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GEOPEKO

A DIVISION OF PEKO EXPLORATION LTD

91-3246 + A

EL 54/89 GRASSY

REPORT ON EXPLORATION ACTIVITY

APRIL 1990 TO MARCH 1991

MINES	
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**Ian Mathison
March, 1991**

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Distribution: Geopeko, Parkes
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1.0 INTRODUCTION

1.1 Location and Access (Fig. 1)

EL 54/89 Grassy covers the SE corner of King Island. It surrounds the King Island Scheelite mine lease ML 17M/79 which is excluded from the EL.

Road access throughout the EL is very good.

1.2 Tenure and Land Usage

EL 54/89 of 182 km² was granted to Peko Exploration Ltd in March 1990. The EL schedule is detailed in Appendix 1.

Almost all of the land within the EL is private property and most of this is open pasture. Small patches of tea tree and wattle scrub occur along creeks and in swampy areas. Some patches of coastal scrub occur in southern sections of the EL.

1.3 Regional Geology (Fig. 2)

The oldest rocks in the area are the siltstones and mudstones of the Precambrian Rocky Cape Group. These outcrop in the north and west of the EL and underlie almost 50% of the EL. To the east and south the Precambrian rocks are overlain by Eo-cambrian carbonates, clastic sediments, mafic volcanics and volcanoclastics which dip east-wards and south-eastwards under Bass Strait. In the south-east the Eo-cambrian rocks have been intruded by Devonian granites. A major fault, the Grassy River Fault, trends northwards across the central portion of the EL. This fault is adjacent to the major scheelite orebodies near Grassy. Several minor occurrences of tin, tungsten and gold mineralization are known from the fault zone.

1.4 Known Mineral Deposits/Occurrences (Fig. 2)

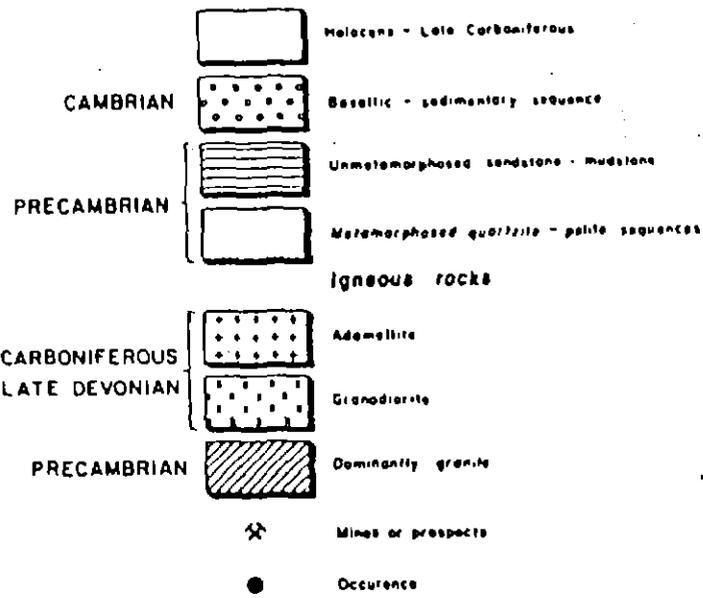
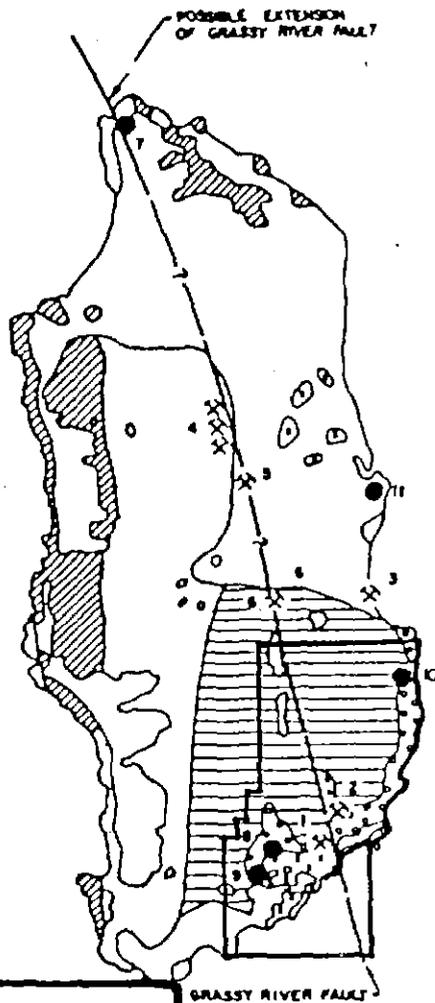
Mineralization in the SE quadrant of King Island is dominated by the scheelite skarn deposits around the Grassy and Bold Head Granites. The Dolphin and Bold Head Mines have been developed on this mineralization. These deposits are well described in the Geology & Mineral Resources of Tasmania. (Burrett & Martin, 1989)

At Barrier Creek a series of quartz sulphide (\pm carbonate) veins have been tested by adits and shallow shafts. Previous assays indicate that these veins host lead, zinc, arsenic, silver and gold. However, the veins are only a few centimetres wide and mineralization does not appear to extend into the siltstone host rocks.

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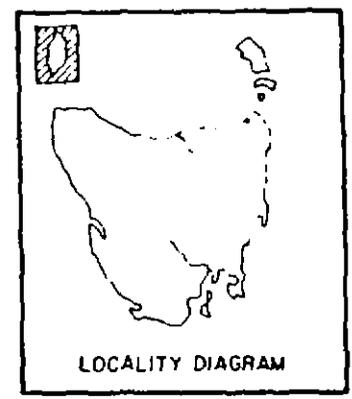
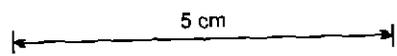
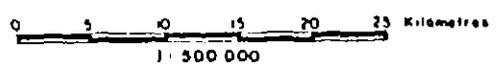




- 1 DOLPHIN/WPI OREBODY - W, Mo
- 2 BOLD HEAD - W, Mo
- 3 NARACOOPA - Beach Sands
- 4 REEKARA - W, Sn
- 5 HAWKES ALLUVIAL - Sn, W
- 6 FRASER RIVER - Au
- 7 VICTORIA COVE - W
- 8 LOOP ROAD - W, Mo
- 9 INVESTIGATOR 21 - W, Mo
- 10 BARRIER CREEK - Au, Ag, Pb, Cu, As
- 11 COWPER POINT - Beach Sands



EL 54/89



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EL 54/89 - GRASSY FIG. 2

REGIONAL GEOLOGY AND
KNOWN MINERALIZATION

KING ISLAND GEOLOGICAL MAP

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Just north of the EL, auriferous quartz veins have been tested by shallow adits, trenches and shafts. No production has been recorded. These workings are known as the Sea Elephant River and Fraser River workings. Verbal reports of deeper shafts which have since been filled in have not been substantiated.

High quality silica sands suitable for glass making occur within ML 17M/79 and extend westwards into EL 54/89 where they have not been tested.

An extensive deposit of lateritic iron ore has been defined near Pegarah. Reports suggest that this laterite has been developed by Tertiary weathering of a basic intrusive body.

1.5 Previous Exploration

Systematic exploration of the area for tin/tungsten mineralization was carried out by a Costigan Mining-King Island Scheelite Joint Venture over EL 15/66. Regional exploration included aeromagnetic surveys and reconnaissance auger drilling along roads. Geological outcrop mapping of the area at a scale of 1:12 000 was completed.

Magnetic anomalies were followed up by grid based geological mapping, soil geochemistry, jacro auger geochemistry, ground magnetics and IP. Several anomalies within ML 17M/79 were drilled. A base metal geochemical anomaly located south of Pegarah, the Ireland's Farm Anomaly, was tested by diamond drilling. No base metal mineralization was intersected. (Brown 1987)

1.6 Exploration Philosophy and Target Models

The area has been intensely explored for carbonate replacement scheelite and tin mineralization within the Eo-cambrian sequence. Current exploration is directed at base metal and gold mineralization in the rocks further away from the granite. The following mineralization models are considered appropriate:

- (i) Gold:- shear related gold deposits along the Grassy River Fault and within the mafic volcanics of the Grassy Group.
- (ii) Base metals:- McArthur River style lead-zinc deposits within the siltstones of the Rocky Cape Group.

Exploration will use the "huminex" method of water sampling, rock chip sampling across fault zones and aeromagnetic interpretation to define prospective areas within the EL.

Prospective areas will be further tested by detailed geological mapping, "huminex" soil sampling and ground geophysics before defining drilling targets.

2.0 EXPLORATION ACTIVITY

2.1 Aims

Exploration in 1990 was designed to test whether the Huminex water and soil geochemical techniques could be used to explore beneath extensive sand and laterite cover.

2.2 Work Completed

Water Geochemistry

Eighty-nine water samples from creeks draining EL 54/89 were collected at a density of 2-3 km². Good access within the EL allowed the whole area to be sampled.

At each sample location water colour, water level, rate of flow, vegetation type, contamination, geology and rock float were recorded. Sample locations were marked with aluminium tags and flagging tape. Water samples were forwarded to the DMMR laboratory in June 1990. Results have not yet been received.

Soil Geochemistry

One hundred soil samples were collected at 20m spacings along Brumbys Road. Samples were analysed for Cu, Pb, Zn, Au, Ag and As. Results were entered into a computer database for statistical evaluation. Soil samples were collected from just below the base of grass roots and samples were analysed at the DMMR laboratory, Hobart by the Huminex method.

Rock Geochemistry

Any mineralized, altered or interesting rock outcrop or float encountered during creek or beach traverses was sampled for assay or hand specimen purposes.

Old workings at Barrier Creek, Sea Elephant River and Fraser River were located and sampled.

Eighteen rock samples, including two samples of the gravel used on local roads, were submitted for analysis for Cu, Pb, Zn, Ag, Cr, As and Au.

2.3 Results Received

Water Geochemistry

No results have been received.

Soil Geochemistry

Farmers on King Island use relatively large quantities of super phosphate on their pastures. Because of previously diagnosed trace element deficiency on the island, this fertilizer is often trace element enriched. In an attempt to reduce contamination, soil samples were collected from what appeared to be undisturbed soil beside a fence along a road. Nevertheless, copper and zinc values must be considered suspect.

Results received are listed in Appendix 2 and summarized below.

Element	Range	Mean	Mean + 1SD	Mean + 2SD
Cu	35-618 ppm	156	282	511
Pb	20-784 ppm	67	129	234
Zn	29-2360 ppm	260	578	1282
As	0-117 ppm	1	3	11
Ag	8.7-795.5 ppb	71	146	299
Au	0.1-121.2 ppb	1.7	8.3	41.0

The following results appear significant and merit follow up by auger sampling.

Number	Cu	Pb	Zn	As	Ag	Au
20716	562	20	283	1	37.7	121.2
20753	213	236	422	7	296.9	71.9
20757	354	272	698	6	795.5	11.8
20777	430	784	2360	0	274.0	47.8

Elevated Arsenic results for 20702 and 20703 do not look reliable. There appears to be no meaningful correlation between As results and either base or precious metals.

Good correlation exists between lead and precious metals. Elevated lead values are associated with elevated gold and/or silver.

Rock Geochemistry (See Appendix 3 & 5)

Rocks from Barrier Creek adit have elevated lead, zinc and arsenic values with weakly anomalous gold. The significance of these results is down graded by the thinness of the host quartz veins. No appreciable mineralization extends into the country rocks and the source of the mineralization is as yet uncertain.

Weakly anomalous gold values (12 ppb) were reported from road gravel. This should have no appreciable effect on the water geochemistry.

Low level anomalism in copper and zinc is evident in the Eo-cambrian basic volcanics and volcanoclastics. No detectable gold was reported from quartz samples from the Sea Elephant River Mine.

R.J. Wormald has examined the whole rock geochemistry of the Grassy Granites (See appendix 5). He concludes that it has a relatively high Au content of 13.2 ppb. (Based on only one sample). He suggests that skarn mineralization at Bold Head and Dolphin Mines should be analysed for Au, especially if Bi content is higher than normal.

3.0 CONCLUSIONS

- * Evaluation of the results of 1990 exploration of King Island cannot be attempted until results of water sampling are received from the DMMR.
- * Rock chip samples collected during water sampling provide useful additional information. However, these new results need to be compared with previous results before meaningful analysis can be attempted.
- * Huminex soil sampling may have responded to base metal or precious metal mineralization related to the Grassy River Fault. Follow up of selected anomalies by hand auger sampling should be able to confirm these anomalies.
- * Laterites on King Island do not appear to have been tested for gold.

4.0 RECOMMENDATIONS

EL 54/89 should be retained in full until results of the water sampling can be evaluated. These results will need to be screened to ensure that the samples have not been affected by a long storage time in polyethylene bottles.

Anomalous soil sample sites along Brumbys Road should be tested by augering to bedrock/laterite. Should results be confirmed, grid based auger sampling of these areas is recommended.

The silica sand deposits extending westward from ML 17M/79 into EL 54/89 should be tested by hand augering. Present estimates are based on air photo interpretation. These estimates are inadequate.

REFERENCES

- BROWN, S.G. 1987 Final Report. EL 15/66, King Island
Tasmania. Unpublished report for
Warman Services Limited. Report No.
12/87.
- BURRETT & MARTIN 1989 "Geology & Mineral Resources of
Tasmania". Geological Society of
Australia 15.

