深度 8.8～13.4mは，灰色のきわめて軟弱で含水量の高い粘土主体層で，細粒砂を少量伴い貝殻片が散在する。堆積物がたいへん含水量に富むため，コア採取率がやや低めであった。

化学分析結果では，下位でジルコニウム，チタンがやや高い値を示すほかは，きわめて低濃度である。

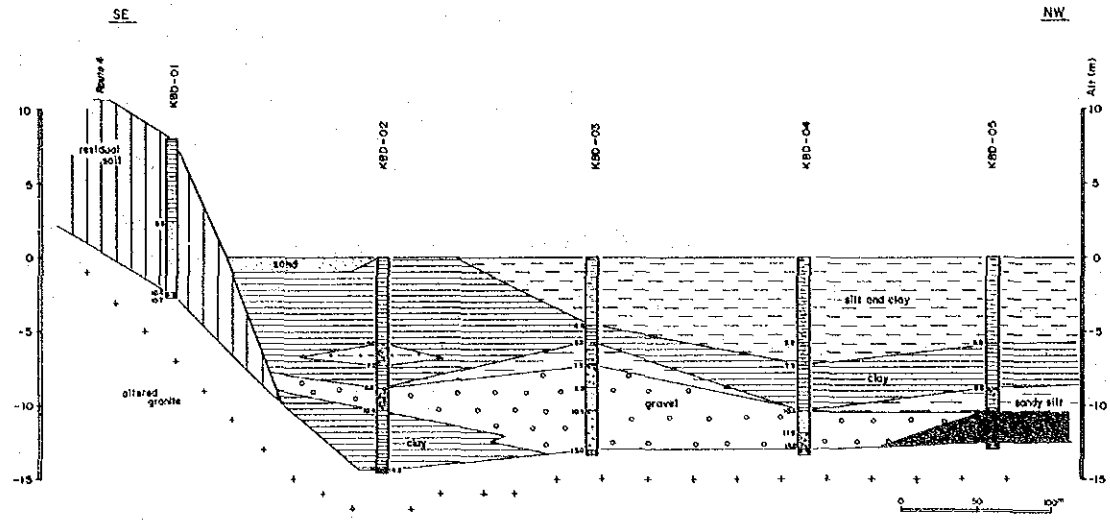
2－3　考察

D－1地区は，第2年次調査では陸域を除けば，陸域に沿って分布する粗粒砂層でレアアースの高濃度域が認められるのみで，それ以外の地域はマングローブ土に覆われることから顕著な地化学異常域は分布していない。しかしながら，D－1地区の南部岩体を挟んだ東側や地区の約10km南にも錫の2次鉱床が分布していたことから，マングローブ土の下位には優良な錫の2次鉱床が存在するものと類推された。

ボーリング調査の結果，D－1地区の堆積盆は陸域との境界で急激に深度を増し，10～14m程度の深度で平坦面を形成していることが明かとなった。地形的特徴から海岸侵食による海食台あるいは波食台地形であるものと思われる。この結果は第2年次に推定した大クラブリ川方向に緩傾斜の斜面を形成している地下構造とは大きく異なっている。また基盤岩を覆って発達していると考えられていた砂礫層，砂層はKBD-03，KBD-09を中心に3～5.5 mの層厚で分布しているが，KBD-08やKBD-11～16には分布しない。これらの分布は堆積盆と端の急崖に沿っており，崖錐状の堆積環境下で堆積したものと思われる。地表での地形からKBD-01～07，KBD-09～10付近は旧河川の流域にあたり粗粒な堆積物が堆積しやすい環境にあったものと推定される。砂礫層および砂層は珪長質の砂，礫から構成され花崗岩礫なども含むが有色鉱物はきわめて少ない。

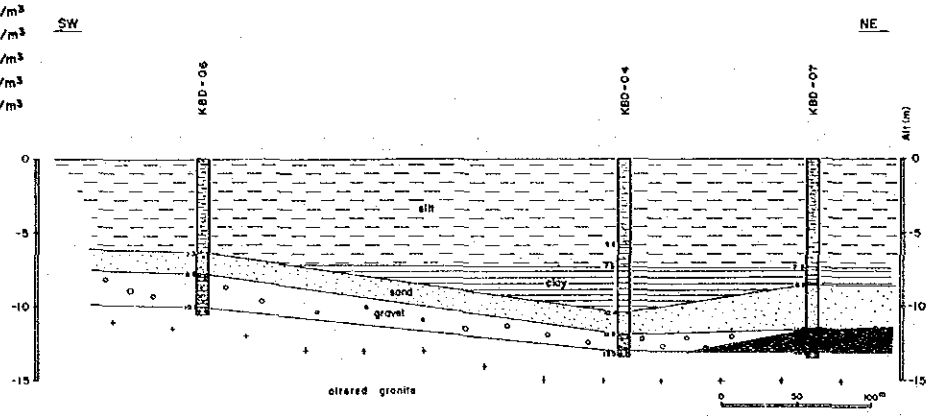
D－1地区の北東側の地層および中央部から南東部の砂・砂礫層より上部の地層は，灰色ないし暗灰色のシルト・粘土層から構成されており，生物起源と思われる黄鉄鉱を多含して，これらの堆積物はきわめて静かで還元的な環境で堆積したものと思われる。また，KBD-03，KBD-04付近の砂層の上部に分布するシルト層および粘土層には魚卵状の菱鉄鉱が多量に認められる。

