Gormerly recommends treatment methods for pilot plant bulk testing.

Serious consideration should be given to determining the potential value of the surface layer of clay covering the salt deposit. This material is a dark green high plastic, highly absorbent, montmorillonite clay containing scattered salt crystals. This material may be valuable for cosmetic and therapeutic properties comparable to those attributed to Dead Sea mud being imported for these purposes. The Cedars property is ideally located, close to a large supply and transportation centre but outside the Kamloops city limits. Kamloops represents a large labour pool within easy commuting distance. A well developed infrastructure, including railway, highway, power line and natural gas, service the claims area within two kilometers. Kamloops Lake provides a reliable source of fresh water. Climate is moderate, suitable for a year round operation.

STATMENT OF QUALIFICATIONS

I, Jay D. Murphy, hereby certify:

1. That I am a Consulting Geological Engineer, resident at 1335 Todd Road, Kamloops, B.C.

2. That I am a graduate from the University of Manitoba (1954) with a B.Sc. in Geological Engineering.

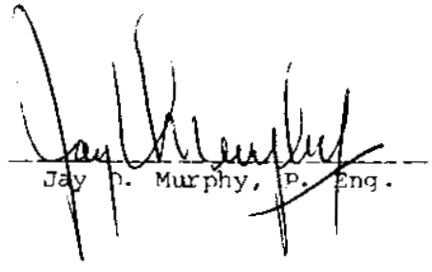
3. That I have practiced my profession continuously since graduation.

4. That I am a member of the Association of Professional Engineers of British Columbia and Ontario.

5. That the information contained in this report is based on library research and a personal examination of the subject property.

6. That I have no financial interest in the subject property or Salor Scientific Inc.

7. That this report or excerpts therefrom may not be published in any Prospectus or Statement of Material Facts without written permission from the undersigned.



Jay D. Murphy, P. Eng.

BIBLIOGRAPH

(1)	Carr, J.M. and Reid, A.J.	Afton: A Supergene Copper Deposit. Porphyry Deposits of the Canadian Cordillera, CIM Special Volume No. 15 pp 376-378, 1976.
(2)	Ewing, Thomas	Geology of the Kamloops Group. Province of British Columbia Geological Division Paper 1979-1 pp 119-123, 1979.
(3)	Gormely, Lynton S.	Cost Effective Phase Change Heat Storage: Development and Prototype Demonstration for Selected Markets, Research and Development Proposal. Report for Salor Scientific Inc., 1986.
	Ibid.:	Untitled report for Rapid Canadian Resource Corporation, 1985.
(4)	Peele, Robert	Mining Engineer's Handbook, Vol. 1, Ch. 13, p. 10, 1952.
(5)	McCammon, J. W.	Minister of Mines B.C. Annual Report, p. A-264 - A-266, 1949.
(6)	Nichols, H.C.	Minister of Mines B.C. Annual Report, p. A-196, 1930.

APPENDIX 1: METHODS AND MATERIALS

1. TEST SAMPLES AND PREPARATION

Samples were received (double bagged) in moist condition.

As received samples were broken up on a rubber bucking pad with a stainless steel roller, mixed and subsampled (200 g).

2. INSOLUBLES, SOLUTION PREPARATION AND ANALYSES

The 200 g subsamples were pulped with ~300 mL of distilled water and heated to ~90°C with stirring. Pulp was then passed over a 100 mesh stainless steel sieve (to remove any coarse material) and a 1/8 split removed by a stainless steel riffle for gravimetric insoluble determination using a 0.45 µ filter.

Filtrate and hot water washings were diluted to 200 mL for sodium analysis by atomic absorption spectroscopy (AAS) and sulphate by turbidimetric titration with barium chloride.

Remaining pulp was transferred to storage bottles; quiescent settling behaviour was observed visually, and supernatant turbidity was measured instrumentally on selected samples.

Solution pH values were measured at 22°C.

3. SODIUM SULPHATE CRYSTALLIZATION

Aliquots (100 mL) of supernatant solution were transferred to a rotary evaporator and reduced in volume to 20-30 mL at ambient temperature, to produce a pourable crystal slurry.