APPENDIX 1
EL SCHEDULE

TASMANIA

No. EL 54/89

(Regulation 6A)

The Mining Act 1929**EXPLORATION LICENCE**

Issued to PEKO EXPLORATION LTD of P.O. BOX 180, ROSEBERY, TAS, 7470
in respect of 182 square kilometres of land in the Land District
of KING ISLAND vicinity of GRASSY as described in the schedule
hereto.

This licence shall remain in force until the THIRTIETH day of MARCH
1991.

This licence is subject to the following conditions:-

1. That the licensee shall immediately on the issue of this licence take steps to commence preliminary works necessary for the investigation of the area.
2. That the licensee shall carry out investigations as may be necessary to determine the mineral potential of the area, and in particular will fulfil the proposals set out in the exploration programme and approved by the Director of Mines.
3. That the licensee shall employ such technical and other staff and equipment as may be necessary effectively to carry out such investigations.
4. The licensee shall satisfy a minimum expenditure commitment of \$72,000 during the first two years of the licence.
5. This licence shall apply to all minerals.
6. The licensee shall notify the owner and occupier of private land, in writing, at least three days before entering such land.
7. That the security (Private Land Deposit) provided by Section 15E (1) (a) & (b) of the Mining Act, 1929, (see below) shall be lodged with the Director of Mines before entering private land.
8. The licensee shall observe, perform and fulfil the conditions as set forth in Schedule 'A' (Revised) attached hereto.

9. The licensee shall be liable to pay the cost of any work carried out to remedy any damage arising from any breach of the conditions of this licence.
10. The licensee shall deposit an amount of \$10,000 (Performance Deposit) and \$10,000 (Private Land Deposit) as security that the conditions contained herein shall be observed. Upon expiry or sooner determination of the licence, if the licensee satisfies the Director of Mines that such conditions have been complied with, the Director of Mines shall refund such deposit or such portion thereof, as he may determine.
11. If it is found, that the operations hereby authorised, are causing any undue damage to, or erosion of, the subject land or other land in the vicinity thereof or are unnecessarily disturbing the environment, the Minister may cancel the licence without compensation to the licensee by giving seven days' notice in writing of his intention so to do.
12. The licensee shall obtain the written permission of the Director of Mines before carrying out any work in a Forest Reserve.
13. The licensee shall arrange and keep in good standing public liability insurance to the minimum of \$1,000,000. Evidence of currency shall be produced on demand.

SCHEDULE

Commencing at the south west corner at grid co-ordinates 242 000 metres E. 5 555 000 metres N. thence grid north to 5 563 000 metres N. grid east to 243 000 metres E. again grid north to 5 564 000 metres N. again grid east to 244 000 metres E. again grid north to 5 566 000 metres N. again grid east to 245 000 metres E. again grid north to 5 576 000 metres N. again grid east to 254 000 metres E. again grid north to the low water mark on the East Coast of King Island by that low water mark in a general south easterly and south westerly direction to its intersection with 252 000 metres E. grid south to 5 555 000 metres N. thence grid west to the point of commencement.

The area excludes: 23 skm Mining Leases
0.7 skm Crown Reserves

LAND TENURE:

The area comprises: State Forest
Private Property
Crown Land
Crown Land (Subject to Environment & Planning Department approval)

(NOTE: The land tenure table is a guide only)

EXCLUSIONS

The area embraced by this licence includes State Forests but does not include:

- (a) All other public reserves or municipal reserves or roadways.
- (b) All forms of mining tenements and water licences including leases, water licences, easement licences, special and exploration licences, prospectors licences, miners rights, permits to enter, owners consents and owners rights which were in lawful possession or marked out prior to the date of marking out of this licence.
- (c) Land exempt from the provisions of the Mining Act, 1929.
- (d) Land under the National Parks and Wildlife Act, 1970, not subject to the Mining Act, 1929.
- (e) All Crown reservations or other land set apart or dedicated for any public purposes.

MINISTER FOR RESOURCES AND ENERGY

Date

APPENDIX 2
SOIL GEOCHEMISTRY -
ANALYTICAL RESULTS

KING ISLAND SOIL SAMPLES
HUMINEX ANALYSIS

380016

NUMBER	CU	PB	ZN	AS	AG	AU
20701	278	63	375	2	66.1	25.0
20702	162	158	284	79	66.4	3.5
20703	202	197	381	117	76.9	5.9
20704	305	39	748	3	45.9	9.3
20705	122	52	154	0	99.9	31.6
20706	103	140	242	2	84.5	3.5
20707	69	92	139	1	37.4	11.1
20708	49	47	87	1	36.7	2.3
20709	81	41	99	1	23.4	4.5
20710	175	32	419	1	73.3	3.5
20711	172	36	220	0	32.7	5.4
20712	35	67	309	0	36.4	1.8
20713	137	23	119	1	25.3	3.1
20714	137	29	726	0	21.4	6.8
20715	130	30	201	1	64.9	3.9
20716	562	20	283	1	37.7	121.2
20717	161	56	235	0	77.0	0.4
20718	161	57	220	0	53.0	0.6
20719	178	56	327	1	119.7	0.1
20720	248	67	203	1	90.6	1.2
20721	127	49	121	0	92.1	6.5
20722	149	68	112	2	131.8	0.1
20723	137	50	113	1	86.6	0.1
20724	53	42	403	1	72.1	1.0
20725	73	51	81	1	82.7	0.5
20726	134	104	195	2	212.2	1.1
20727	276	77	301	1	123.9	0.4
20728	169	48	129	1	88.8	0.3
20729	199	54	242	0	96.2	1.0
20730	219	45	173	1	76.6	0.3
20731	72	45	189	1	59.1	0.2
20732	80	38	162	0	65.5	0.6
20733	40	77	45	1	59.5	1.0
20734	161	56	531	6	94.8	1.7
20735	81	26	138	0	58.4	0.5
20736	184	35	94	2	59.0	1.4
20737	86	55	74	1	114.9	3.6
20738	108	29	29	1	53.6	0.2
20739	119	28	71	1	55.1	0.2
20740	140	29	72	1	57.2	0.4
20741	72	29	109	1	63.5	0.4
20742	78	30	121	3	60.8	1.1
20743	41	63	537	7	76.9	10.8
20744	110	51	184	0	66.5	9.4
20745	197	65	225	1	70.9	12.0
20746	196	71	280	1	73.5	2.6
20747	618	237	378	10	88.9	31.5
20748	485	114	342	3	86.8	9.0
20749	95	65	167	3	200.5	1.5
20750	182	101	293	1	161.4	1.3
20751	236	95	248	7	109.2	1.7
20752	352	109	291	3	244.9	4.2
20753	213	236	422	7	296.9	71.9
20754	142	95	557	1	125.8	13.6
20755	62	48	143	2	136.4	1.0

KING ISLAND SOIL SAMPLES
HUMINEX ANALYSIS

380017

NUMBER	CU	PB	ZN	AS	AG	AU
20756	202	92	471	3	287.3	9.1
20757	354	272	698	6	795.5	11.8
20758	108	51	224	7	157.1	4.3
20759	182	67	406	2	155.3	1.8
20760	173	76	573	3	236.7	4.8
20761	86	34	620	0	131.8	7.5
20762	199	90	415	1	175.9	7.0
20763	154	141	515	1	221.2	3.4
20764	180	109	578	0	116.0	21.9
20765	54	115	404	0	49.2	3.3
20766	54	93	511	1	65.4	0.9
20767	97	105	899	1	76.5	1.3
20768	183	124	648	0	85.8	2.1
20769	162	85	833	0	44.0	14.1
20770	124	161	713	1	122.2	2.3
20771	131	117	362	1	81.0	1.3
20772	128	170	704	0	58.4	0.8
20773	165	98	587	0	86.2	0.7
20774	259	201	1349	0	108.6	6.9
20775	132	71	344	2	70.6	2.8
20776	341	159	785	0	116.0	1.0
20777	430	784	2360	0	274.0	47.8
20778	179	60	357	1	36.9	1.5
20779	451	190	1151	2	80.4	1.8
20780	114	63	225	0	22.5	0.6
20781	174	63	304	1	13.9	0.7
20782	163	63	214	1	20.4	0.1
20783	220	194	214	0	63.3	0.5
20784	139	51	151	1	16.4	0.1
20785	486	32	239	0	36.4	6.2
20786	356	50	46	0	47.4	0.1
20787	295	41	315	1	33.2	0.5
20788	83	59	777	2	23.1	0.1
20789	124	29	911	1	25.5	0.3
20790	246	43	242	1	56.5	0.6
20791	241	36	111	0	63.5	0.1
20792	302	37	75	2	39.9	0.3
20793	228	38	92	1	75.6	1.9
20794	190	21	104	1	25.5	1.0
20795	210	83	249	1	26.6	0.8
20796	119	331	262	2	8.7	0.4
20797	293	47	332	1	39.8	3.1
20798	294	69	189	3	116.6	1.7
20799	313	58	355	1	87.9	0.4
20800	182	72	187	2	56.2	0.8

16:27:55 KING ISLAND SOILS - HUMINEX ANALYSES 03/13/91

 SUMMARY STATISTICS and HISTOGRAM LOGARITHMIC VALUES

Variable = Zn Unit = ppm N = 100
 Mean = 2.4161 Min = 1.4624 1st Quartile = 2.1875
 Std. Dev. = 0.3459 Max = 3.3729 Median = 2.4183
 CV % = 14.3147 Skewness = -0.0899 3rd Quartile = 2.6253
 Anti-Log Mean = 260.671 Anti-Log Std. Dev. : (-) 117.554
 (+) 578.030

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%	cum %	antilog	cls int	(# of bins = 20 - bin size = 0.1006)
0.00	0.50	25.830	1.4121	
1.00	1.49	32.559	1.5127	*
0.00	1.49	41.042	1.6132	
2.00	3.47	51.735	1.7138	*
0.00	3.47	65.213	1.8143	
5.00	8.42	82.203	1.9149	****
4.00	12.38	103.620	2.0154	***
9.00	21.29	130.616	2.1160	*****
6.00	27.23	164.645	2.2165	****
9.00	36.14	207.540	2.3171	*****
14.00	50.00	261.610	2.4177	*****
11.00	60.89	329.768	2.5182	*****
13.00	73.76	415.682	2.6188	*****
5.00	78.71	523.980	2.7193	****
8.00	86.63	660.493	2.8199	*****
7.00	93.56	832.572	2.9204	*****
3.00	96.53	1049.483	3.0210	**
1.00	97.52	1322.905	3.1215	*
1.00	98.51	1667.562	3.2221	*
0.00	98.51	2102.013	3.3226	
1.00	99.50	2649.651	3.4232	*

0 1 2 3 4

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16:30:00

KING ISLAND SOILS - HUMINEX ANALYSES

03/13/91

SUMMARY STATISTICS and HISTOGRAM LOGARITHMIC VALUES

Variable = Ag Unit = ppb N = 100
 Mean = 1.8501 Min = 0.9395 1st Quartile = 1.6920
 Std. Dev. = 0.3131 Max = 2.9006 Median = 1.8651
 CV % = 16.9256 Skewness = 0.0646 3rd Quartile = 2.0382
 Anti-Log Mean = 70.818 Anti-Log Std. Dev. : (-) 34.435
 (+) 145.643

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%	cum %	antilog	cls int	(# of bins = 20 - bin size = 0.1032)
0.00	0.50	7.725	0.8879	
1.00	1.49	9.798	0.9911	*
0.00	1.49	12.426	1.0943	
1.00	2.48	15.760	1.1976	*
1.00	3.47	19.988	1.3008	*
6.00	9.41	25.351	1.4040	****
3.00	12.38	32.152	1.5072	**
10.00	22.28	40.778	1.6104	*****
4.00	26.24	51.719	1.7136	***
18.00	44.06	65.594	1.8169	*****
17.00	60.89	83.192	1.9201	*****
13.00	73.76	105.511	2.0233	*****
12.00	85.64	133.818	2.1265	*****
4.00	89.60	169.719	2.2297	***
3.00	92.57	215.252	2.3329	**
3.00	95.54	273.001	2.4362	**
3.00	98.51	346.243	2.5394	**
0.00	98.51	439.135	2.6426	
0.00	98.51	556.948	2.7458	
0.00	98.51	706.369	2.8490	
1.00	99.50	895.878	2.9522	*

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0 1 2 3 4

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16:31:42

KING ISLAND SOILS - HUMINEX ANALYSES

03/13/91

SUMMARY STATISTICS and HISTOGRAM LOGARITHMIC VALUES

Variable = Au Unit = ppb N = 100

Mean = 0.2296 Min = -1.0000 1st Quartile = -0.2218
 Std. Dev. = 0.6918 Max = 2.0835 Median = 0.2304
 CV % = 301.3343 Skewness = 0.2009 3rd Quartile = 0.7324

Anti-Log Mean = 1.697 Anti-Log Std. Dev. : (-) 0.345
 (+) 8.345

%	cum %	antilog	cls int	(# of bins = 20 - bin size = 0.1623)
0.00	0.50	0.083	-1.0811	
8.00	8.42	0.121	-0.9189	*****
0.00	8.42	0.175	-0.7566	
3.00	11.39	0.255	-0.5943	**
4.00	15.35	0.370	-0.4320	***
10.00	25.25	0.537	-0.2697	*****
6.00	31.19	0.781	-0.1074	****
12.00	43.07	1.135	0.0549	*****
7.00	50.00	1.649	0.2172	*****
10.00	59.90	2.396	0.3795	*****
6.00	65.84	3.481	0.5418	****
9.00	74.75	5.059	0.7040	*****
7.00	81.68	7.351	0.8663	*****
5.00	86.63	10.681	1.0286	****
6.00	92.57	15.521	1.1909	****
1.00	93.56	22.553	1.3532	*
3.00	96.53	32.771	1.5155	**
0.00	96.53	47.619	1.6778	
1.00	97.52	69.194	1.8401	*
1.00	98.51	100.544	2.0024	*
1.00	99.50	146.099	2.1646	*