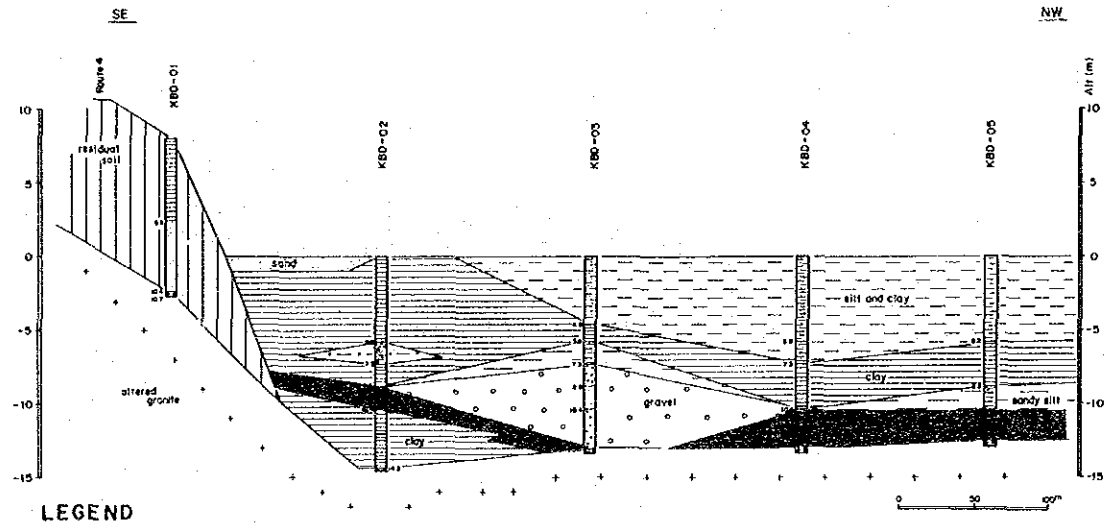
第2年次調査で堆積盆と陸部の境界に分布していた粗粒砂層は，境界部から 100m以内の表層部にのみ分布することが判明し，この砂層はマングローブ土が堆積した後に現在の河川系により運搬・堆積したものと考えられる。第2年次調査においてはこの砂層は後背地の地化学特性を反映していることから，極めてレアアースに富んだ傾向を示し，地化学異常域として抽出された。第2年次調査調査ではこの砂層がマングローブ土の下位に連続



LEGEND

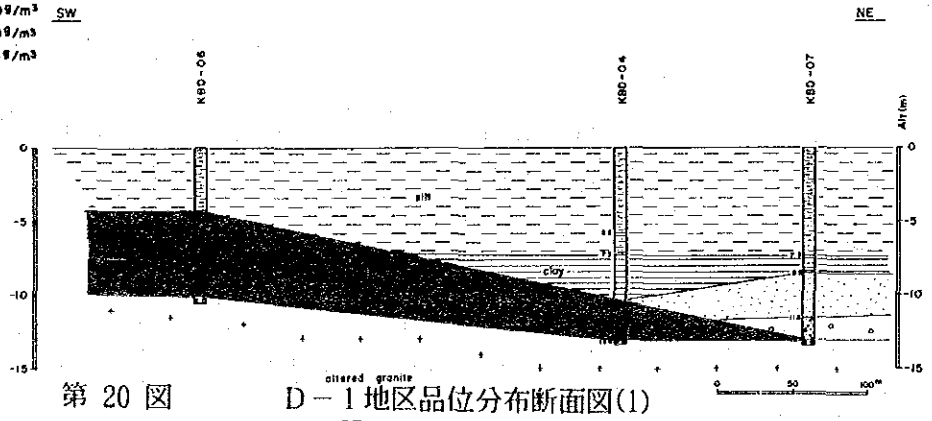
$SnO_2 > 500 g/m^3$
$500 > SnO_2 > 200 g/m^3$
$200 > SnO_2 > 100 g/m^3$
$100 > SnO_2 > 50 g/m^3$
$50 > SnO_2 > 25 g/m^3$