Pulp containing crystallized product was dumped to a vacuum filter pad and drained for 30 seconds without washing. Drained crystals were dried overnight at 110°C; weighed subsamples of each dried product were dissolved for determination of sodium (AAS) and sulphate (gravimetric, as $BaSO_4$) contents.

BC RESEARCH
3650 Westbrook Mall,
Vancouver, B.C.,
Canada V6S 2L2
Phone (604) 224-4331
Cable RESEARCHBC
Telex 04-507748

September 8, 1988
Our File: 2-51-824

Mr. K. Ellerbeck
SALOR Scientific Corp.
1834 Breakenridge Court
Kamloops, B.C.
V2E 1W9

Dear Mr. Ellerbeck:

Re: ANALYSIS OF CEDARS SAMPLES AND QUALITY OF SODIUM SULPHATE PRODUCT

Results of our analyses on the Cedars samples and of crystallization products from these materials are presented in Tables 1 and 2 (attached).

As indicated by the data of Table 1, all of the test samples contain significant quantities of sodium sulphate. There is a fairly wide variation in quality, however, since (calculated) anhydrous sodium sulphate contents range from 44% to ~13%. Corresponding (calculated) Glaubers salt ($Na_2SO_4.10\ H_2O$) contents range from near 100% to ~30%.

It should be noted that most of the samples contain excess sodium (see $Na:SO_4$ molar ratio, Table 1). For the selected samples we have tested, chloride and carbonate anions do not fully balance the excess sodium, so results to date do not allow a complete cation-anion balance for the samples.

Table 2 presents results of analyses on products from initial sodium sulphate crystallization tests on solutions prepared from the test samples. Test methods are described in Appendix 1.

These data indicate that acceptable (i.e. $\geq$99% Na_2SO_4) can be prepared by single stage crystallization/drying from 14 of the 19 samples tested. For the remaining materials, test results (>96% Na_2SO_4 in primary dried product) suggest that acceptable product could be prepared by blending of raw materials; this will require confirmation testing, however. It is probable that the impurities in samples containing <99% Na_2SO_4 resulted from solution retained with the filtered crystals which were (deliberately) not washed. On this basis, it is also possible that slower crystallization - resulting in coarser crystals - could produce acceptable product.

.../2

The insoluble contents of test samples consisted primarily of fine grained material; presence of +100 mesh sand and pebbles was noted for only 3 samples (see Table 1).

At their natural pH values (pH 10-10.4) slurry samples showed good settling properties; turbidity values for supernatant after 1 h quiescent settling were in the 10-45 ppm range. Visual observations of sedimentation indicated a degree of self-flocculation. Ultimate settled pulp density was not determined.

Overall, test results confirm the feasibility of producing technically pure sodium sulphate (>99% Na_2SO_4) from 14 of the 19 test samples.

My recommendation for immediate further testwork is to submit selected samples for multi-element analysis; results of these tests will be useful in obtaining cation-anion balances.

I trust this report is satisfactory; if you have any questions or comments, please contact me.

Yours very truly,

B.C. RESEARCH

R. O. McElroy
Extractive Metallurgy
Division of Applied Biology

ROM/md
Enc.