0 1 2 3 4

4

APPENDIX 3
ROCK GEOCHEMISTRY -
SAMPLE DETAILS AND
ANALYTICAL RESULTS

KING ISLAND PROJECT - ROCK CHIP SAMPLING
EL 54/89 - GRASSY

NUMBER 20321 SAMPLER KJV TYPE RK EL 54/89 DATE 25-05-1990
 LOCATION QUARRY NEAR W/S 21037 FROM *o/c*
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY GREEN CHLORITIC SILTSTONE (gn Sslt c)
 COMMENTS
 PURPOSE assay

NUMBER 20322 SAMPLER MAT TYPE RK EL 54/89 DATE 30-05-1990
 LOCATION MILLWALL RD X CONGLOMERATE CK FROM ROAD
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY PYRITIC BLACK SILTSTONE
 COMMENTS ROAD METAL
 PURPOSE ASSAY

NUMBER 20535 SAMPLER MAT TYPE RK EL 54/89 DATE 25-05-1990
 LOCATION BRUMBYS RD X FRASER R FROM *o/c*
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY i/b gy Sslt, mic Ssst, mic Sslt, bk Sslt
 COMMENTS mica detrital
 PURPOSE assay

NUMBER 20536 SAMPLER MAT TYPE RK EL 54/89 DATE 25-05-1990
 LOCATION FORESTRY RD 50m E YATES CK FROM *o/c*
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY wth'd lt gy vfg Ssst
 COMMENTS
 PURPOSE assay

NUMBER 20537 SAMPLER MAT TYPE GRAB EL 54/89 DATE 25-05-1990
 LOCATION SEAS ELEPHANT RIVER SHAFT FROM DUMP
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY WHITE QUARTZ (qz)
 COMMENTS EXTENSIVE NNW TRENDING QZ VEIN
 PURPOSE ASSAY

NUMBER 20538 SAMPLER MAT TYPE RC EL 54/89 DATE 25-05-1990
 LOCATION SEAS ELEPHANT RIVER ADIT FROM ADIT
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY SHEARED BLACK SHALE AND QUARTZ
 COMMENTS
 PURPOSE ASSAY

NUMBER 20539 SAMPLER MAT TYPE RC EL 54/89 DATE 26-05-1990
 LOCATION CONGLOMERATE CREEK FROM O/C
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY GREY FG FELSIC VOLCANIC
 COMMENTS WEATHERED
 PURPOSE ASSAY

NUMBER 20540 SAMPLER MAT TYPE RC EL 54/89 DATE 26-05-1990
 LOCATION AT W/S 20180 FROM O/C
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY PURPLISH GREY Scgl, COBBLES S1st, Mqzt, Bb IN ?TUFFACEOUS MATRIX
 COMMENTS
 PURPOSE ASSAY

KING ISLAND PROJECT - ROCK CHIP SAMPLING

EL 54/89 - GRASSY

NUMBER 20541 SAMPLER MAT TYPE RC EL 54/89 DATE 26-05-1990
 LOCATION YARRA CK AT W/S 20182 FROM O/C
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY dk gy Sslt & Sqar
 COMMENTS
 PURPOSE assay

NUMBER 20542 SAMPLER MAT TYPE RC EL 54/89 DATE 26-05-1990
 LOCATION AT W/S 20183 FROM O/C
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY Basaltic volcanic breccia (gn gy bxBb)
 COMMENTS part wth'd
 PURPOSE assay

NUMBER 20543 SAMPLER MAT TYPE GRAB EL 54/89 DATE 26-05-1990
 LOCATION CITY OF MELBOURNE BAY - SLATE MINE FROM DUMP
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY PURPLE SLATE (clv'd MSslt)
 COMMENTS
 PURPOSE assay

NUMBER 20544 SAMPLER MAT TYPE RC EL 54/89 DATE 26-05-1990
 LOCATION 400m UP BARRIER CK FROM O/C
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY PYRITIC SANDSTONE (gy vfg Ssst py)
 COMMENTS Trace galena, ?possibly hornfelsesd.
 PURPOSE assay

NUMBER 20545 SAMPLER MAT TYPE RC EL 54/89 DATE 28-05-1990
 LOCATION BARRIER CK ADIT - NE CROSS CUT FROM BACK
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY 15cm wide band of yellow stained gouge
 COMMENTS
 PURPOSE ASSAY

NUMBER 20546 SAMPLER MAT TYPE RC EL 54/89 DATE 28-05-1990
 LOCATION BARRIER CK ADIT - DRIVE FROM FACE
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY Vein quartz and wth'd Sslt
 COMMENTS
 PURPOSE assay

NUMBER 20547 SAMPLER MAT TYPE GRAB EL 54/89 DATE 28-05-1990
 LOCATION BARRIER CK ADIT - DRIVE - 25M FROM FLOOR
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY RUSTY VEIN QUARTZ
 COMMENTS
 PURPOSE ASSAY

NUMBER 20548 SAMPLER MAT TYPE RC EL 54/89 DATE 28-05-1990
 LOCATION BARRIER CK ADIT - DRIVE - 2M FROM BACK
 AMG COORDINATES EAST 0.00 NORTH 0.00
 LITHOLOGY VEIN QUARTZ, WTH'D Sslt, GOUGE
 COMMENTS *
 PURPOSE ASSAY

KING ISLAND PROJECT - ROCK CHIP SAMPLING
EL 54/89 - GRASSY

NUMBER 20549 SAMPLER MAT TYPE GRAB EL 54/89 DATE 30-05-1990
LOCATION MILLWALL RD FROM ROAD
AMG COORDINATES EAST 0.00 NORTH 0.00
LITHOLOGY Mqzt
COMMENTS ROAD METAL
PURPOSE ASSAY

NUMBER 20551 SAMPLER MAT TYPE RC EL 54/89 DATE 01-06-1990
LOCATION STANLEY RIVT AT W/S 20197 FROM O/C
AMG COORDINATES EAST 0.00 NORTH 0.00
LITHOLOGY gy ms Sslt
COMMENTS
PURPOSE assay

ANALABS

380028

Phone (09) 458 7999

A division of MacDonald Hamilton & Co. Pty. Ltd.
52 Murray Road, Welshpool, W.A. 6106

Telex AA92560

FAX: 004 31 8890

ANALYTICAL REPORT No. 27.3.08.07152

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

ORDER No.

PROJECT

Geopeko
P.O. Box 180
Rosebery
Tasmania 7470

50055	King Island
DATE RECEIVED	RESULTS REQUIRED
06/06/90	ASAF

No. OF PAGES OF RESULTS

DATE REPORTED

No. OF COPIES

TOTAL No. OF SAMPLES

1	22/06/90	1	18
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DATE OF SAMPLES	REFER BELOW	SAMPLE NUMBERS	PRE-TREATMENT						ANALYSIS				
			DRY	CRUSH	SPLIT	PUL-VERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD	
		<20,321/322,535/549,551	RC	Prep: 006,010,011,012,013,016							Cu,Pb,Zn,Ag,Cr/101		
		<20,321/322,535/549,551	RC								As/114		
		<20,321/322,535/549,551	RC								Au,AuChk/309		
		<20,321/322,535/549,551	RC								As/101		

RESULTS

TO

K. Virgoe
Geopeko
P.O. Box 180
Rosebery
Tasmania 7470

RESULTS

TO

REMARKS

STATE OF SAMPLES	ANALYSIS — PREPARATION	ANALYSIS — METHOD
whole core	perchloric acid A1	atomic absorption AAS
split core	hydrochloric acid A2	x-ray fluorescence XRF
cutting	nitric acid A3	spectrophotometry SPEC
rock	aqua regia A4	colorimetry COL
oil	nitric-perchloric A5	chromatography CHR
pulp	HF mixture A6	titration TTN
water	HF under pressure A7	other chemical means CHEM
tissue	fusion A8	miscellaneous MISC
stream sediment		fluorescence FLUOR
heavy mineral		inductively coupled plasma ICP

AUTHORISED OFFICER

Jenkins

ANALABS

A Division of Inchcape Inspection and Testing Services Australia Pty. Ltd.

380029

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No

PAGE

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Cr	As	As	Au	AuChk
		27.3.08.07152			22/06/90		50055		1 OF 1	
1	20321	25	30	90	0.5	40	-	8	<0.008	<0.008
2	20322	80	35	85	1.0	30	-	11	<0.008	-
3	20535	170	35	220	2.0	40	-	16	<0.008	-
4	20536	10	20	35	0.5	40	-	2	<0.008	-
5	20537	5	5	5	<0.5	10	-	1	<0.008	-
6	20538	70	35	35	0.5	20	-	29	<0.008	-
-	20539	15	20	70	0.5	125	-	6	<0.008	-
8	20540	210	35	100	2.0	15	-	2	<0.008	-
9	20541	145	25	145	1.0	25	-	6	<0.008	-
10	20542	60	25	840	2.0	30	-	3	<0.008	-
11	20543	65	25	160	1.5	20	-	2	<0.008	-
12	20544	45	70	105	0.5	15	-	81	<0.008	-
13	20545	60	40	85	0.5	10	600	>100	0.009	-
14	20546	50	295	470	1.5	55	2450	>100	0.031	-
15	20547	10	40	1200	<0.5	185	3100	>100	<0.008	-
16	20548	30	555	1800	3.5	40	6050	>100	0.043	0.046
	20549	15	30	40	<0.5	15	-	44	0.012	-
18	20551	25	15	80	0.5	15	-	14	<0.008	-
19										
20										
21										
22										
23	DETECTION	5	5	5	0.5	5	100	1	0.008	0.008
24	UNITS	ppm	ppm _s	ppm	ppm	ppm	ppm	ppm	ppm	ppm
25	METHOD	101	101	101	101	101	101	114	309	309

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER

Gentiana

APPENDIX 4
WATER GEOCHEMISTRY -
SAMPLE DETAILS

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

380031

DATE 01-06-1990 NUMBER 20176 MAP KING TYPE WATER
 EL 54/89 NORTH 5575860 EAST 245270 SAMPLER MAT

WIDTH 1.0
 DIRECTION 0
 COLOUR weak brown
 FLOW slow

UNIT
 FLOAT_1
 FLOAT_2
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 2.0

DATE 01-06-1990 NUMBER 20177 MAP KING TYPE WATER
 EL 54/89 NORTH 5576680 EAST 248340 SAMPLER MAT

WIDTH 1.5
 DIRECTION 0
 COLOUR mud brown
 FLOW moderate

UNIT
 FLOAT_1
 FLOAT_2
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 1.5

DATE 01-06-1990 NUMBER 20178 MAP KING TYPE WATER
 EL 54/89 NORTH 5576920 EAST 253930 SAMPLER MAT

WIDTH 1.0
 DIRECTION 0
 COLOUR weak brown
 FLOW moderate

UNIT
 FLOAT_1
 FLOAT_2
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION ti tree

DRAINAGE AREA 1.5

DATE 01-06-1990 NUMBER 20179 MAP KING TYPE WATER
 EL 54/89 NORTH 5569160 EAST 254230 SAMPLER MAT

WIDTH 2.0
 DIRECTION 0
 COLOUR weak brown
 FLOW fast

UNIT
 FLOAT_1
 FLOAT_2
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 3.0

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20180 MAP KING TYPE WATER
 EL 54/89 NORTH 5568520 EAST 254040 SAMPLER MAT

WIDTH 1.0
 DIRECTION 0
 COLOUR very weak
 FLOW very slow

UNIT
 FLOAT_1 Scg1
 FLOAT_2
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20181 MAP KING TYPE WATER
 EL 54/89 NORTH 5567720 EAST 253660 SAMPLER MAT

WIDTH 0.5
 DIRECTION 0
 COLOUR very weak
 FLOW still

UNIT
 FLOAT_1 Bb
 FLOAT_2
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20182 MAP KING TYPE WATER
 EL 54/89 NORTH 5567280 EAST 253150 SAMPLER MAT

WIDTH 4.0
 DIRECTION 0
 COLOUR very weak
 FLOW moderate

UNIT
 FLOAT_1 SsIt
 FLOAT_2 Mqzt
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 3.0

DATE 01-06-1990 NUMBER 20183 MAP KING TYPE WATER
 EL 54/89 NORTH 5565880 EAST 252870 SAMPLER MAT

WIDTH 2.0
 DIRECTION 0
 COLOUR weak brown
 FLOW moderate

UNIT
 FLOAT_1 bxBb
 FLOAT_2
 FLOAT_3

LEVEL low

CONTAM lagoon?
 VEGETATION lagoon veg.