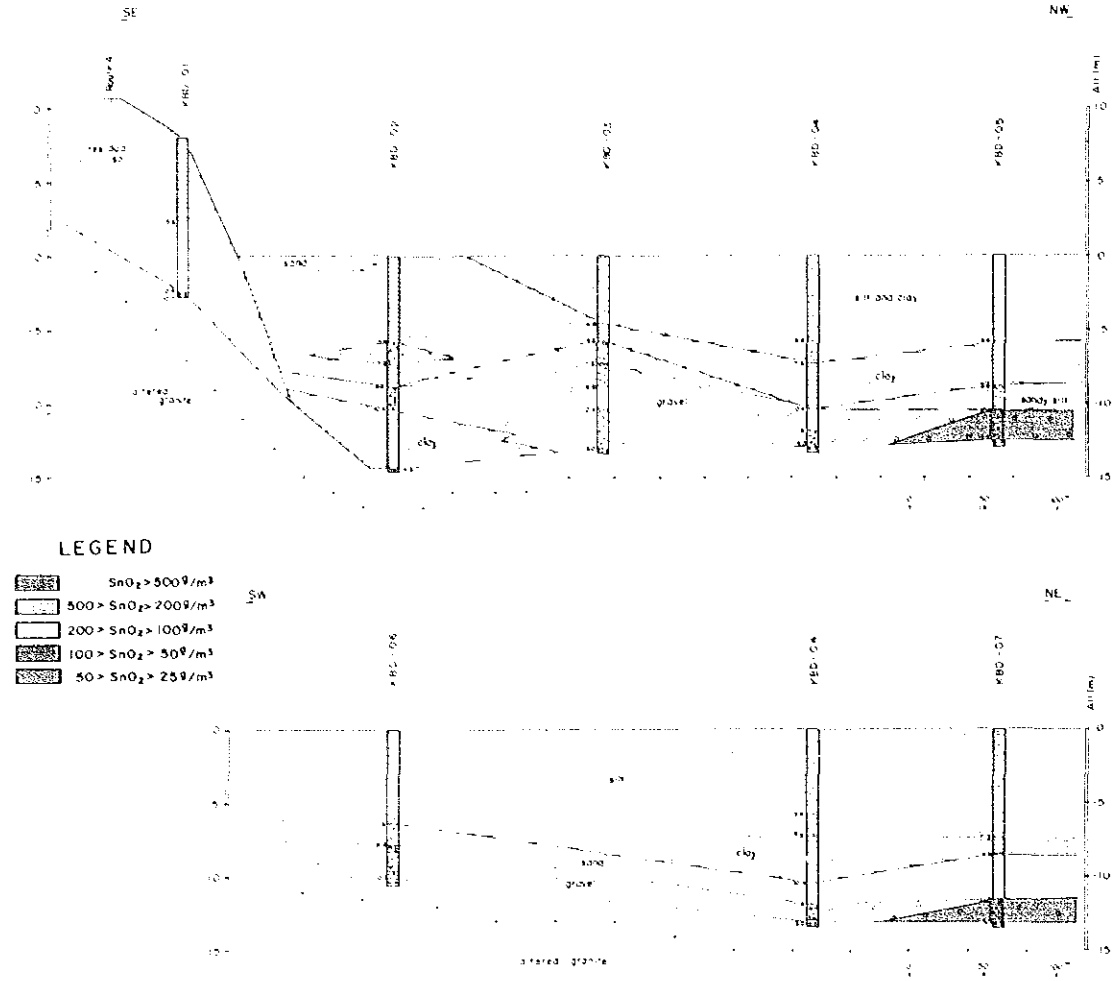


LEGEND

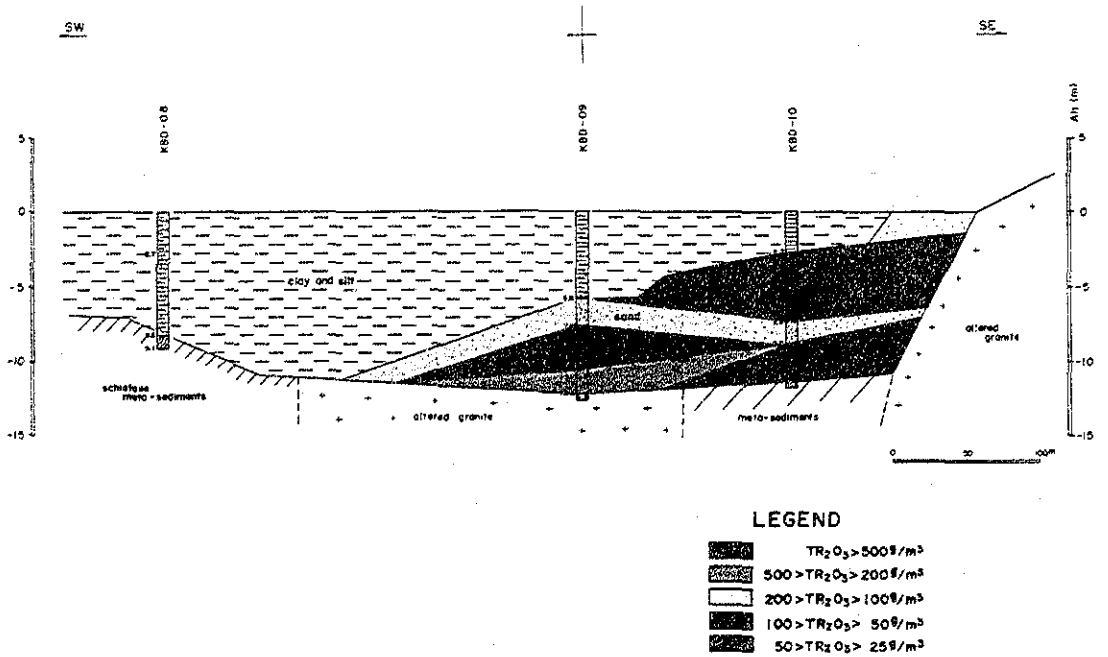
$TR_2O_3 > 500 g/m^3$
$500 > TR_2O_3 > 200 g/m^3$
$200 > TR_2O_3 > 100 g/m^3$
$100 > TR_2O_3 > 50 g/m^3$
$50 > TR_2O_3 > 25 g/m^3$



