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PRELIMINARY REPORT ON THE
BEACH SANDS EXPLORATION PROGRAMME
NEAR BRIDPORT

E.L. 19/70

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Z. KOCIUMBAS,
MINING ENGINEER.

July, 1971.

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PRELIMINARY REPORT ON THE
BEACH SANDS EXPLORATION PROGRAMME
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Z. KOCIUMBAS,
MINING ENGINEER,
JULY, 1971.

(This report has been submitted previously, but
without this summary ~~report~~ page. D.J.J.)

SUMMARY.

A programme of reconnaissance of the beach and sand dunes was carried out down to the water-table, during the summer of 1971-72 near Bridport, Tasmania, to determine the presence or absence of heavy minerals and their concentration in the sands inshore.

The concentrated samples from selected holes were analysed by AMDEL and the results show the presence of Ilmenite, Rutile and Zircon in sub-economic quantities (total value approx. 4¢ per cubic yard) together with minor amounts of Monazite and occasional traces of Cassiterite and Gold.

Conclusions.

It appears that the quantity of heavy minerals in the holes selected for sampling, is small and at this stage would appear uneconomical, at least down to the water table, as none of the holes were bottomed.

Recommendations.

It is recommended that any further scout boring should be done below the water table down to bedrock.

more extensive drilling should be carried out to try and find areas of higher mineral concentrations.

The area sampled is $1\frac{1}{2}$ miles by $\frac{1}{2}$ mile and represents a very tiny part of the dune system (old and new) available to us under the exploration licence.

In view of the low cost involved in carrying out this type of sampling programme it is recommended to recommence the beach sand sampling programme.

Location.

Sampling was carried out by H. MOSES along four lines. The lines were half a mile apart and at right angles to the beach. Line 1 is situated near "ADAMS CUT" east of Bridport.* The other lines are further to the east of line 1. The holes along each line were spaced 400 feet apart.

Method of Sampling.

Sampling was done by hand, using a 2 $\frac{1}{2}$ inch auger, and was carried out in accordance with the "Manual of Beach Mining Practice" by McDonald. The material from every 5 foot section of hole was bulked together, then concentrated by panning, bagged and labelled. The quantity of concentrate collected from each sample was approximately the same.

To reduce the number of samples to be analysed the first time, only several holes were selected from which samples were dispatched to AMDEL for a mineral content determination.

Cost of Samples.

AMDEL have analysed 36 Beach Sand samples for B.M.I.

Mining.

The cost was quoted to be \$14 - \$15 per sample when the initial enquiries were made by phone. We have been charged \$35 per sample.

This account was queried with Dr. Honley, in charge of beach sand analysis. He stated that the original quote must have been made in error, and that their normal charge is \$35 per sample. Cost should have been \$500, but are now \$1,260.

* See BRIDPORT Topographic map.

APPENDIX 1.METHOD USED FOR BEACH SANDS EVALUATION.SAMPLE VOLUME.

The hand auger, used to drill the holes and collect the samples has a nominal diameter of $2\frac{1}{2}$ " and an outside diameter of $2\frac{3}{4}$ " .

Samples were collected from the surface, to the bottom of the hole in 5 foot intervals.

The volume of sand in a 5 foot interval

$$= \left[\frac{\pi}{4} \left(\frac{2\frac{3}{4}}{12} \right)^2 \times 5 \right] \text{ c.ft.}$$

$$= \underline{0.2 \text{ c.ft. per sample.}}$$

(H. Moses stated that a sample over the 5' interval fills one panning dish. There are 135 dishes to the cubic yard, therefore

$$\text{Volume of sample} = \frac{27}{135} \text{ c.ft.}$$

$$= 0.2 \text{ c.ft.}$$

This agrees exactly with the above calculations.)

SAMPLE WEIGHT.

Taking the density of sand as 90lb. per cubic foot the weight of a sample (over a 5 foot interval) would be

$$= (90 \times 0.2 \times 454) \text{ gms.}$$

$$= \underline{8,174 \text{ gms.}} \text{ (Say 8,200 gms.)}$$

WEIGHT % OF MINERAL.