DRAINAGE AREA 2.0

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20184 MAP KING TYPE WATER

EL 54/89 NORTH 5565810 EAST 252790 SAMPLER MAT

WIDTH 0.5 UNIT
 DIRECTION 0 FLOAT_1 Sbx
 COLOUR dark brown FLOAT_2
 FLOW still FLOAT_3

LEVEL low

CONTAM

VEGETATION ti tree

DRAINAGE AREA 1.0

DATE 01-06-1990 NUMBER 20185 MAP KING TYPE WATER

EL 54/89 NORTH 5565220 EAST 252290 SAMPLER MAT

WIDTH 0.5 UNIT
 DIRECTION 0 FLOAT_1 dk gy hornfised basalt
 COLOUR dark brown FLOAT_2
 FLOW still FLOAT_3

LEVEL low

CONTAM

VEGETATION sea?
 coastal heath

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20186 MAP KING TYPE WATER

EL 54/89 NORTH 5571560 EAST 254790 SAMPLER MAT

WIDTH 2.0 UNIT
 DIRECTION 0 FLOAT_1 Bd
 COLOUR clear FLOAT_2 Sbx
 FLOW fast FLOAT_3 Sslt

LEVEL low

CONTAM

VEGETATION moderate gorge

DRAINAGE AREA 2.0

DATE 01-06-1990 NUMBER 20187 MAP KING TYPE WATER

EL 54/89 NORTH 0 EAST 254900 SAMPLER MAT

WIDTH 1.0 UNIT
 DIRECTION 0 FLOAT_1 Bx
 COLOUR clear FLOAT_2 Sslt
 FLOW slow FLOAT_3 Bb Bd

LEVEL low

CONTAM

VEGETATION

DRAINAGE AREA 2.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20188 MAP KING TYPE WATER

EL 54/89 NORTH 5572810 EAST 254920 SAMPLER MAT

WIDTH 2.0
DIRECTION 0
COLOUR weak brown
FLOW moderate

UNIT
FLOAT_1 Bb
FLOAT_2 SsIt
FLOAT_3

LEVEL low

CONTAM
VEGETATION

DRAINAGE AREA 6.0

DATE 01-06-1990 NUMBER 20189 MAP KING TYPE WATER

EL 54/89 NORTH 5575120 EAST 255320 SAMPLER MAT

WIDTH 1.0
DIRECTION 0
COLOUR weak brown
FLOW moderate

UNIT
FLOAT_1 Mqzt
FLOAT_2
FLOAT_3

LEVEL low

CONTAM
VEGETATION

DRAINAGE AREA 1.5

DATE 01-06-1990 NUMBER 20190 MAP KING TYPE WATER

EL 54/89 NORTH 5575470 EAST 255320 SAMPLER MAT

WIDTH 0.5
DIRECTION 0
COLOUR weak brown
FLOW slow

UNIT
FLOAT_1
FLOAT_2
FLOAT_3

LEVEL low

CONTAM cattle?
VEGETATION sand

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20191 MAP KING TYPE WATER

EL 54/89 NORTH 5576960 EAST 254780 SAMPLER MAT

WIDTH 0.5
DIRECTION 0
COLOUR very weak
FLOW slow

UNIT
FLOAT_1 basalt
FLOAT_2
FLOAT_3

LEVEL low

CONTAM sea?
VEGETATION coastal heath

DRAINAGE AREA 0.5

RING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20192 MAP KING TYPE WATER

EL 54/89 NORTH 5568060 EAST 250580 SAMPLER MAT

WIDTH 3.0
DIRECTION 0
COLOUR clear
FLOW very slow

UNIT
FLOAT_1
FLOAT_2
FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20193 MAP KING TYPE WATER

EL 54/89 NORTH 5567900 EAST 250700 SAMPLER MAT

WIDTH 0.5
DIRECTION 0
COLOUR very weak
FLOW moderate

UNIT
FLOAT_1 Sslt
FLOAT_2 Sqar
FLOAT_3 qz

LEVEL low

CONTAM farming
VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20194 MAP KING TYPE WATER

EL 54/89 NORTH 5570070 EAST 252930 SAMPLER MAT

WIDTH 2.0
DIRECTION 0
COLOUR very weak
FLOW very slow

UNIT
FLOAT_1
FLOAT_2
FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20195 MAP KING TYPE WATER

EL 54/89 NORTH 5570130 EAST 252960 SAMPLER MAT

WIDTH 1.0
DIRECTION 0
COLOUR brown
FLOW slow

UNIT
FLOAT_1 lateritic Fe stone
FLOAT_2
FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms

DRAINAGE AREA 0.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20196 MAP KING TYPE WATER
 EL 54/89 NORTH 5569930 EAST 253040 SAMPLER MAT

WIDTH 2.0 UNIT
 DIRECTION 0 FLOAT_1 gy Sslt
 COLOUR brown FLOAT_2
 FLOW slow FLOAT_3

LEVEL 1ow

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20197 MAP KING TYPE WATER
 EL 54/89 NORTH 0 EAST 0 SAMPLER MAT

WIDTH 7.0 UNIT
 DIRECTION 0 FLOAT_1 gy Sslt
 COLOUR brown FLOAT_2
 FLOW moderate FLOAT_3

LEVEL 1ow

CONTAM farming
 VEGETATION coastal heath

DRAINAGE AREA 6.0

DATE 01-06-1990 NUMBER 20198 MAP KING TYPE WATER
 EL 54/89 NORTH 0 EAST 0 SAMPLER MAT

WIDTH 5.0 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR silt bk FLOAT_2
 FLOW moderate FLOAT_3

LEVEL 1ow

CONTAM farming
 VEGETATION coastal heath & TT

DRAINAGE AREA 2.0

DATE 01-06-1990 NUMBER 20199 MAP KING TYPE WATER
 EL 54/89 NORTH 0 EAST 0 SAMPLER MAT

WIDTH 0.0 UNIT
 DIRECTION 0 FLOAT_1 SWAMP
 COLOUR brown FLOAT_2
 FLOW still FLOAT_3

LEVEL 1ow

CONTAM swamp
 VEGETATION tea tree

DRAINAGE AREA 20.0

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20200 MAP KING TYPE WATER

EL 54/89 NORTH 0 EAST 0 SAMPLER MAT

WIDTH 0.0 UNIT
DIRECTION 0 FLOAT_1
COLOUR brown FLOAT_2
FLOW still FLOAT_3

LEVEL low

CONTAM swamp
VEGETATION coastal heath & TT DRAINAGE AREA 20.0

DATE 01-06-1990 NUMBER 20679 MAP KING TYPE WATER

EL 54/89 NORTH 5563840 EAST 242530 SAMPLER KJV

WIDTH 3.0 UNIT
DIRECTION 0 FLOAT_1 laterite
COLOUR med brown FLOAT_2 gn Ssst
FLOW slow FLOAT_3

LEVEL low

CONTAM farming
VEGETATION pasture DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20680 MAP KING TYPE WATER

EL 54/89 NORTH 5566180 EAST 248520 SAMPLER KJV

WIDTH 3.0 UNIT
DIRECTION 0 FLOAT_1 gn fg Sgar
COLOUR very weak FLOAT_2 gy fg mic Sslt
FLOW slow FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms DRAINAGE AREA 1.0

DATE 01-06-1990 NUMBER 20681 MAP KING TYPE WATER

EL 54/89 NORTH 5566130 EAST 248480 SAMPLER KJV

WIDTH 3.0 UNIT
DIRECTION 0 FLOAT_1 meta Sgar
COLOUR weak brown FLOAT_2 gy fg Ssst
FLOW moderate FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms DRAINAGE AREA 3.0

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990	NUMBER 20682	MAP KING	TYPE WATER
-----------------	--------------	----------	------------

EL 54/89	NORTH 5566150	EAST 251180	SAMPLER KJV
----------	---------------	-------------	-------------

WIDTH	1.5	UNIT	
DIRECTION	0	FLOAT_1	
COLOUR	med brown	FLOAT_2	
FLOW	slow	FLOAT_3	

LEVEL low

CONTAM	farming
VEGETATION	farms

DRAINAGE AREA 1.0

DATE 01-06-1990	NUMBER 20683	MAP KING	TYPE WATER
-----------------	--------------	----------	------------

EL 54/89	NORTH 5567910	EAST 251370	SAMPLER KJV
----------	---------------	-------------	-------------

WIDTH	10.0	UNIT	
DIRECTION	0	FLOAT_1	
COLOUR	weak brown	FLOAT_2	
FLOW	very slow	FLOAT_3	

bk Sslt carb

LEVEL low

CONTAM	farming
VEGETATION	farms

DRAINAGE AREA 7.0

DATE 01-06-1990	NUMBER 20684	MAP KING	TYPE WATER
-----------------	--------------	----------	------------

EL 54/89	NORTH 5572030	EAST 252865	SAMPLER KJV
----------	---------------	-------------	-------------

WIDTH	1.0	UNIT	
DIRECTION	0	FLOAT_1	
COLOUR	brown	FLOAT_2	
FLOW	puddle	FLOAT_3	

LEVEL low

CONTAM	farming
VEGETATION	farms

DRAINAGE AREA 0.5

DATE 01-06-1990	NUMBER 20685	MAP KING	TYPE WATER
-----------------	--------------	----------	------------

EL 54/89	NORTH 5572210	EAST 252900	SAMPLER KJV
----------	---------------	-------------	-------------

WIDTH	0.5	UNIT	
DIRECTION	0	FLOAT_1	
COLOUR	clear	FLOAT_2	
FLOW	puddle	FLOAT_3	

LEVEL low

CONTAM	farming
VEGETATION	farms

DRAINAGE AREA 0.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20686 MAP KING TYPE WATER

EL 54/89 NORTH 5571160 EAST 253510 SAMPLER KJV

WIDTH 1.0 UNIT
 DIRECTION 0 FLOAT_1 dk gy mic Ssst
 COLOUR weak brown FLOAT_2 pl gy Sqar
 FLOW slow FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms DRAINAGE AREA 1.0

DATE 01-06-1990 NUMBER 20687 MAP KING TYPE WATER

EL 54/89 NORTH 5569930 EAST 248610 SAMPLER KJV

WIDTH 2.0 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR med brown FLOAT_2
 FLOW stagnant FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20688 MAP KING TYPE WATER

EL 54/89 NORTH 5569960 EAST 248190 SAMPLER KJV

WIDTH 4.0 UNIT
 DIRECTION 0 FLOAT_1 gy mic Ssst
 COLOUR dark brown FLOAT_2 Fe stone boulder
 FLOW slow FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms DRAINAGE AREA 2.5

DATE 01-06-1990 NUMBER 20689 MAP KING TYPE WATER

EL 54/89 NORTH 5574520 EAST 245350 SAMPLER KJV

WIDTH 2.0 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR dark brown FLOAT_2
 FLOW stagnant FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms DRAINAGE AREA 2.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20690 MAP KING TYPE WATER
 EL 54/89 NORTH 5573720 EAST 252900 SAMPLER KJV

WIDTH 5.0 UNIT
 DIRECTION 0 FLOAT_1 qz
 COLOUR med brown FLOAT_2 vfg gy Ssst
 FLOW slow FLOAT_3
 LEVEL low

CONTAM farming
 VEGETATION farms DRAINAGE AREA 4.0

DATE 01-06-1990 NUMBER 20691 MAP KING TYPE WATER
 EL 54/89 NORTH 5565180 EAST 248710 SAMPLER KJV

WIDTH 2.0 UNIT
 DIRECTION 0 FLOAT_1 gy mic vfg Ssst
 COLOUR very weak FLOAT_2 vfg gy Ssst
 FLOW slow FLOAT_3 qz
 LEVEL low

CONTAM little
 VEGETATION ti tree DRAINAGE AREA 1.0

DATE 01-06-1990 NUMBER 20692 MAP KING TYPE WATER
 EL 54/89 NORTH 5565250 EAST 248560 SAMPLER KJV

WIDTH 4.0 UNIT
 DIRECTION 0 FLOAT_1 gy fg Sqar
 COLOUR weak brown FLOAT_2 dk gy Sslt
 FLOW moderate FLOAT_3
 LEVEL low

CONTAM little
 VEGETATION ti tree DRAINAGE AREA 2.5

DATE 01-06-1990 NUMBER 20693 MAP KING TYPE WATER
 EL 54/89 NORTH 5565300 EAST 248620 SAMPLER KJV

WIDTH 10.0 UNIT
 DIRECTION 0 FLOAT_1 gy mic Ssst
 COLOUR weak brown FLOAT_2
 FLOW moderate FLOAT_3
 LEVEL low

CONTAM little
 VEGETATION ti tree DRAINAGE AREA 4.0

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20694 MAP KING TYPE WATER
 EL 54/89 NORTH 5564590 EAST 248960 SAMPLER KJV

WIDTH 1.0 UNIT
 DIRECTION 0 FLOAT_1 gy vfg Ssst
 COLOUR FLOAT_2 Fe
 FLOW slow FLOAT_3
 LEVEL low
 CONTAM orange moss
 VEGETATION ti tree DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20695 MAP KING TYPE WATER
 EL 54/89 NORTH 5564450 EAST 249050 SAMPLER KJV

WIDTH 1.5 UNIT
 DIRECTION 0 FLOAT_1 gy Sslt carb
 COLOUR clear FLOAT_2
 FLOW fast FLOAT_3
 LEVEL low
 CONTAM farming
 VEGETATION ti tree DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 20696 MAP KING TYPE WATER
 EL 54/89 NORTH 5564400 EAST 248960 SAMPLER KJV