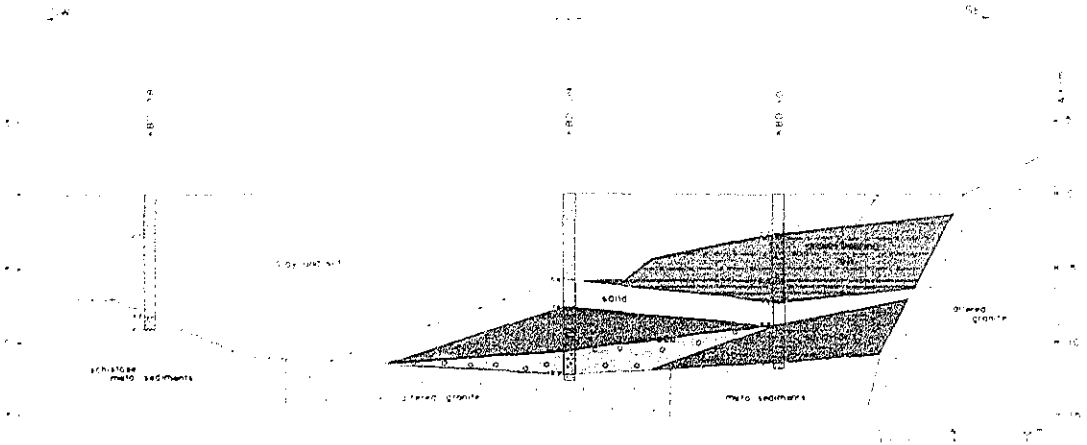
第 20 図　　D－1地区品位分布断面図(1)



第 20 図　　D－1 地区品位分布断面図(1)



第 21 図　　D－1地区品位分布断面図(2)