Taking sample No. BP 1 as an example, the AMDEL Report gives an amount of 14% of zircon in the sample supplied to them. Its dry weight was 29.60 gms. This amount of sample was washed out of the original sample over the 5' drill hole interval, and weighed 8,200 gms.

Therefore the percentage of zircon present by weight in
the sand dunes where the hole was drilled:

$$= \frac{29.60 \text{ gms.}}{8,200 \text{ gms.}} \times 14\%$$

$$= \underline{0.05\%}$$

This is the basis used for calculating the percentages of
minerals present in the dunes.

Value Evaluation.

Value of Minerals contained in Line 3 Hole 3.

Hole depth 47 feet.

Sample No's BP 66 - BP 75.

Dry Sample Weight	Ilmenite		Rutile		Zircon	
	gms.	%	gms.	%	gms.	%
19.05	25	4.76	6	1.14	7	1.33
13.81	20	2.76	3	0.41	5	0.69
16.23	20	3.24	3	0.49	6	0.97
17.23	33	5.68	6	1.03	12	2.07
33.17	31	10.28	4	1.33	11	3.65
34.87	35	12.20	6	2.09	9	3.14
33.59	19	6.38	4	1.34	3	1.01
22.91	25	5.73	6	1.37	8	1.83
23.43	23	5.39	5	1.17	7	1.64
9.35	19	1.77	2	0.19	7	0.65
		58.73		10.56		16.98

The depth of the hole which is represented by the above minerals, is 47 feet.

As previously calculated, a 5 ft. section of hole represents 0.2 cu.ft.

therefore total value of hole

$$= \frac{47}{5} \times 0.2 \text{ c.ft.}$$

$$= \underline{1.88 \text{ c.ft.}}$$

This volume of sand yielded 58.73 gms. of Ilmenite, as shown in the above table.

Thus the grade of Ilmenite is $\frac{58.73}{454} \times \frac{27}{1.88}$

$$= \underline{1.86 \text{ lb/c.yd.}}$$

Mineral	Grade	Price per Ton	Value of Sample
	lb/c.yd.	\$	¢
Ilmenite	1.86	11	0.91
Rutile	0.33	150	2.20
Zircon	0.54	41	0.99
			4.10

*Price as at 1/2/71.

The value of the minerals in the sand around Hole 3 on Line 3
is 4.1 ¢ per cubic yard.

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3/431/2/0

REPORT MP 3786/71

April, 1971

EXAMINATION OF THIRTY SIX BEACH SAND SAMPLES

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES
Adelaide South Australia

858010

amdel

The Australian Mineral Development Laboratories

Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AAB2520

Please address all correspondence to the Director
In reply quote: MP 3/431/2/0

28 April, 1971

**E. M. I. Mining Pty Ltd.,
Box 577 PO.,
LAUNCESTON, TAS 7250**

**Attention: Mr. Z. Kociumbas
Area Exploration Manager (Tas)**

REPORT MP 3786/71

YOUR REFERENCE:	Letter dated 24/2/71.
MATERIAL:	Thirty six beach sand samples.
LOCALITY:	Not specified - Tasmania.
IDENTIFICATION:	BP1 - 4, BP13 - 17, BP34 - 42, BP66 - 75 and BP80 - 87.
DATE RECEIVED:	2/3/71.
WORK REQUIRED:	Identification and proportions of heavy minerals.

Investigation and Report by: R. Cooper.

Officer in Charge, Mineralogy/Petrology Section: Dr. K.J. Henley.

K. J. Henley
**for F. R. Hartley,
Director.**

858011

MP 3/431/2/0

28 April, 1971

B. M. I. Mining Pty Ltd.,
Box 577 PO.,
LAUNCESTON, TAS 7250

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for F. R. Hartley,
Director.

EXAMINATION OF THIRTY SIX BEACH SAND SAMPLES

1. INTRODUCTION

Thirty six beach sand samples were submitted by B.M.I. Mining Pty Ltd., labelled in five series as follows:-
BP1 to 4, BP13 to 17, BP34 to 42, BP66 to 75 and BP80 to 87.

These had been partially concentrated before being submitted and the dry weight of each was required. In addition, the heavy mineral content of each sample was required (wt. and wt. %), together with a quantitative mineralogical analysis of the heavy fraction.