WIDTH 2.0 UNIT
 DIRECTION 0 FLOAT_1 gy mic Sslt carb
 COLOUR weak brown FLOAT_2
 FLOW moderate FLOAT_3
 LEVEL low
 CONTAM farming
 VEGETATION ti tree DRAINAGE AREA 1.5

DATE 01-06-1990 NUMBER 20697 MAP KING TYPE WATER
 EL 54/89 NORTH 5563760 EAST 249030 SAMPLER KJV

WIDTH 4.0 UNIT
 DIRECTION 0 FLOAT_1 gy Sslt
 COLOUR brown FLOAT_2
 FLOW moderate FLOAT_3
 LEVEL low
 CONTAM little
 VEGETATION ti tree DRAINAGE AREA 0.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 20698 MAP KING TYPE WATER
 EL 54/89 NORTH 5563810 EAST 249050 SAMPLER KJV

WIDTH 0.0 UNIT
 DIRECTION 0 FLOAT_1 gy Sslt
 COLOUR clear FLOAT_2
 FLOW moderate FLOAT_3

LEVEL low

CONTAM little
 VEGETATION ti tree

DRAINAGE AREA 6.0

DATE 01-06-1990 NUMBER 20699 MAP KING TYPE WATER
 EL 54/89 NORTH 5560790 EAST 248190 SAMPLER KJV

WIDTH 5.0 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR weak brown FLOAT_2
 FLOW stagnant FLOAT_3

LEVEL low

CONTAM sea
 VEGETATION coastal heath

DRAINAGE AREA 3.0

DATE 01-06-1990 NUMBER 20700 MAP KING TYPE WATER
 EL 54/89 NORTH 5560830 EAST 248370 SAMPLER KJV

WIDTH 4.0 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR brown FLOAT_2
 FLOW stagnant FLOAT_3

LEVEL low

CONTAM sea
 VEGETATION coastal heath

DRAINAGE AREA 1.0

DATE 01-06-1990 NUMBER 21001 MAP KING TYPE WATER
 EL 54/89 NORTH 5560380 EAST 247180 SAMPLER KJV

WIDTH 3.0 UNIT
 DIRECTION 0 FLOAT_1 granite under area
 COLOUR dark brown FLOAT_2
 FLOW puddle FLOAT_3

LEVEL low

CONTAM sea
 VEGETATION coastal heath and TT

DRAINAGE AREA 1.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE	01-06-1990	NUMBER	21002	MAP	KING	TYPE	WATER
EL	54/89	NORTH	5560310	EAST	247110	SAMPLER	KJV
WIDTH	3.0			UNIT			
DIRECTION	0			FLOAT_1		granite outcrop in area	
COLOUR	dark brown			FLOAT_2			
FLOW	puddle			FLOAT_3			
CONTAM	sea					LEVEL	low
VEGETATION	coastal heath					DRAINAGE AREA	1.5
DATE	01-06-1990	NUMBER	21003	MAP	KING	TYPE	WATER
EL	54/89	NORTH	5561320	EAST	242020	SAMPLER	KJV
WIDTH	1.5			UNIT			
DIRECTION	0			FLOAT_1		gy meta Ssst	
COLOUR	brown			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM	farming					LEVEL	low
VEGETATION	ti tree					DRAINAGE AREA	2.0
DATE	01-06-1990	NUMBER	21004	MAP	KING	TYPE	WATER
EL	54/89	NORTH	5562000	EAST	242020	SAMPLER	KJV
WIDTH	2.0			UNIT			
DIRECTION	0			FLOAT_1		meta gy Ssst	
COLOUR	weak brown			FLOAT_2			
FLOW	moderate			FLOAT_3			
CONTAM	farming					LEVEL	low
VEGETATION	ti tree					DRAINAGE AREA	2.0
DATE	01-06-1990	NUMBER	21005	MAP	KING	TYPE	WATER
EL	54/89	NORTH	5561750	EAST	246440	SAMPLER	KJV
WIDTH	1.0			UNIT			
DIRECTION	0			FLOAT_1			
COLOUR	brown			FLOAT_2			
FLOW	still			FLOAT_3			
CONTAM	farming					LEVEL	low
VEGETATION	ti tree					DRAINAGE AREA	1.0

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 21006 MAP KING TYPE WATER
 EL 54/89 NORTH 5561710 EAST 246410 SAMPLER KJV

WIDTH 1.5 UNIT
 DIRECTION 0 FLOAT_1 qz
 COLOUR clear FLOAT_2 Ssst fg white
 FLOW slow FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION ti tree

DRAINAGE AREA 1.5

DATE 01-06-1990 NUMBER 21007 MAP KING TYPE WATER
 EL 54/89 NORTH 5561220 EAST 245790 SAMPLER KJV

WIDTH 1.5 UNIT
 DIRECTION 0 FLOAT_1 qz
 COLOUR brown FLOAT_2 draining granite
 FLOW slow FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION ti tree

DRAINAGE AREA 2.5

DATE 01-06-1990 NUMBER 21008 MAP KING TYPE WATER
 EL 54/89 NORTH 5559070 EAST 247670 SAMPLER KJV

WIDTH 1.5 UNIT
 DIRECTION 0 FLOAT_1 draining granite
 COLOUR brown FLOAT_2 H(two)S gas in mud
 FLOW stagnant FLOAT_3

LEVEL low

CONTAM sea
 VEGETATION coastal heath

DRAINAGE AREA 3.0

DATE 01-06-1990 NUMBER 21009 MAP KING TYPE WATER
 EL 54/89 NORTH 5557930 EAST 246770 SAMPLER KJV

WIDTH 1.0 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR weak brown FLOAT_2
 FLOW stagnant FLOAT_3

LEVEL low

CONTAM sea
 VEGETATION coastal heath

DRAINAGE AREA 2.0

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE	01-06-1990	NUMBER	21010	MAP	KING	TYPE	WATER
EL	54/89	NORTH	5559410	EAST	247860	SAMPLER	KJV
WIDTH	0.0			UNIT			
DIRECTION	0			FLOAT_1		draining granite from bed	
COLOUR	clear			FLOAT_2			
FLOW	fast			FLOAT_3			
						LEVEL	low
CONTAM	tailings?					DRAINAGE AREA	0.0
VEGETATION	seaweed						
DATE	01-06-1990	NUMBER	21011	MAP	KING	TYPE	WATER
EL	54/89	NORTH	5559540	EAST	247720	SAMPLER	KJV
WIDTH	1.5			UNIT			
DIRECTION	0			FLOAT_1		H(two)S sirell	
COLOUR	dark brown			FLOAT_2		draining granite	
FLOW	still			FLOAT_3			
						LEVEL	low
CONTAM	sea?					DRAINAGE AREA	4.0
VEGETATION	coastal heath and TT						
DATE	01-06-1990	NUMBER	21012	MAP	KING	TYPE	WATER
EL	54/89	NORTH	5561260	EAST	247150	SAMPLER	KJV
WIDTH	2.0			UNIT			
DIRECTION	0			FLOAT_1		through granite	
COLOUR	weak brown			FLOAT_2			
FLOW	slow			FLOAT_3			
						LEVEL	low
CONTAM	sea?					DRAINAGE AREA	2.5
VEGETATION	coastal heath and TT						
DATE	01-06-1990	NUMBER	21013	MAP	KING	TYPE	WATER
EL	54/89	NORTH	5565470	EAST	246600	SAMPLER	KJV
WIDTH	5.0			UNIT			
DIRECTION	0			FLOAT_1			
COLOUR	mud brown			FLOAT_2			
FLOW	very slow			FLOAT_3			
						LEVEL	low
CONTAM	farming					DRAINAGE AREA	1.0
VEGETATION	farms						

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 21014 MAP KING TYPE WATER
 EL 54/89 NORTH 5564970 EAST 247320 SAMPLER KJV

WIDTH 5.0 UNIT
 DIRECTION 0 FLOAT_1 gy Sslt carb
 COLOUR weak brown FLOAT_2 pale gy Sqar
 FLOW moderate FLOAT_3

LEVEL 1ow

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 1.0

DATE 01-06-1990 NUMBER 21015 MAP KING TYPE WATER
 EL 54/89 NORTH 5565950 EAST 248460 SAMPLER KJV

WIDTH 2.0 UNIT
 DIRECTION 0 FLOAT_1 gy Sslt (clayey)
 COLOUR very weak FLOAT_2
 FLOW slow FLOAT_3

LEVEL 1ow

CONTAM farming
 VEGETATION farms & TT

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 21016 MAP KING TYPE WATER
 EL 54/89 NORTH 5568170 EAST 247160 SAMPLER KJV

WIDTH 0.0 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR dark bn-bk FLOAT_2
 FLOW puddle FLOAT_3

LEVEL 1ow

CONTAM cows
 VEGETATION farms

DRAINAGE AREA 2.0

DATE 01-06-1990 NUMBER 21017 MAP KING TYPE WATER
 EL 54/89 NORTH 5568150 EAST 247230 SAMPLER KJV

WIDTH 1.5 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR mud black FLOAT_2
 FLOW puddle FLOAT_3

LEVEL 1ow

CONTAM cows
 VEGETATION farms

DRAINAGE AREA 0.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990	NUMBER 21018	MAP KING	TYPE WATER
EL 54/89	NORTH 5570340	EAST 248040	SAMPLER KJV

WIDTH	5.0	UNIT
DIRECTION	0	FLOAT_1
COLOUR	mud bk-bn	FLOAT_2
FLOW	puddle	FLOAT_3

LEVEL 1ow

CONTAM	farming
VEGETATION	farms

DRAINAGE AREA 2.0

DATE 01-06-1990	NUMBER 21019	MAP KING	TYPE WATER
EL 54/89	NORTH 5569070	EAST 248470	SAMPLER KJV

WIDTH	1.0	UNIT
DIRECTION	0	FLOAT_1
COLOUR	brown	FLOAT_2
FLOW	slow	FLOAT_3

LEVEL 1ow

CONTAM	farming
VEGETATION	farms

DRAINAGE AREA 0.5

DATE 01-06-1990	NUMBER 21020	MAP KING	TYPE WATER
EL 54/89	NORTH 5569110	EAST 248510	SAMPLER KJV

WIDTH	5.0	UNIT
DIRECTION	0	FLOAT_1
COLOUR	brown	FLOAT_2
FLOW	slow	FLOAT_3

LEVEL 1ow

CONTAM	farming
VEGETATION	farms

DRAINAGE AREA 3.0

DATE 01-06-1990	NUMBER 21021	MAP KING	TYPE WATER
EL 54/89	NORTH 5568650	EAST 248880	SAMPLER KJV

WIDTH	5.0	UNIT
DIRECTION	0	FLOAT_1
COLOUR	weak brown	FLOAT_2
FLOW	slow	FLOAT_3

LEVEL 1ow

CONTAM	farming
VEGETATION	farms

DRAINAGE AREA 3.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 21022 MAP KING TYPE WATER
 EL 54/89 NORTH 5568590 EAST 248880 SAMPLER KJV

WIDTH 5.0
 DIRECTION 0
 COLOUR mud dk bn
 FLOW very slow

UNIT
 FLOAT_1
 FLOAT_2
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 2.5

DATE 01-06-1990 NUMBER 21023 MAP KING TYPE WATER
 EL 54/89 NORTH 5568750 EAST 249630 SAMPLER KJV

WIDTH 2.0
 DIRECTION 0
 COLOUR grey
 FLOW slow

UNIT
 FLOAT_1 Sqar
 FLOAT_2 mic Ssst
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 21024 MAP KING TYPE WATER
 EL 54/89 NORTH 5568690 EAST 249650 SAMPLER KJV

WIDTH 10.0
 DIRECTION 0
 COLOUR very weak
 FLOW slow

UNIT
 FLOAT_1 Sqar
 FLOAT_2 qz
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 6.0

DATE 01-06-1990 NUMBER 21025 MAP KING TYPE WATER
 EL 54/89 NORTH 5568770 EAST 250240 SAMPLER KJV

WIDTH 5.0
 DIRECTION 0
 COLOUR weak brown
 FLOW slow

UNIT
 FLOAT_1 Sqar
 FLOAT_2 gy mic Ssst
 FLOAT_3

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 6.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 21026 MAP KING TYPE WATER

EL 54/89 NORTH 5568780 EAST 250310 SAMPLER KJV

WIDTH 1.5
DIRECTION 0
COLOUR weak brown
FLOW slow

UNIT
FLOAT_1 pale gy mic sst
FLOAT_2 qz
FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms & TT

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 21027 MAP KING TYPE WATER

EL 54/89 NORTH 5563850 EAST 243670 SAMPLER KJV

WIDTH 2.0
DIRECTION 0
COLOUR weak brown
FLOW moderate

UNIT
FLOAT_1 gn vfg Ssst
FLOAT_2
FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 21028 MAP KING TYPE WATER

EL 54/89 NORTH 5563780 EAST 243680 SAMPLER KJV

WIDTH 2.0
DIRECTION 0
COLOUR weak brown
FLOW moderate

UNIT
FLOAT_1 gn Sslt
FLOAT_2 qz
FLOAT_3

LEVEL low

CONTAM oil/cows
VEGETATION farms

DRAINAGE AREA 1.5

DATE 01-06-1990 NUMBER 21029 MAP KING TYPE WATER

EL 54/89 NORTH 5563890 EAST 242620 SAMPLER KJV

WIDTH 0.0
DIRECTION 0
COLOUR weak brown
FLOW slow

UNIT
FLOAT_1
FLOAT_2
FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms

DRAINAGE AREA 3.0

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 21030 MAP KING TYPE WATER
 EL 54/89 NORTH 5563810 EAST 242620 SAMPLER KJV