TABLE 1: RESULTS OF ANALYSES ON CEDARS SAMPLES

SAMPLE CODE	INSOLUBLES (wt%)	SODIUM (wt%)	SULPHATE (wt%)	$Na:SO_4$ MOLAR RATIO	Na_2SO_4 [1] (wt%)	$Na_2SO_4 \cdot 10\ H_2O$ (wt%)	NOTES
A3	8.5	14.4	30.0	2.0	44.4	>100	
A7	4.1	14.05	29.2	2.0	43.2	98	Sulphide smell, some rocks and grit.
A9	11.8	13.5	24.8	2.26	41.9	95	
A11	6.7	11.5	13.3	3.6	35.7	81	Sulphide smell.
A13	7.0	12.5	27.8	1.9	38.8	88	
A1+15	12.4	10.8	11.9	3.8	17.6	40	
A4+20	7.1	13.4	14.4	3.9	21.3	48	
B2	2.6	11.5	16.8	1.9	24.9	56	Grit in insolubles.
B4	3.0	13.2	11.7	4.75	17.3	39	
B6	2.7	11.7	11.0	4.4	16.3	37	
B10	5.6	13.6	11.6	4.9	17.2	39	
B14	3.0	13.6	12.6	4.5	18.6	42	
B8+14E	7.0	11.0	9.2	5.0	13.6	31	
B15+8	12.2	10.2	9.3	4.9	13.8	31	
C3	7.5	11.4	10.0	4.7	14.9	34	
C13	13.7	12.8	9.2	5.8	13.6	31	
C15	12.3	10.6	9.2	4.8	13.6	31	
C16+10	18	9.8	19.4	2.15	28.7	65	Rocks and grit in insolubles.
D16+12E	10.5	10	24.4	1.7	31	70	Grit in insolubles.

(1) Calculated from limiting ion (in most cases SO_4).

TABLE 2: RESULTS OF ANALYSES OF OVEN DRIED CRYSTALLIZATION PRODUCTS

SAMPLE CODE	(wt%) Sodium	Sulphate	Na_2SO_4*	Unaccounted
A3	32.41	67.55	99.96	0.04
A7	32.37	67.48	99.85	0.15
A9	32.45	67.41	99.86	0.14
A11	32.59	67.30	99.89	0.11
A13	32.41	67.52	99.93	0.07
A1+15	32.65	67.24	99.89	0.11
A4+20	32.71	67.17	99.88	0.12
B2	32.63	67.05	99.68	0.32
B4	32.71	65.93	98.64	1.36
B6	32.70	66.31	99.01	0.99
B10	32.80	65.64	98.44	1.56
B14	32.68	66.32	99.0	1.0
B8+14E	32.55	65.35	97.90	2.1
B15+8	32.51	65.13	97.64	2.36
C3	32.14	67.10	99.24	0.76
C13	32.60	64.01	96.61	3.39
C15	32.38	66.88	99.26	0.74
C16+10	32.43	67.51	99.94	0.06
D16+12E	32.43	67.62	(100.06)	(0.06)

* Total of sodium + sulphate.

-22-

APPENDIX 5

ITEMIZED COST STATEMENT

CONSULTING: JAY D. MURPHY		
1 day field work @$350 Sat. July 23/88		$350.00
REPORT PREPARATION: JAY D. MURPHY		
14 hrs. @ $40.00		$560.00
		$910.00
TRANSPORTATION: JAY D. MURPHY		
1 day 4x4 rental	$25.00	
191 kms. @ $0.20	$38.20	$63.20
Sat. July 23/88		
OFFICE COSTS: JAY D. MURPHY		
TYPING AND PHOTOCOPIES		$38.80
ASSAYS AND ANALYSIS: BC RESEARCH		
CONTRACT ANALYSIS		
20 samples GLAUBER SALTS		$3000.00
GRID PREPARATION: TITAN CONSULTING INC		
2.0 km. @ 200.00/km Sat July 23/88		$400.00
SAMPLING , BAGGING AND SHIPPING SAMPLES:		
TITAN CONSULTING INC.		
20 samples @ 20/ sample		$400.00
Sat. July 23/88		
Sun. July 24/88		
Mon. July25/88		
TOTAL COST		$4812.00

INVOICE

TO: Salor Scientific Inc.
1834 Breakenridge Court
Kamloops, B.C.

IN ACCOUNT WITH:
Jay D Murphy P.Eng
1335 Todd Road
KAMLOOPS, B.C. V2C 5B4

MONTHS: February, July, August & September

DATE: 1988-09-09

CONSULTING		
1 day fieldwork, sampling Cedars Lake deposit @ $350.00	$350.00	
14 hrs. Miscellaneous office, report amendments etc. @ $40/hr	$560.00	
TOTAL CONSULTING	$910.00	$910.00
TRANSPORTATION		
1 day 4x4 rental @ $25/day	$ 25.00	
191 km @ $.20/km	38.20	
TOTAL TRANSPORTATION	$ 63.20	$ 63.20
OFFICE COSTS		
Typing	$ 29.00	
Photocopies	9.80	
TOTAL OFFICE COSTS	$ 38.80	$ 38.80
TOTAL INVOICE		$1012.00

APPLICATION FORM -24-

BCR Project No.: _____

TAP Commitment: $_____

Company Name: SALOR Scientific Inc.