2. PROCEDURE

The procedure adopted in the examination of the samples was as follows:-

1. The samples were dried and then weighed.
2. The samples were then separated in tetrabromoethane, S.G. 2.96, and the products weighed.
3. The heavy mineral fraction, S.G. >2.96, was then split, half for use in a temporary mount, the other half in a polished section.
4. The temporary mounts were examined in transmitted light; the translucent minerals identified, and their proportions, as well as the proportion of opaques, estimated by counting approximately 300 grains. This procedure may be taken to give an accuracy of - 10% relative.
5. The polished sections were "tinned" with granulated zinc and hydrochloric acid to facilitate the identification of cassiterite. The briquettes were scanned for cassiterite and gold, the opaque minerals identified, and 100 to 200 grains counted in order to quantify the proportions of the various opaque minerals.
6. The results were calculated and tabulated.

Note.

The numbers of the briquettes examined in this Report are consecutive and run from 15026 (BP1) to 15060 (BP87)

3. RESULTS

Table 1 includes, for each sample, the dried weight of the sample as received and the weight and weight percentage of the heavy fraction obtained by separation with tetrabromoethane.

TABLE 1: HEAVY LIQUID SEPARATION RESULTS

Sample Number	Dry Sample Weight (gms)	Heavy Fraction S.G. >2.96 (gms)	Heavy Fraction as % of Total Weight
BP1	29.60	22.80	77.23
2	15.44	12.03	78.07
3	27.25	20.97	76.94
4	33.51	24.58	73.36
13	13.41	10.14	75.61
14	24.23	20.36	84.01
15	5.49	4.92	89.62
16	7.32	6.33	86.54
17	6.03	4.62	76.62
34	10.32	9.52	92.34
35	11.79	10.14	85.97
36	7.56	6.82	90.21
37	8.79	7.36	83.73
38	5.08	4.34	85.43
39	5.40	4.70	87.04
40	6.36	5.18	81.38
41	18.14	13.09	72.16
42	9.72	7.49	77.06
66	19.05	11.21	58.94
67	13.81	7.72	55.90
68	16.23	8.07	49.72
69	17.23	11.10	64.83
70	33.17	20.48	61.76
71	34.87	24.69	70.80
72	33.59	21.66	64.47
73	22.91	12.76	55.70
74	23.43	11.70	49.94
75	9.35	3.83	41.02
80	19.36	9.13	47.15
81	18.78	14.05	74.81
82	18.12	4.47	24.67
83	22.63	4.84	21.39
84	25.15	9.92	39.44
85	25.21	8.16	32.37
86	13.52	5.56	41.86
87	18.16	4.43	24.39

Table 2 contains the results of the examination of the temporary mounts and polished sections, giving the percentage of the heavy fractions of the economic minerals and also "others" (i.e. silicates).