LEGEND

$TR_2O_3 > 500 g/m^3$

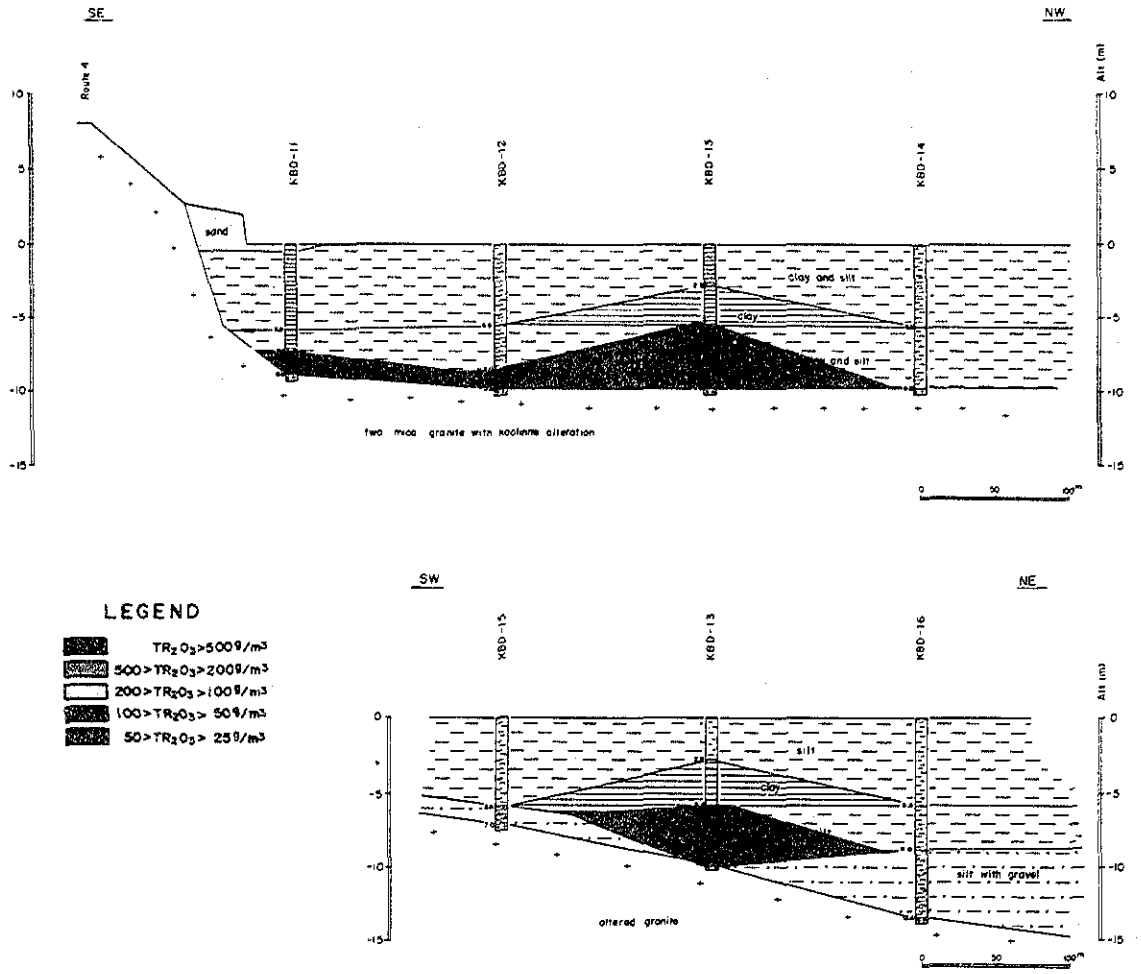
$500 > TR_2O_3 > 200 g/m^3$

$200 > TR_2O_3 > 100 g/m^3$

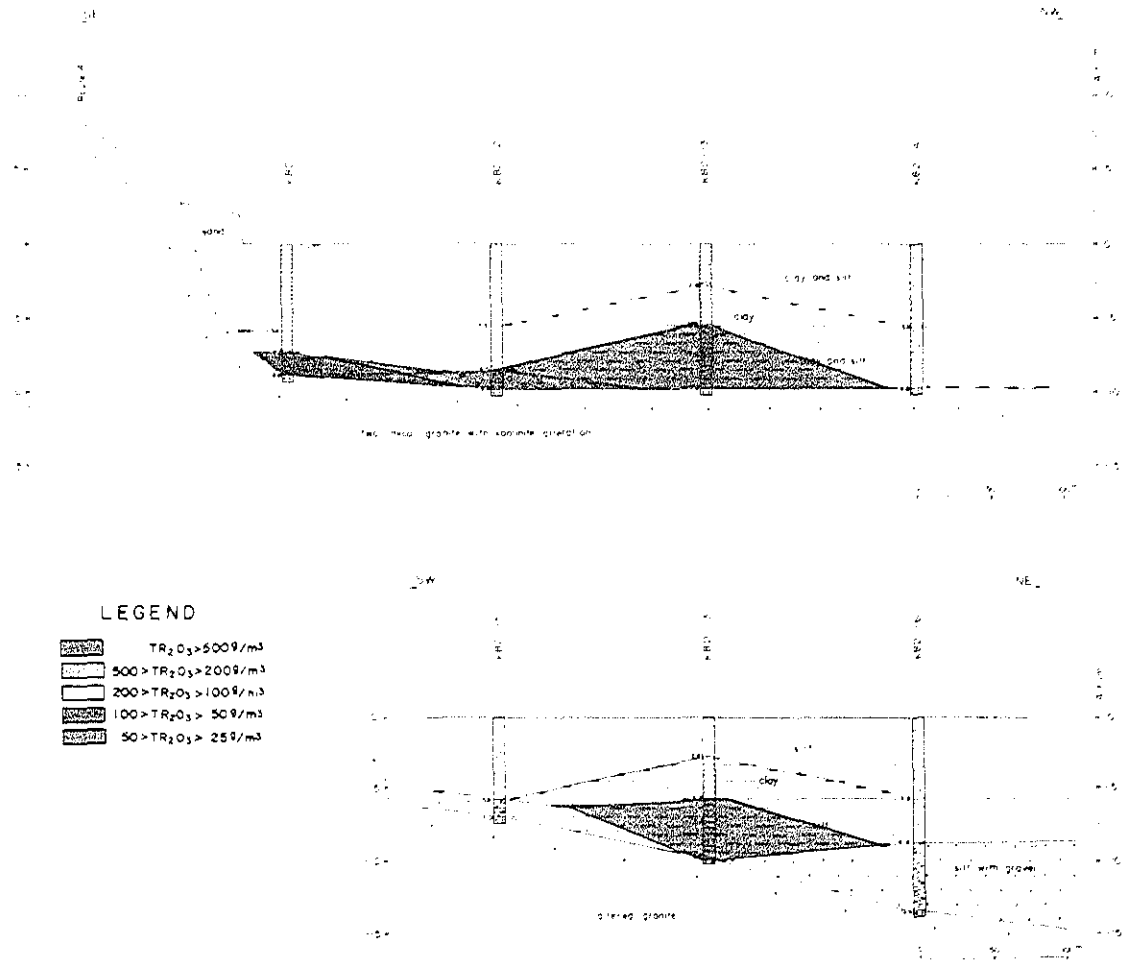
$100 > TR_2O_3 > 50 g/m^3$

$50 > TR_2O_3 > 25 g/m^3$

第21図　　D　地域鉱化分布断面図(2)