Company Address: 1834 Breakenridge Court

Kamloops, B.C.

Contact Person: Mr. K. Ellerbeck **Postal Code:** V2E 1W9

Position/Title: _____ **Telephone:** 372-8396 **No.Employees:** ____

Project Title:

"CEDAR" SODIUM SULPHATE

Project Description: (summarize the technical objectives of the project)

To determine sodium sulphate and insolubles contents of ore samples, and quality of anhydrous sodium sulphate from processing.

Project Budget: $ 3,000

Estimated Start Date: August 5, 1988

Estimated Completion Date: August 19, 1988

Signed: _____
B.C. Research Project Leader

Signed: _____
B.C. Research TAP Co-ordinator

1. The applicant will pay B.C.Research the total agreed project cost and will then be eligible for re-imbursement from the Technology Assistance Program upon submission of the receipted invoice, together with a brief Project Completion Report.
2. The Project Completion Report must be submitted by March 20, 1989 and all project costs must be fully paid by that date in order to quaiify for the re-imbursement.
3. The applicant understands that this project may not receive any other financial support from the N.R.C. Industrial Research Assistance Program, the Science Council of B.C., or from any other Provincial research grant program.

Agreed and accepted on this 9th day of August, 1988

Signed: _____
(on behalf of Applicant)

REVISED 04/88

TITAN CONSULTING INC.
1834 BREAKENRIDGE COURT
KAMLOOPS, BC V2E 1W9

INVOICE:

IN ACCOUNT WITH: SALOR SCIENTIFIC CORP

TO: GRID PREPARATION ON CEDARS PROPERTY JULY 23/88	2.0 KM. @ 200/KM	400.00
TO: SAMPLING, BAGGING AND SHIPPING 20 SAMPLES OF $NA_2SO_4 \cdot 10H_2O$ TO B.C. RESEARCH JULY 24, 25/88	@ $20.00/SAMPLE	400.00
	TOTAL	$800.00

THANK YOU

PRESIDENT

JULY 30/88

DESCRIPTION OF

SAMPLING PROCEDURE

1335 Todd Road
Kamloops, B.C.
V2C 5B4

1988-09-08

Burstall & Company
Suite 2100, 801-6th Avenue S.W.
Calgary, Alberta, T2P 3W2

ATTN: Art Coady, RE: Salor Scientific Inc.

Dear Mr. Coady,

As a follow up to my letter of 1988-08-26 I am enclosing the complete results of analytical tests carried out by B.C. Research on samples taken from the Cedars Lake Glaubers salt deposit. Sample B-12 is missing as previously noted. This sample was apparently lost in transit or during analysis.

Enclosed data include Table 1, showing the results of analyses on Cedars samples, Table 2, showing analytical results on crystallised anhydrous sodium sulphate, Appendix 1, listing sample preparation and analytical methods, and a two page letter from Dr.R.O.McElroy, B.C.Research Corp. to Mr.K.Ellerbeck, President, Salor Scientific Inc, with respect to analytical results.