TABLE 2 MINERALOGICAL COMPOSITIONS OF THE SAMPLES
Weight % of Original Samples

Sample Number	Interval	Ilm.	Lcx.	Rut.	Zir.	Mon.	Mag.	Hem.	Others (Silicates)	Cass (C) & Gold (g)	Light Fract. %			
Line 1 Hole 6	BPl 0-5'	40	0.14 ⁺	1	3	0.01	14	0.05	1	1	17	-	22	
	2 5-10'	48	0.09	2	4	0.01	16	0.03	<1	1	8	Trace C	21	
	3 10-15'	48	0.16	1	5	0.02	16	0.05	<1	<1	7	-	23	
	4 15-17'6"	45	0.36	2	3	0.02	13	0.10	<1	-	9	-	27	
Line 2 Hole 7	13 0-5'	39	0.06	1	4	0.01	8	0.01	-	-	22	-	24	
	14	44	0.12	2	5	0.01	11	0.01	<1	2	19	-	16	
	15	46	0.23	3	4	0.02	16	0.01	1	5	14	Trace C	11	
	16	39	0.03	1	6	0.02	10	0.01	<1	3	1	26	-	14
	17 23'-23'	36	0.04	-	4	0.02	9	0.01	<1	3	-	25	-	23
Line 2 Hole 5	34 0-5'	52	0.06	-	7	0.01	14	0.02	<1	1	19	-	7	
	35	54	0.08	-	5	0.02	14	0.02	1	1	3	9	-	13
	36	43	0.04	2	6	0.02	12	0.01	<1	3	3	21	-	10
	37	40	0.04	1	5	0.02	11	0.01	1	5	-	19	-	18
	38	44	0.03	1	7	0.02	13	0.01	<1	2	1	17	-	14
	39	38	0.025	-	5	0.02	12	0.01	<1	3	-	29	Trace C Trace G	13
	40	37	0.03	3	3	0.02	28	0.006	1	2	1	27	-	18
	41	31	0.07	4	4	0.009	6	0.01	<1	1	-	27	-	27
	42 40-42'	34	0.10	-	4	0.01	9	0.02	-	1	-	30	-	22
	66 0-5'	25	0.06	1	6	0.01	7	0.01	<1	1	<1	19	-	41
Line 3 Hole 3	67	20	0.03	<1	3	0.008	5	0.004	<1	1	1	25	-	44
	68	20	0.04	-	3	0.006	6	0.012	-	3	-	18	-	50
	69	33	0.07	-	6	0.013	12	0.025	<1	-	1	13	-	35
	70	31	0.125	2	4	0.016	11	0.04	1	1	-	13	-	37

* The figures in pencil represent the overall percentage of mineral in the original bulk sample over the indicated interval.

Continued

TABLE 2: Continued

Sample Number	Ilm.	Lcx.	Rut.	Zir.	Mon.	Mag.	Hem.	Others (Silicates)	Cass (C) & Gold (G)	Light Fract. %	
BP71	35	0.15	2	60.026	90.04	-	1	-	17	-	30
72	19	0.08	3	40.016	30.01	<1	<1	<1	34	-	36
73	25	0.07	3	60.017	80.02	<1	<1	-	13	-	44
74	23	0.07	1	50.014	70.02	1	1	-	11	-	51
75 45-47	19	0.05	-	20.006	70.02	-	1	<1	10	Trace C	60
80 0-5	23	0.05	1	50.01	80.02	1	2	-	8	-	52
81	35	0.08	-	80.02	80.02	<1	2	-	22	-	25
Line 4 Hole 2 82	12	0.03	-	30.007	40.01	<1	-	<1	5	-	76
83	9	0.02	<1	20.005	30.01	-	<1	-	7	-	78
84	20	0.06	<1	30.01	80.024	<1	-	<1	8	-	60
85	17	0.05	1	20.006	50.015	<1	-	-	6	-	68
86	21	0.03	1	30.005	90.015	-	-	-	8	-	58
87 35-40	12	0.026	<1	20.004	60.013	<1	-	<1	5	-	75

Note <1 - indicates amounts between 0.1% and 0.8%.
Trace - indicates one grain of cassiterite or gold in the polished section.

Terminology

- Ilm. = Ilmenite
- Lcx. = Leucoxene
- Rut. = Rutile
- Zir. = Zircon
- Mon. = Monazite
- Mag. = Magnetite
- Hem. = Hematite
- Cass = Cassiterite

4. NOTES ON MINERALS PRESENT

- Ilmenite - occurs in angular to subrounded grains which are nearly always unaltered.
- Leucoxene - occurs rarely in well-rounded, white, semi-opaque grains.
- Rutile - occurs as idiomorphic to subrounded grains of varying hue but mostly dark brown. It is occasionally seen associated with ilmenite in grains.
- Zircon - occurs as angular to subrounded grains.
- Hematite - has a similar habit to magnetite and is occasionally partly altered to goethite. The hematite does not appear to be an alteration product of magnetite.
- Other silicates - these include the following:
- Hornblende - as green and brown subrounded grains.
- Biotite - as green and more commonly brown pleochroic flakes.
- Garnet - as angular, pink isotropic grains.
- Pyroxene - as angular to subrounded grains some of which have inclined extinction whereas others are straight extinguishing and faintly pleochroic.
- Kyanite - as angular near-straight extinguishing grains.
- Occasional grains of tourmaline, andalusite and other silicates were also noted.
- Gold - one well-rounded grain was noted in sample BP39.
- Cassiterite - in all, four grains of this mineral were detected in the briquettes.