WIDTH 0.5 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR brown FLOAT_2
 FLOW slow FLOAT_3

LEVEL 1ow

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 21031 MAP KING TYPE WATER
 EL 54/89 NORTH 0 EAST 0 SAMPLER KJV

WIDTH 0.5 UNIT
 DIRECTION 0 FLOAT_1
 COLOUR very weak FLOAT_2
 FLOW slow FLOAT_3

LEVEL 1ow

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 0.0

DATE 01-06-1990 NUMBER 21032 MAP KING TYPE WATER
 EL 54/89 NORTH 0 EAST 0 SAMPLER KJV

WIDTH 0.5 UNIT
 DIRECTION 0 FLOAT_1 gy Sslt to vfg Ssst
 COLOUR very weak FLOAT_2
 FLOW moderate FLOAT_3

LEVEL 1ow

CONTAM farming
 VEGETATION eucalypt & TT

DRAINAGE AREA 0.0

DATE 01-06-1990 NUMBER 21033 MAP KING TYPE WATER
 EL 54/89 NORTH 5574250 EAST 251440 SAMPLER KJV

WIDTH 4.0 UNIT
 DIRECTION 0 FLOAT_1 qz
 COLOUR brown FLOAT_2 gy vfg Sslt
 FLOW slow FLOAT_3 fg gy sqar

LEVEL 1ow

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 2.0

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 21034 MAP KING TYPE WATER

EL 54/89 NORTH 5574340 EAST 251490 SAMPLER KJV

WIDTH 3.0
DIRECTION 0
COLOUR brown
FLOW slow

UNIT
FLOAT_1
FLOAT_2
FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms

DRAINAGE AREA 1.5

DATE 01-06-1990 NUMBER 21035

MAP KING

TYPE WATER

EL 54/89 NORTH 5573800

EAST 250760

SAMPLER KJV

WIDTH 2.0
DIRECTION 0
COLOUR mud bn-bk
FLOW very slow

UNIT
FLOAT_1
FLOAT_2
FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms & TT

DRAINAGE AREA 1.0

DATE 01-06-1990 NUMBER 21036

MAP KING

TYPE WATER

EL 54/89 NORTH 5573860

EAST 250760

SAMPLER KJV

WIDTH 2.0
DIRECTION 0
COLOUR brown
FLOW stagnant

UNIT
FLOAT_1
FLOAT_2
FLOAT_3

LEVEL low

CONTAM farming
VEGETATION farms & TT

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 21037

MAP KING

TYPE WATER

EL 54/89 NORTH 5577870

EAST 252550

SAMPLER KJV

WIDTH 3.0
DIRECTION 0
COLOUR very weak
FLOW moderate

UNIT
FLOAT_1
FLOAT_2
FLOAT_3

gy Sslt

LEVEL low

CONTAM farming & sea
VEGETATION farms & TT

DRAINAGE AREA 1.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990 NUMBER 21038 MAP KING TYPE WATER

EL 54/89 NORTH 5578780 EAST 251700 SAMPLER KJV

WIDTH 7.0
 DIRECTION 0
 COLOUR brown
 FLOW slow

UNIT
 FLOAT_1
 FLOAT_2
 FLOAT_3

LEVEL low

CONTAM farming & sea
 VEGETATION farms & TT

DRAINAGE AREA 14.0

DATE 01-06-1990 NUMBER 21039 MAP KING TYPE WATER

EL 54/89 NORTH 5573720 EAST 252900 SAMPLER KJV

WIDTH 5.0
 DIRECTION 0
 COLOUR silt brown
 FLOW slow

UNIT
 FLOAT_1
 FLOAT_2
 FLOAT_3

2nd SAMPLE FOR 20690

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 4.0

DATE 01-06-1990 NUMBER 21040 MAP KING TYPE WATER

EL 54/89 NORTH 5572210 EAST 252900 SAMPLER KJV

WIDTH 0.5
 DIRECTION 0
 COLOUR clear
 FLOW puddle

UNIT
 FLOAT_1
 FLOAT_2
 FLOAT_3

2nd SAMPLE FOR 20685

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 0.5

DATE 01-06-1990 NUMBER 21041 MAP KING TYPE WATER

EL 54/89 NORTH 5569930 EAST 248610 SAMPLER KJV

WIDTH 2.0
 DIRECTION 0
 COLOUR med brown
 FLOW stagnant

UNIT
 FLOAT_1
 FLOAT_2
 FLOAT_3

2nd SAMPLE FOR 20687

LEVEL low

CONTAM farming
 VEGETATION farms

DRAINAGE AREA 0.5

KING ISLAND PROJECT WATER SAMPLES - EL 54/89

DATE 01-06-1990	NUMBER 21042	MAP KING	TYPE WATER
EL 54/89	NORTH 5567910	EAST 251370	SAMPLER KJV
WIDTH 10.0		UNIT	
DIRECTION 0		FLOAT_1	2nd SAMPLE FOR 20683
COLOUR weak brown		FLOAT_2	
FLOW very slow		FLOAT_3	
CONTAM farming & tip?			LEVEL low
VEGETATION farms			DRAINAGE AREA 7.0

APPENDIX 5
THE GEOCHEMISTRY OF THE
GRASSY GRANITE, KING ISLAND

THE GEOCHEMISTRY OF THE GRASSY GRANITE,

KING ISLAND

- implications for exploration

Report By:-

R.J. Wormald
July, 1990

GEOPEKO



476 ST KILDA ROAD, MELBOURNE, VICTORIA, AUSTRALIA PHONE:(03)829 0000 FACSIMILE:(03)829 0066

MEMORANDUM

TO: Ian Mathison

COPIES TO: Brian Williams
Colin Sinclair

FROM: Peter Legge

DATE: 11th July, 1990

SUBJECT: **King Island Gold Targets**

The AMIRA granites database highlights the Grassy Granite to be prospective for gold. We have not yet researched previous work on gold exploration but the Grassy River Fault could be prospective if an assumption is made that it existed pre-granite emplacement and has since been reactivated.

This note is designed to suggest that consideration of previous work and current geophysics etc. may be warranted as part of Tasmania's Project Generation activity.

A handwritten signature in black ink, appearing to read 'D. Corby'. The signature is fluid and cursive, with a long, sweeping tail that extends to the right.

D. Corby
for
P.J. Legge

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2. SUMMARY
3. RECOMMENDATIONS
4. GEOCHEMISTRY OF THE GRASSY GRANITE
5. DISCUSSION

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2. The variation of Rb and Sr abundances of granites associated with Sn and W skarns
3. Schematic model showing the relationship between an intrusive stock, skarn mineralisation and sediment hosted Au-As mineralisation

Tables

1. Geochemical analyses of the Grassy Granite
2. Comparison between the geochemistry of the Granites from Grassy, Mt Counsel and Three Hummock with the average I and A-type granite from SE Australia

1. Introduction

The King Island W-Mo skarns, located at Grassy (Figure 1), formed as a result of the replacement of Cambrian carbonate and pelitic sedimentary units by metal rich hydrothermal fluids from a late Devonian granitoid stock (Kwak, 1987). Granitoid crops out as two main bodies with the main exposure to the south of Grassy termed the Grassy Granodiorite and a smaller body at the Bold Head mine termed the Bold Head Adamellite (Balind and Stephenson 1988; Figure 1). Both bodies will be called the Grassy Granite in this report. The Granite has been described as an I-type pluton containing biotite, hornblende, magnetite, sphene and allanite as the main ferromagnesian phases (Kwak, 1987).

In this report, the geochemistry of the Grassy Granite is reviewed, comparisons are made with other mineralising plutons and granite types from the AMIRA granite data base, and the implications for exploration discussed.

2. Summary

Geochemical analyses from the Bold Head and Grassy intrusions are very similar with only CaO and Al₂O₃ abundances marginally lower in the Bold Head pluton. This suggests that the two intrusions were originally part of one intrusive body that has been cut and off set by strike-slip movement along the Grassy Fault. Compared to typical I-type granites, the Grassy intrusion has high abundances of Th, U, Zr, Nb, Ce, Mo and W with values more typical of A-type granites. High K, Ba and Sr abundances indicate distinct monzonitic affinities and an Au determination of 15ppb is one of the highest reported on a granitoid from SE Australia. The assemblage of magnetite and sphene in the granite indicates that it would have produced highly oxidised hydrothermal fluids capable of transporting metals including Au. Potential exists for Au rich skarns and Au-quartz vein mineralisation up to 5km away from the intrusion.

3. Recommendations

- A. The geochemistry of the Grassy Granitoid, which could be described as a monzonitic A-type, is distinctive and granites with similar characteristics should be selected from regional geochemical data bases as possible targets for W, Mo and Au mineralisation. This should be a priority on the soon to be updated AMIRA data base.
- B. The high Au content of the Grassy Granite suggests that potential exists for associated gold mineralisation. Current reserves of W-Mo ore, particularly in regions of high Bi, should be assayed for Au.
- C. Exploration in the Grassy region should not neglect the fact that Au-rich skarn mineralisation and other styles of base metal - Au mineralisation may occur up to 5km away from the granite, particularly up fault zones.

4. **Geochemistry of the Grassy Granite**

Geochemical analyses of the Grassy Granite from 8 different localities are presented in table 1. The analyses are very similar in terms of major elements though samples from the Bold Head region (3 and 4, Table 1) are slightly lower in CaO and Al_2O_3 compared with those from the Grassy body (1,2,5,6,7,8; Table 1). Trace element abundances are also uniform except for an anomalously high Ba abundance at locality 1 (Table 1).

The similarity in chemistry between the Bold Head and Grassy granite bodies suggest that they crystallised from the same magma and that there was little insitu differentiation. Post dating crystallisation, the granite was probably split in two by sinistral strike-slip faulting along the Grassy Fault (Figure 1). The two bodies both warrant being called by the one name, the Grassy Granite.

Compared with other granites, the Grassy Granite has high K_2O , Ba and Sr abundances which indicate distinct monzonitic affinities and its high Nb, Ce, Zr, U and Th abundances are typical of A-type rather I-type granites (Table 2). Mo analyses, which range from 1.2 to 1.8ppm, are all higher than the average I-type granite and are similar to the average A-type granite (Table 2). W ranges up to 10ppm which is significantly higher than the average I or A-type granite. Au was analysed on one sample (LFB 1767) which gave an anomalously high value of 13.2ppb Au compared to 1ppb for typical I and A-type granites. Of 70 samples analysed for Au in SE Australia (AMIRA data), only the Eugowra Granite in NSW has a higher Au content (18.6ppb).

A granite with a similar SiO_2 content to the Grassy Granite has been sampled at Mt Counsel in the northern part of King Island. The Mt Counsel Granite has distinctly lower abundances of K_2O , Ba, Rb, Sr, Th, U and Zr. These abundances are typical of I-type granites (Table 2).

Compared to the granites in western Tasmania, the Grassy Granite has a similar high K_2O abundance which is a feature not observed in the typical I-type granites from mainland SE Australia. Unlike the Grassy Granite, the western Tasmanian granites are higher in SiO_2 and have higher Rb/Sr (e.g. The Three Hummock Granite, Table 2). Unfractionated (>400ppm Sr) to moderately fractionated (100-400ppm Sr) granites tend to be associated with W mineralisation while highly fractionated (<100ppm Sr) granites are associated with Sn mineralisation (Figure 2).

5. **Discussion**

The Grassy Granite has distinctive geochemical characteristics compared to I-type granites and would be best described as a monzonitic A-type granite. Monzonitic granites are derived by partial melting of evolved I-type granite sources such as tonalites and granodiorites which are relatively enriched in metals compared to the dioritic sources of typical I-type granites (Wormald 1990). Monzonitic intrusives of this character are a key target for Mo, W, Bi, U,

REE and Au mineralisation.

An unusual feature of the Grassy Granite is its high Au content. Similar Au rich potassic intrusives are related to gold mineralisation in southern NSW which have been termed the Boggy Plain Supersuite (Wyborne et al 1987). This suggests that there could be a genetic link between the Au - qtz mineralisation on King Island, mentioned to occur by Balind and Stephenson (1988), and intrusive magmatic/hydrothermal activity.

High Au abundances have not been reported from the skarns at Grassy but potential certainly exists. High Au abundances are usually correlated with high Bi in skarns (Kwak pers. comm.). There is also potential for Au rich base metal skarns and Au - quartz mineralisation away from the Grassy Granite, if models proposed by Sillitoe (1990) are correct. This model, shown schematically in Figure 3, was constructed using examples of intrusive related mineralisation in Nevada, USA. Using such a model, base metal - Au skarns may occur along the northerly extension of the Grassy Fault (Figure 1) and other styles of Au mineralisation may occur in fault zones up to 5km away from the Grassy Granite.

References

Balind and Stephenson, 1988 King Island Scheelite Pty. Ltd. Report on the mineral resources and insitu ore reserves of the Dolphin Deposit, King Island (unpubl. report)

Kwak, 1987 W-Sn skarn deposits and related metamorphic skarns and granitoids Developments in Economic Geology. Elsevier.

Wormald 1990. The nature and origin of monzonitic I-type granitoids and their relationship to mineralisation. (Geopeko unpublished report, Melbourne).

Sillitoe, 1990 Sediment-hosted gold deposits: Distal products of magmatic hydrothermal systems. *Geology* 18 pp 157-161.