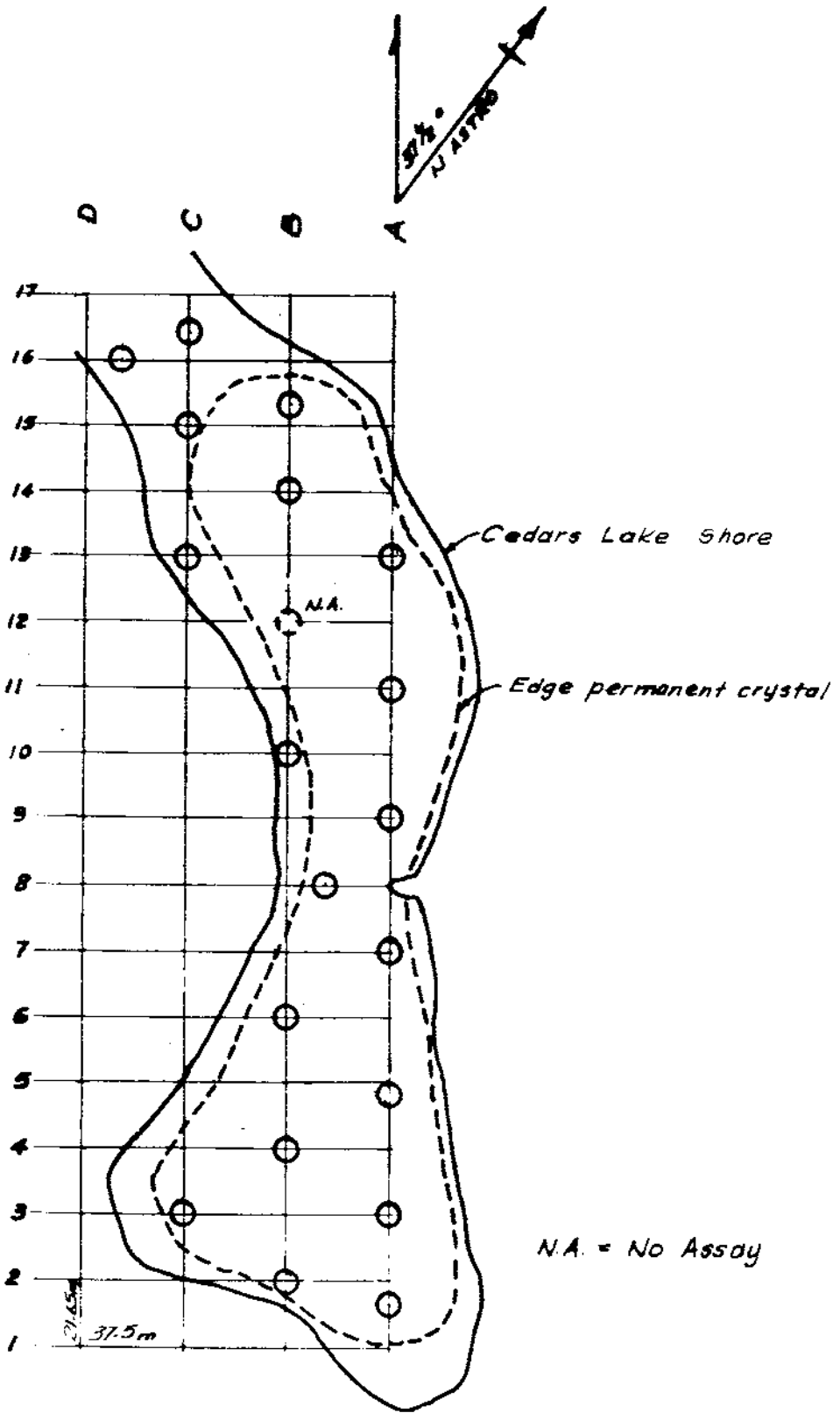
In Table 1 please note that for sample C-16 + 10, the correct value for insolubles is 18% by weight rather than 8% recorded in error on my Table No.1 submitted previously.

All samples were collected by hand from the surface of Cedars Lake. A shovel was used to dig through the thin surface layer of mud to collect the underlying Glaubers salt crystal. Sample material was collected at a uniform depth of approximately 30 cm below surface.

From the sum of enclosed data the writer concludes that the raw material from Cedars Lake deposit is amenable to relatively simple processing that will produce a high purity product meeting market citeria as set by industrial standards.

Yours truly,

J.D.Murphy, P.Eng.



PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
JAY D. MURPHY

SALOR SCIENTIFIC INC.

CEDARS PROPERTY

SAMPLE LOCATIONS

J.D.Murphy	1:2400	PLATE NO 5