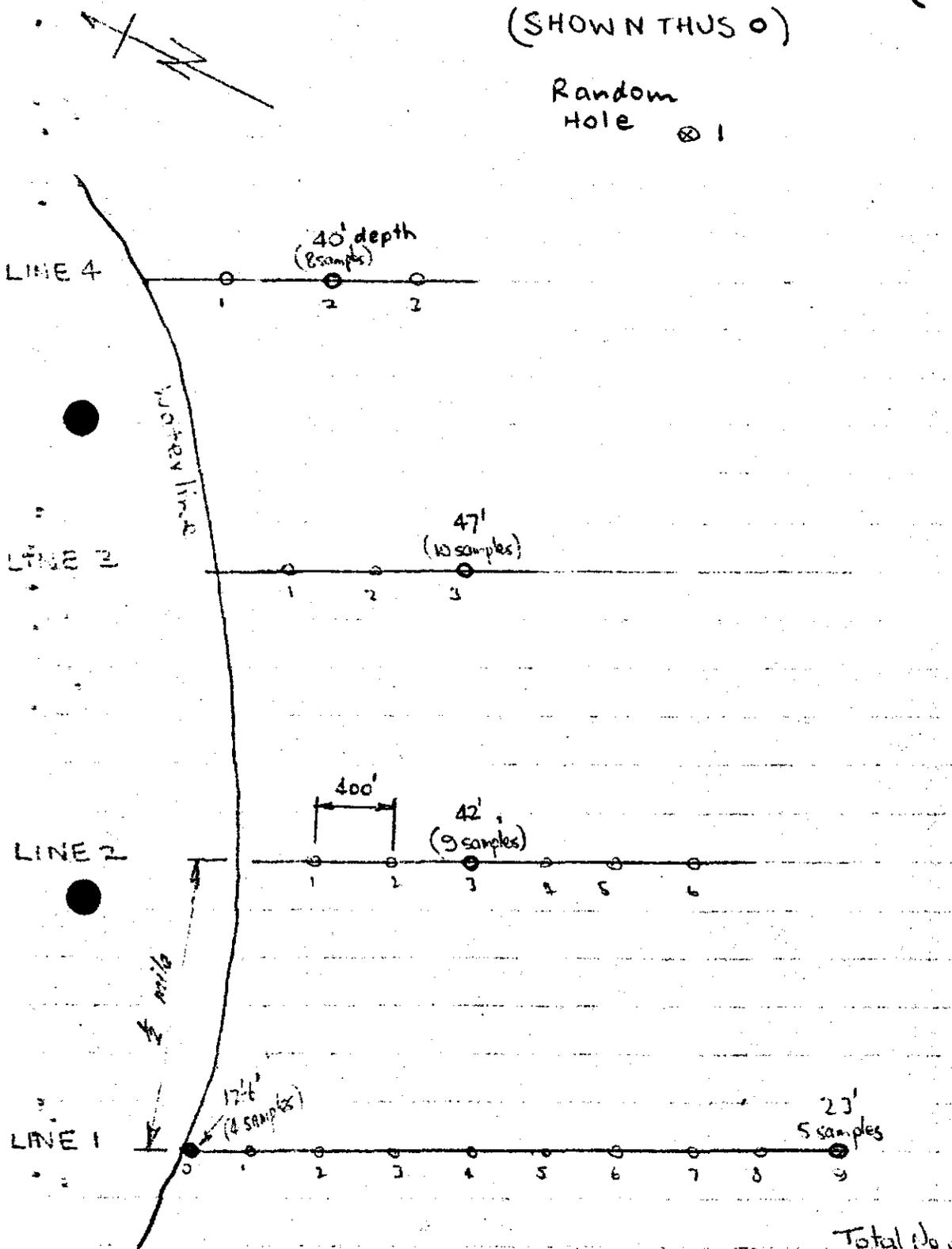
5. CONCLUSION

These beach sands contain in their heavy mineral fractions major fresh ilmenite, minor zircon and rutile, and a trace of monazite. Cassiterite and probably gold, are not present in economic amounts.