第 22 図　　D－1地区品位分布断面図(3)


LEGEND
TR2O3>500g/m3
500>TR2O3>200g/m3
200>TR2O3>100g/m3
100>TR2O3> 50g/m3
50>TR2O3> 25g/m3
clay
clay

するものとして鉱量計算を行った。しかしながら堆積盆の形態や砂層の連続性の推定が間違っていたことから，この計算結果は根拠のないものである。

分析結果では，全元素とも地域全体にわたって低濃度であり鉱床としては期待できない。僅かにKBD-09，KBD-10の下部にレアアース，チタンの高い部分が認められるが，これはサイデーン川の古流系に沿って堆積した砂礫層などに含まれるものと推定される。

D－1地区の堆積盆が全く鉱床として期待はずれであったことは，周囲の鉱床の分布状況からして想像できる結果ではなかった。この原因のひとつとしては，堆積盆の形態が想像していたような緩い斜面状の堆積物でなく海食台上に溜まった堆積物であることが考えられる。すなわち，現在の堆積盆に溜まっている堆積物は海食台が形成され，その後海食台が沈降することに伴って静かに堆積した堆積物で，有用鉱物を含んでいた堆積物は海食台の形成時，または海食台が汀線付近にあって堆積物が常に洗掘されて残っていないことが考えられる。

また根本的にD－1地区の東側に分布する花崗岩が何らかの原因で錫を含まず，レアアースにも乏しい岩相であった可能性もある。しかし，この可能性については過去2年間の地化学調査結果，花崗岩の岩石学的検討結果から後背地の花崗岩は錫花崗岩としてのポテンシャルを有しており，南部岩体の他の地域の花崗岩とこの地域の花崗岩が大きく異なる点は見いだせないことから根拠としては弱い。ただ，D－1地区が他地区と違う点として，ラウン川に近い岩体の最北部で観察されるようにこの岩体が珪化，黄鉄鉱化を被っていることである。砂礫層直上の堆積物中に魚卵状の菱鉄鉱が多量に存在することもこの地区にある時期強い熱水活動があった可能性を示しており，この熱水活動が花崗岩から有用鉱物を溶脱し鉱床が形成されなかった可能性も考えられる。

いずれにせよこの原因の解明にはより詳細の調査が必要である。

第III部　結論および提言

第Ⅲ部　結論および提言

第１章　結　論

本年度は，第１年次および第２年次の調査結果から抽出されたＡ－１地区およびＤ－１地区において，２次鉱床が賦存していると推定された地化学異常域に対してＡ－１地区ではピット調査・バンカドリルによるボーリング調査をＤ－１地区ではバンカドリルによるボーリング調査を実施して次の結論を得た。

１－１　Ａ－１地区

(1)　Ａ－１地区には崖錐性の風化残留堆積物中と河川沿いに発達する河川堆積物中に賦存する２次鉱床が期待されていたが，調査結果からは河川堆積物に含まれる２次鉱床が有望と結論される。

(2)　昨年度調査で風化残留堆積物中に２次鉱床の賦存が期待された地域は，今年度調査では昨年度の1/50～1/1,000 の分析品位しか得られていない。これは分析試料の調整方法の違いに由来するものであり，実際の採掘時には本年度得られた分析品位が参考となる。

(3)　２次鉱床中では錫の濃集部が下位にあり，その上位にレアアースの濃集部が累重する傾向が認められる。これは錫とレアアースの堆積盆への供給時期が異なっていることを示している。

(4)　レアアース鉱物の分析品位と相関的にトリウム，ジルコニウム，チタンおよびタンタル，ニオビウムの分析品位が変化する。特にナムカオ川沿いの堆積盆ではタンタル，ニオビウムが高濃度を示す。

(5)　２次鉱床の有望域は５箇所に分かれて分布するが，５箇所のうちナムカオ川沿いに位置する３箇所合計の推定鉱量は 639,000㎥，平均品位はSnO_2=500g/㎥，Ta_2O_5=10g/㎥，Nb_2O_5=36g/㎥，T.R_2O_3=135g/㎥，ThO_2=18g/㎥，Zr_2O_3=23g/㎥，TiO_2=1025g/㎥と算出される。また，西側２箇所の鉱量は，146,000㎥，平均品位は SnO_2=1000g/㎥，Ta_2O_5=15g/㎥，Nb_2O_5=24g/㎥，T.R_2O_3=50g/㎥，ThO_2=6g/㎥，Zr_2O_3=16g/㎥，TiO_2=290g/㎥と算出される。