Wyborne, 1987 The Boggy Plain Supersuite: a distinctive belt of I-type igneous rocks of potential economic significance in the Lachlan Fold Belt. *Aust. J. Earth Sci.* 34 pp 21-43.

BIBLIOGRAPHY

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PROJECT: Gold and base metals from plutons
PROSPECT: Dolphin Deposit, King Island
REPORT TITLE: The geochemistry of the Grassy Granite
King Island - implications for exploration
AUTHOR: Richard J. Wormald
DATE: July 90
VOLUMES: 1
PAGE TOTAL: 5
FIGURES: 3
COMMODITIES: W, Mo, Au, Sn
KEYWORDS: Grassy, Granite, Skarn, Scheelite

NEAREST TOWN: Grassy
LATITUDE: 40° 00'
LONGITUDE: 144° 00'
MAP REFERENCE NAME: King Island
MAP REFERENCE NUMBER: SK 55-1
WHERE HARD COPY STORED: Melbourne

PROJECT GENERATION
UNTI REPORT NUMBER: ML90/7i
DBASE LIBRARY NUMBER:
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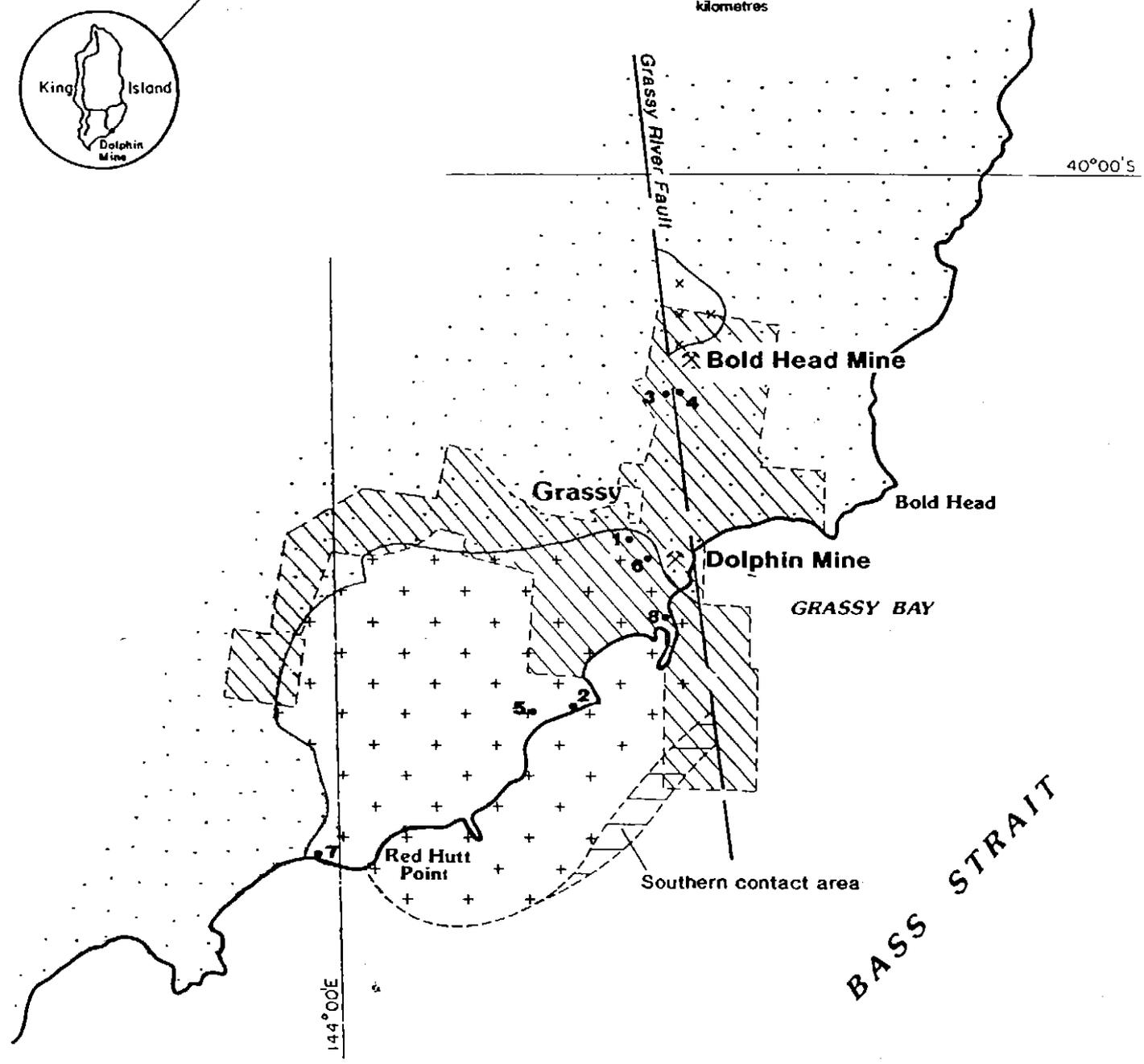
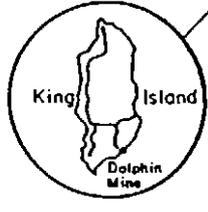
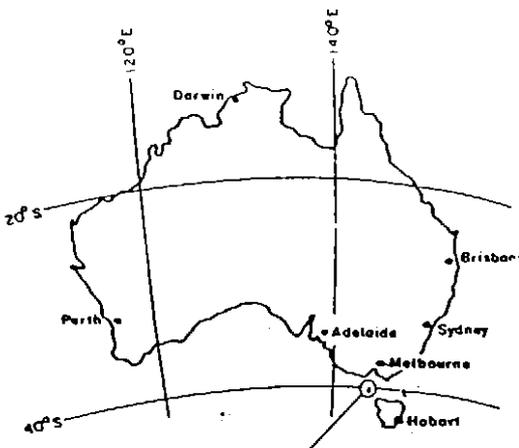
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LEGEND

-  M.L. 17M/79
-  Late Devonian Grassy Granodiorite
-  Bold Head Adamellite
-  Cambrian Sediments
-  Granite sample locality

0 5 kilometres



LOCATION OF THE GRASSY GRANODIORITE, BOLD HEAD ADAMELLITE AND W MINES, KING ISLAND.

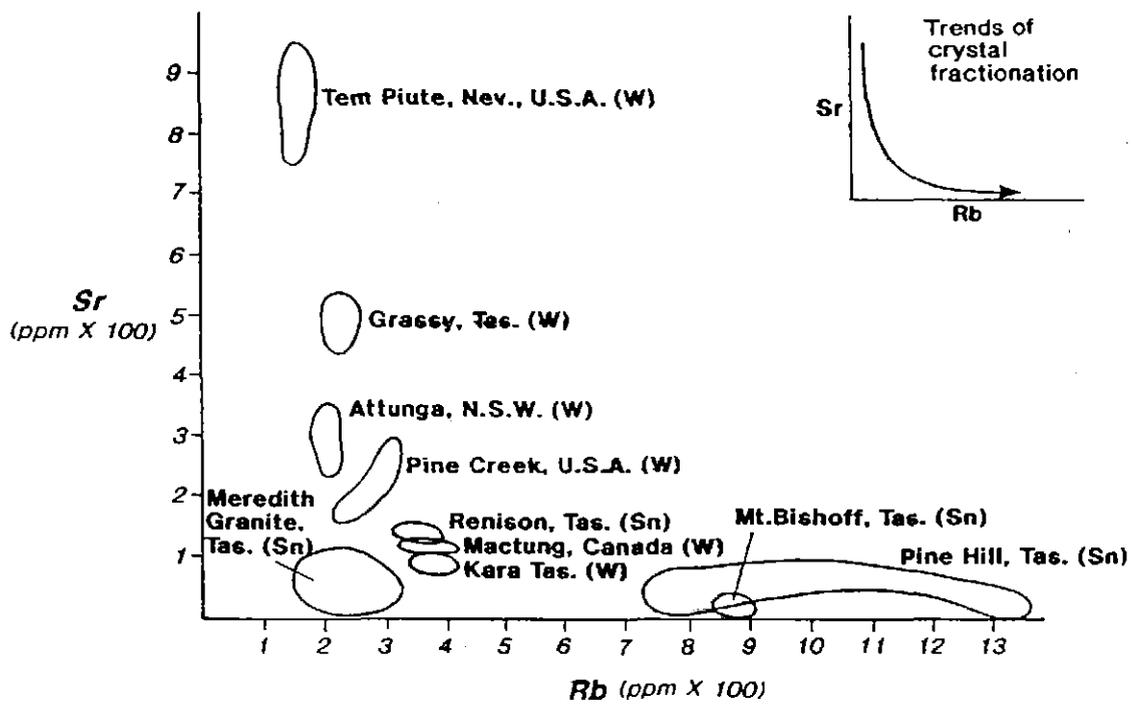


Figure 2. The variation of Sr and Rb for granitoids associated with tungsten skarns (W) and those associated with Tin skarns (Sn). Note that Sn skarns are generally associated with high Rb/Sr (fractionated) granites

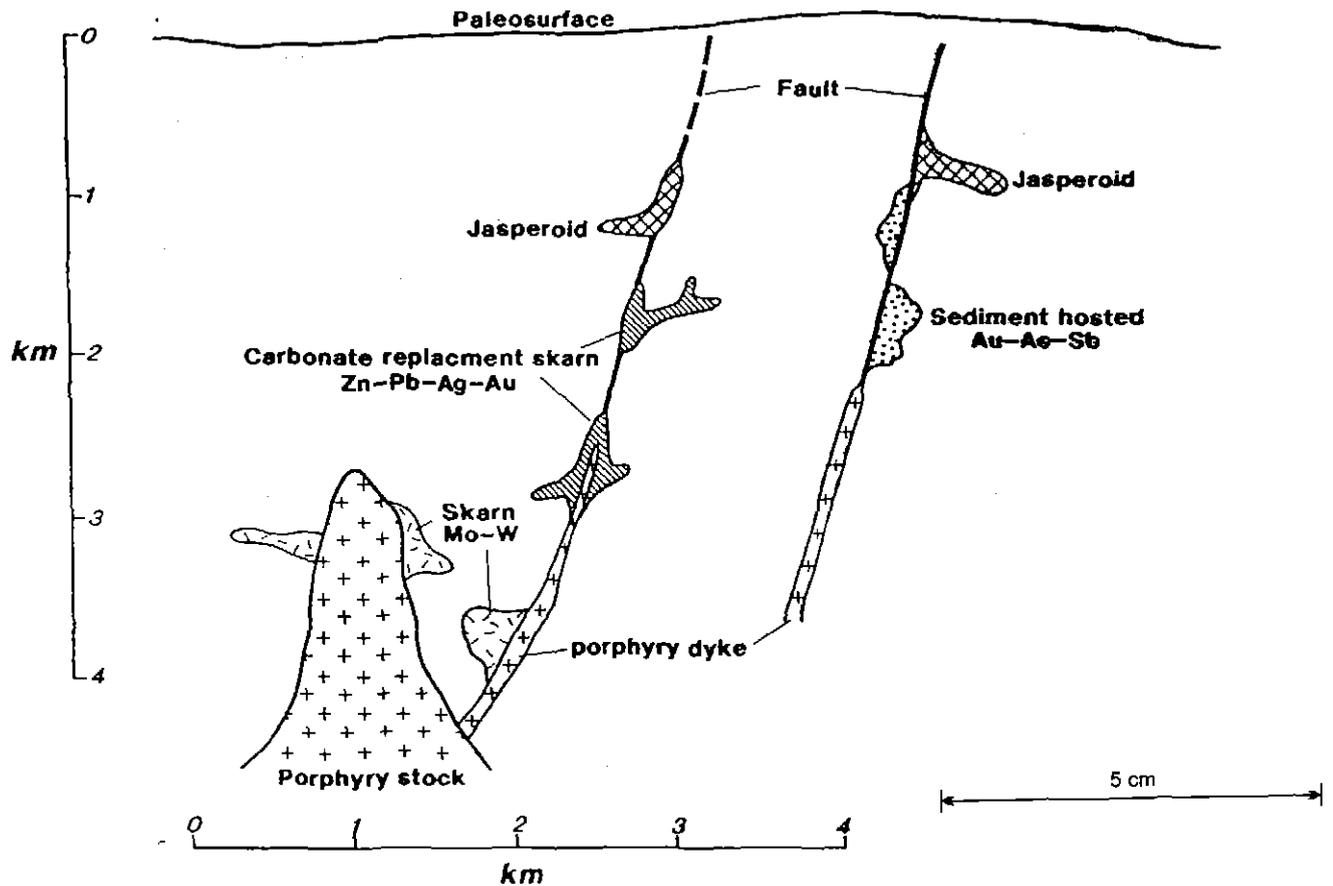


Figure 3. Schematic model to illustrate the typical position of Mo-W skarns, base metal-Ag-Au carbonate replacement skarns and sediment hosted Au-As-Sb deposits in relationship to the source porphyry stock.