BRIDPORT BEACH SAMPLES
 LOCATION OF SAMPLES SENT
 AWAY FOR MINERAL
 DETERMINATION
 (SHOWN THUS ○)

(Not to Scale)

Random
 Hole ⊗ 1



(Not to Scale)	
No of holes in line	
LINE 4	3
LINE 2	3
LINE 2	6
LINE 1	10
Total No of holes	23

BRIDPORT BEACH SANDS

LINE 1Sampler: H. Moses & A. Clough

Sample No	Date	Hole No	Interval	
BP 1		0	0-5'	
BP 2			5'-10'	sent for analyzing
BP 3			10'-15'	
BP 4			15'-17'6"	
BP 5		1	0-5'	
BP 6			5'-8'	
BP 7		2	0-5'	
BP 8			5'-6'6"	
BP 9		3	0-5'	
BP 10		4	0-4'	
BP 11		5	0-2'	
BP 12		6	0-2'	
BP 13		7	0-5'	sent for analyzing
BP 14			5'-10'	
BP 15			10'-15'	
BP 16			15'-20'	
BP 17			20'-23'	
BP 18		8	0-5'	
BP 19			5'-10'	
BP 20		9	0-5'	
BP 21			5'-10'	
BP 22			10'-15'	
BP 23			15'-17'	

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LINE 2

Sampler: _____

H. Moses
A. Clough

Sample No.	DATE	Hole No.	Interval			
BP 24		1	0-5'	BP 43	4	0-5'
BP 25			5-10'	44		5-10'
BP 26			10-15'	45		10-15'
BP 27			15-20'	46		15-20'
BP 28			20-20'6"	47		20-25'
				48		25-30'
BP 29		2	0-5'			
BP 30		2A	0-5'			
BP 31		2B	0-4'			
BP 32		2C	0-5'			
BP 33		2C	5-7'6"			
BP 34		3	0-5'			
BP 35			5-10'			
BP 36			10-15'			
BP 37			15-20'			
BP 38			20-25'	Sent for Analysis.		
BP 39			25-30'			
BP 40			30-35'			
BP 41			35-40'			
BP 42			40-42'			
BP 43		4	0-5'			
BP 44			5-10'			
BP 45			10-15'			

BRIDPORT BEACH

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SHANDS

LINE 2

Samples

H. Moses

H. Clough

Sample	Date	Hole No	Interval
BP 49		4	30'-35'
BP 50			35'-39 1/2'
BP 51		5	0'-5'
BP 52			5'-10'
BP 53			10'-15'
BP 54			15'-20'
BP 55			20'-25'
BP 56			25'-30'
BP 57		6	0'-3'

BRIDPORT

BEACH

SANDS

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LINE 3

Sampler

Moses
A Clough

Sample	Date	Core No.	Interval	
BP 58		1	0-5'	
BP 59			5-10'	
BP 60			10-15'	
BP 61			15-20'	
BP 62			20-22'	
BP 63		2	0-5'	
BP 64			5-10'	
BP 65			10-11'	
BP 66		3	0-5'	
BP 67			5-10'	
BP 68			10-15'	
BP 69			15-20'	
BP 70			20-25'	
BP 71			25-30'	Sent for analysis
BP 72			30-35'	
BP 73			35-40'	
BP 74			40-45'	
BP 75			45-47'	

BRIDPORT

BEACH

SANDS

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LINE 4.

SAMPLER. H.T. MOSES.

SAMPLE NO	HOE NO	Interval	
BP 76	1	0-5'	
BP 77		5'-10'	
BP 78		10'-15'	
BP 79		15'-19'	
BP 80	2	0-5'	
BP 81		5'-10'	
BP 82		10'-15'	
BP 83		15'-20'	End of penetration
BP 84		20'-25'	
BP 85		25'-30'	
BP 86		30'-35'	
BP 87		35-40'	
BP 88	3	0-5'	
BP 89		5'-10'	
BP 90		10'-15'	
BP 91		15'-20'	
BP 92		20'-24'	

BRIDPORT

BEACH

SANDS

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TOP OF SAND DUNE

SAMPLER

H.T. MOSES

SAMPLE No.	HOLE No.	INTERVAL
12-93	RANDOM	0-5'
31-94	"	5-10'