１－２　Ｄ－１地区

(1)　Ｄ－１地区の堆積盆はマングローブ土が広く覆っているが，その下位には２次鉱床が胚胎する有望な砂礫層が賦存し得るものと考えられていた。しかしながら，調査結果では，砂礫層の発達は限られており，含まれる有用鉱物も少ないことが明かとなり鉱床として期待できない。

(2)　D－1地区の堆積物の大部分は，古い河川系の周辺を除いては，極めて静かで還元的環境のもとで堆積したものであり，粗粒な重鉱物をほとんど含まない。

第2章　将来への提言

A－1地区で確認された2次鉱床は，規模はともかくとして錫の分析品位では極めて高い値を示す。さらに，タンタリウム，ニオビウム，レアアース，チタン，ジルコニウムなども伴うことから採算面でも有利である。今回の調査は調査孔の間隔が広いことから開発にあったてはより詳細な調査が必要であろう。また実際に開発する場合には現在地表部は耕作地として利用されていることから，これらの補償費との経済比較も必要である。

3年間の調査を通じて，錫の市況が悪いことから錫鉱のみでなくレアアース鉱物も伴う2次鉱床をターゲットとしてきたが，錫鉱のみに限ればクラブリ地区南部のクン川流域の旧鉱地帯はこの地区の中では高いポテンシャルをもっているし，ラムリアン川上流には初生の錫鉱床が胚胎する可能性が高い。今後，機会があればこれらの地区の鉱床評価を実施することを望みたい。

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APPENDICES

付表1　　鉱石研磨薄片鑑定結果・モード分析一覧表

Sample No.		Microscopic observation													grain size(mm)		Modal composition											
		Q	Fd	Il	Tm	Bi	Mv	Cs	Mz	Xn	Pc	Zr	Py	Sd	Q,Fd,Il	Others	Q	Fd	Il	Tm	Bi	Mv	Cs	Mz	Xn	Pc	Zr	Py	Sd
1	KBA-P01-3	◎	○	◎	○	·	·	○	○	○	·	○			0.1-0.7	0.1-0.8	35.6	16.6	30.7	4.1	1.2	0.6	2.7	2.2	1.8	0.5	4.0		
2	KBA-P02-2	◎	○	◎	◎		·	·	·	·	·	○			0.1-1.2	0.1-0.8													
3	KBA-P04-1	◎	○	○	○			·	○	·	·	○			0.1-1.0	0.1-0.6	47.6	15.9	19.6	4.3	1.2	0.7	2.3	2.3	1.7	0.6	3.8		
4	KBA-P04-9	◎	○	○	○	·	○	○	○	○		·			0.1-1.0	0.1-0.6													
5	KBA-P05-3	◎	○	○	○			○	○	·	·	○			0.1-1.1	0.1-0.8													
6	KBA-P05-8	◎	○	◎	○	○	·	○	·	○	·	○			0.1-0.9	0.1-0.7	47.0	16.0	21.2	4.4	1.0	1.2	1.3	1.5	2.1	0.7	3.7		
7	KBA-P06-4	○	○	◎	·			○	·	·	○	○			0.1-1.0	0.1-0.6													
8	KBA-P07-1	◎	○	◎	◎	·	·	○	○	○	·	○			0.1-1.0	0.1-1.0													
9	KBA-P07-5	◎	○	○	○	·	·	○	○	·		○			0.1-1.0	0.1-0.8													
10	KBA-P07-6	◎	○	○	○			○	○	○	·	○			0.1-1.0	0.1-1.0	26.3	13.6	18.9	3.5	4.8	4.0	15.4	2.1	3.8	0.9	6.9		
11	KBA-P08-5	○	○	◎	○	·	·	○	○	·	·	○			0.1-1.1	0.1-1.0	19.5	10.8	24.6	11.4	0.6	0.4	23.7	1.2	1.6	0.4	5.9		
12	KBA-P08-6	○	○	○	○			○	·	○		○			0.1-1.0	0.1-0.6	25.6	19.5	20.4	9.1	1.2	0.3	16.8	1.2	2.2		3.6		
13	KBA-P09-4	◎	○	○	○	·	·	○	·	·		○			0.1-1.1	0.1-0.7	27.3	15.1	21.6	18.2	0.8	0.5	2.0	3.2	2.8	1.0	7.6		
14	KBA-P09-5	○	○	○	○			○	·	·	○	○			0.1-1.2	0.1-0.9													
15	KBA-P10-5	◎	○	○	○	·		○	·	○		○			0.1-1.0	0.1-1.1	41.0	13.6	23.3	3.7	0.4	0.5	15.0	0.4	0.3		2.0		
16	KBA-P12-1	◎	○	○	○		○	○	○	○	·	○			0.1-1.2	0.1-0.7													
17	KBA-P13-6	◎	◎	○	○	○	○	○	·	○		○			0.1-0.4	0.1-0.3	45.9	21.5	8.9	11.5	2.2	2.6	2.2	1.3	1.2		2.7		
18	KBA-P14-1	◎	○	◎	○	○	○	○	·	·	·	○			0.1-0.8	0.1-1.1													
19	KBA-P14-3	◎	◎	○	○	○		○	·	·		○			0.1-0.9	0.1-0.8	40.6	22.7	11.4	17.3	1.6	1.8	1.1	1.1	1.0		1.4		
20	KBA-P14-6	◎	○	○	○	○		○	·	·		○			0.1-0.7	0.1-0.6	39.4	24.1	9.4	20.4	1.1	2.1	0.8	0.7	0.9		1.2		
21	KBD-02-6	○	○	○	○			·	·	○		○	◎	○	0.1-0.3	0.1-0.3													
22	KBD-03-2	○	○	○				·	·	·			◎		0.1-0.4	0.1-0.5	25.3	4.0	0.9				0.5	1.7	1.4			66.3	
23	KBD-03-3	○	○	○	○			·	·	·		·	○	◎	0.1-0.3	0.1-0.4													
24	KBD-03-4	○	○	○				·	·				◎	◎	0.1-0.3	0.1-0.3	22.8	3.3	0.7				1.5	0.4				44.0	27.2
25	KBD-05-2	◎		○				·					◎		0.1-1.2	0.1-0.4	28.3		1.3				1.4					69.1	
26	KBD-06-2	◎	◎	○	○			·	·				○		0.1-0.4	0.1-0.3	41.9	34.6	1.0	2.7		2.6	1.5	0.5			0.8	14.5	
27	KBD-07-3	○	○	○	·			·					◎	○	0.1-0.7	0.1-0.3													
28	KBD-09-2	◎	○	○					·				◎		0.1-0.6	0.1-0.7	34.2	23.1	0.9	1.4								40.4	
29	KBD-11-2	○	○	○					·	·		·	◎		0.1-0.2	0.1-0.3													
30	KBD-14-3	◎	○	·	○			·	·	·		·	○		0.1-0.2	0.1-0.4	40.4	24.7	2.1	2.1			0.9	1.2	0.8		3.3	24.6	