Table 1. Major and Trace element analyses of the Grassy Granite, King Island (Map Sheet 7717). Data from AMIRA

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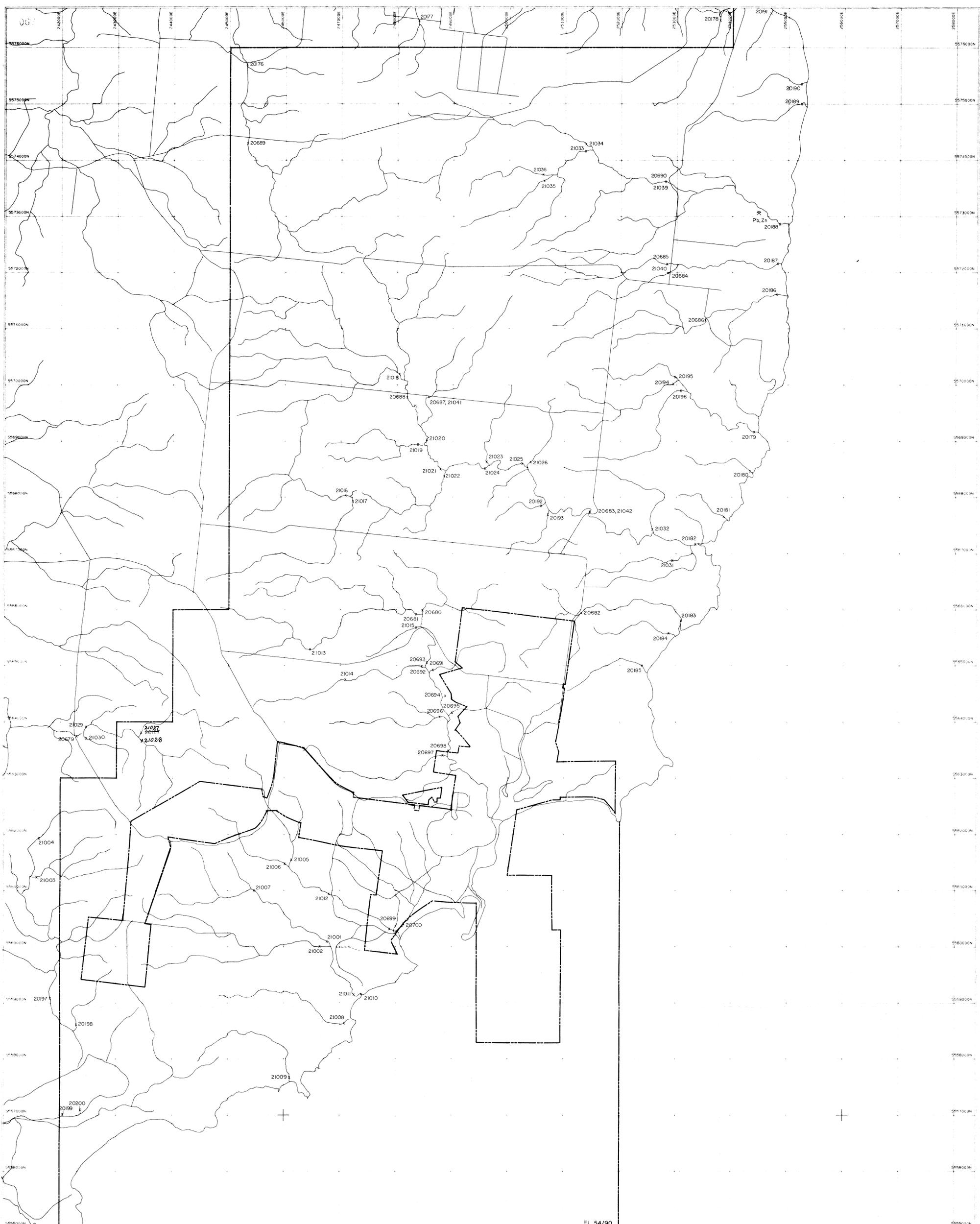
Sample No. on map	1	2	3	4	5	6	7	8
Amira sample no.	LFB1771	LFB1773	LFB1774	LFB1775	LFB1767	LFB1768	LFB1767	LFB1770
Grid Reference	488621	480594	495644	495644	474593	492618	446568	495609
SiO ₂	68.32	68.17	67.65	68.57	67.50	68.21	68.51	67.92
TiO ₂	0.47	0.48	0.48	0.44	0.50	0.51	0.47	0.48
Al ₂ O ₃	14.67	14.53	14.37	14.25	15.01	14.53	14.53	14.52
Fe ₂ O ₃	1.24	1.21	0.73	1.14	1.41	1.10	0.71	0.64
FeO	1.74	1.66	2.03	1.63	1.88	1.99	2.24	2.28
MnO	0.07	0.06	0.05	0.06	0.07	0.06	0.06	0.06
MgO	1.51	1.30	1.66	1.48	1.29	1.75	1.59	1.51
CaO	2.69	2.74	2.57	2.65	2.98	2.56	2.75	2.89
Na ₂ O	3.32	3.29	3.38	3.42	3.40	3.42	3.35	3.40
K ₂ O	4.37	4.21	4.13	3.88	3.75	4.10	3.98	4.06
P ₂ O ₅	0.20	0.21	0.21	0.19	0.23	0.23	0.20	0.21
S	(0.02)	(0.02)	(0.02)	(0.02)	0.02	(0.02)	0.02	0.08
H ₂ O ⁺	0.79	0.92	1.33	1.06	0.94	1.00	0.73	1.02
H ₂ O ⁻	0.18	0.22	0.37	0.25	0.19	0.18	0.14	0.17
CO ₂	0.12	0.25	0.20	0.38	0.18	0.24	0.17	0.47
rest	0.30	0.28	0.27	0.25	0.24	0.23	0.27	0.28
					99.59		99.74	99.99
O=S					0.01		0.01	0.04
Total	99.99	99.53	99.43	99.65	99.58	99.71	99.73	99.95
Trace elements (ppm)								
Ba	1140	935	925	755	680	605	895	920
Rb	208	215	207	220	207	212	178	207
Sr	530	492	510	500	359	425	525	510
Pb	37	37	29	32	32	35	24	31
Th	35.0	41.0	35.0	35.0	31.8	38.5	31.5	45.0
U	6.6	10.0	8.0	11.6	8.4	13.6	7.6	11.0
Zr	190	254	202	188	270	203	193	210
Nb	25.5	25.5	27.5	25.5	30.5	31.5	24.5	24.0
Y	18	17	21	18	18	20	21	19
La	54	60	59	59	61	63	66	61
Ce	115	124	120	117	121	127	132	123
Sc	8	8	9	8	9	10	9	9
V	45	40	49	44	45	50	48	49
Cr	21	25	32	30	18	36	36	34
Mn	515	490	405	435	540	500	485	440
Co								
Ni	17	16	18	16	11	20	17	18
Cu	18	18	(1)	2	16	(1)	43	19
Zn	48	51	35	38	52	36	39	32
Ga	18.0	17.6	18.2	18.4	18.8	18.8	18.0	17.8
Mo	1.3	1.8	1.4	1.6	1.6	1.3	1.3	1.8
W	6.5	3.0	6.0	10.0	5.5	5.0	6.5	9.5

Table 2.

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SAMPLE	GRASSY	MT COUNSEL	3 HUMMOCK	AVERAGE	AVERAGE
	LFB 1774	LFB 1776	LFB 1763	I-type	A-type
SiO ₂	67.65	68.73	73.19	69.17	73.39
TiO ₂	0.48	0.45	0.21	0.43	0.30
Al ₂ O ₃	14.37	14.71	14.50	14.33	12.88
Fe ₂ O ₃	0.73	0.53	2.24	1.04	0.90
FeO	2.03	2.26	1.19	2.29	1.66
MnO	0.05	0.07	0.06	0.07	0.06
MgO	1.66	1.34	0.39	1.42	0.30
CaO	2.57	2.82	0.91	3.20	1.07
Na ₂ O	3.38	3.43	3.37	3.12	3.49
K ₂ O	4.13	3.70	4.63	3.40	4.61
P ₂ O ₅	0.21	0.16	0.20	0.11	0.08
S	(0.02)	(0.02)	(0.02)		
H ₂ O+	1.33	0.90	0.89		
H ₂ O-	0.37	0.24	0.17		
CO ₂	0.20	0.30	0.09		
rest	0.27	0.20	0.11		
O=S					
Total	99.43	99.84	100.15		
Trace elements (ppm)					
Ba	925	610	135	539	546
Rb	207	154	491	151	188
Sr	510	308	50	246	97
Pb	29	30	26	19	27
Th	35.0	19.6	13.8	18	24
U	8.0	3.8	5.6	4	5
Zr	202	175	76	151	325
Nb	27.5	22.0	24.5	11	26
Y	21	20	18	28	71
La	59	43	17	29	55
Ce	120	89	40	64	131
Sc	9	9		13	12
V	49	41	10	60	9
Cr	32	25	5	20	2
Mn	405	515	445		
Ni	18	8	1	7	2
Cu	(1)	15	(1)	9	5
Zn	35	51	42	49	95
Ga	18.2	18.0	20.2	16	22
Mo	1.4	1.3	(0.2)	1.1	1.7
W	6.0	4.0	26.0	4.9	6.4

Table 2. The major and trace geochemistry of the Grassy Granite (King Island) compared with analysed from the Mt. Counsel Granite (King Island), the Three Hummock Granite (Tasmania) and the average I and A-type granites from SE Australia



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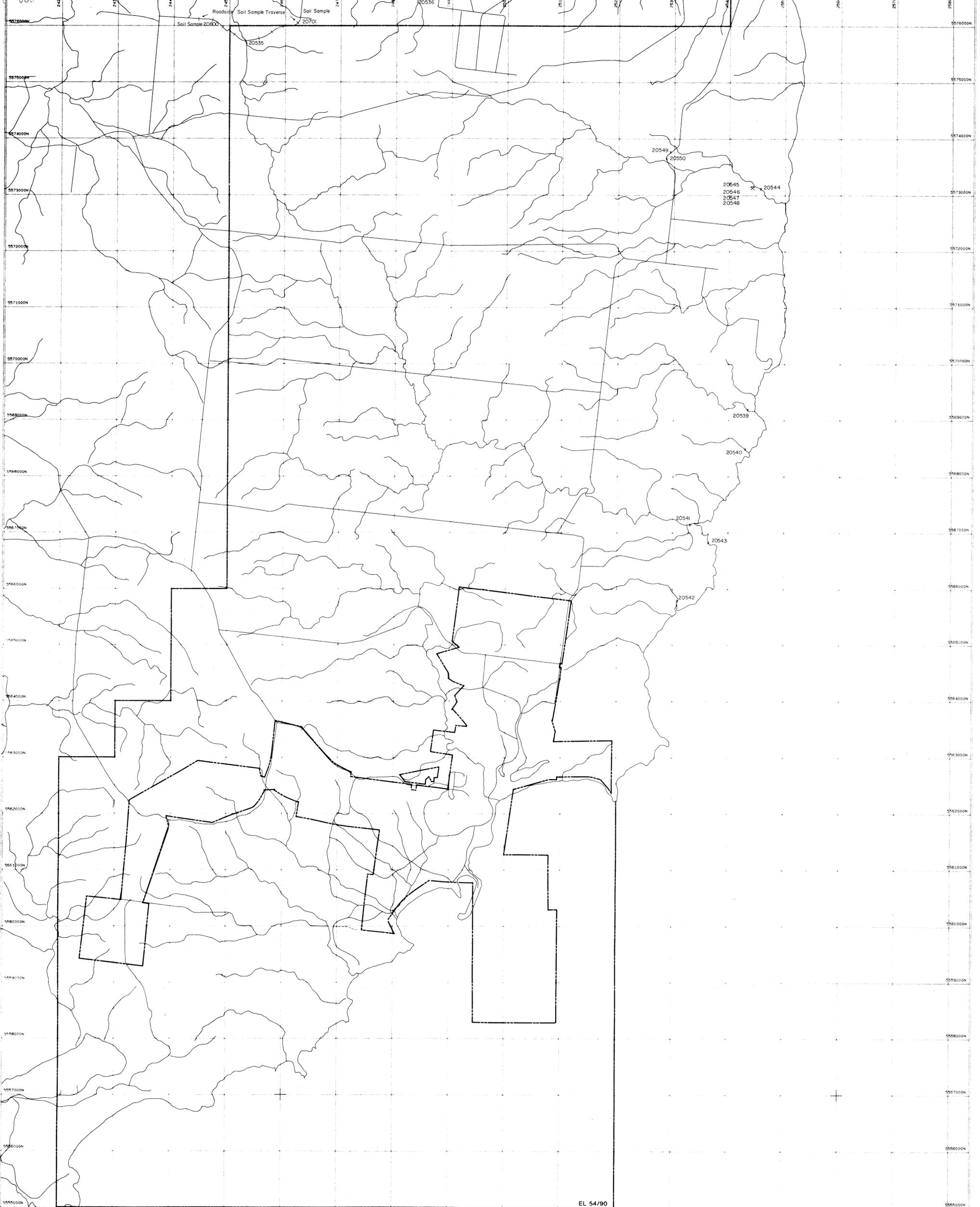
PLATE I

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**EL 54/90 GRASSY
WATER GEOCHEMISTRY
SAMPLE LOCATIONS**

Dwg No 1493 ab

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EL 54/90



LEGEND
 x ROCK SAMPLE LOCATION
 ++ SOIL (HUMINEX) SAMPLE LOCATION

91-3246. PLATE II

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GENEKO

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Drawn	ABDIE
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Date	19-JUN-90

EL 54/90 GRASSY
ROCK GEOCHEMISTRY & SOIL
SAMPLE LOCATIONS

DWG NO. 1493 a c