[Abbreviation]
Q: quartz, Fd: feldspar, Il: ilmenite, Tr: tourmaline, Bi: biotite, Mv: muscovite, Cs: cassiterite, Mz: monazite
Xn: xenotime, Pc: polyclase, Zr: zircon, Py: pyrite, Sd: siderite

◎: abundant, ○: common, ○: rare, ·: tiny

Sample No.		Microscopic observation													grain size(mm)		Modal composition												
		Q	Fd	Il	Tm	Bi	Mv	Cs	Mz	Xn	Pc	Zr	Py	Sd	Q,Fd,Il	Others	Q	Fd	Il	Tm	Bi	Mv	Cs	Mz	Xn	Pc	Zr	Py	Sd
31	KBD-16-2	◎	◎	○	○	○		?	·	·		·	◎		0.1-0.2	0.1-0.3	52.8	37.9	3.1	2.1			0.6				3.4		
32	KBD-16-3	◎	◎	○	○			·				○	○		0.1-0.3	0.1-0.3	51.7	38.0	3.3	2.3			0.9				3.7		
33	KBD-16-4	◎	○		○			·				○	○		0.1-0.3	0.1-0.3													
34	KBA-P06-A1	◎	○	◎	○		○	○	○	○	○	○			0.1-1.0	0.1-0.6	33.4	15.6	38.6	3.7	0.2	0.2	2.0	1.8	2.0	0.8	1.9		
35	KBA-P06-A2	◎	○	◎	○		○	○	○	○	○	○			0.1-1.1	0.1-0.8													
36	KBA-P06-A3	◎	○	◎	○		○	○	○	○	○	○			0.1-0.9	0.1-0.7													
37	KBA-P08-A1	○	○	◎	○	·	·	○	·	·	○	○			0.1-1.0	0.1-0.6													
38	KBA-P08-A2	◎	○	◎	◎	·	·	○	○	○	·	○			0.1-1.0	0.1-1.0													
39	KBA-P09-A1	○	○	○	○	·	·	○	○	·		○			0.1-1.0	0.1-0.8													
40	KBA-P09-A2	◎	○	○	○		·	○	○	○	·	○			0.1-1.0	0.1-1.0													
41																													
42																													
43																													
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Xn: xenotime, Pc: polyclase, Zr: zircon, Py: pyrite, Sd: siderite

◎: abundant, ○: common, ○: rare, · : tiny

付表2　　X線回折試験結果一覧表

Mineral name / Sample No.	quartz	K feldspar	pyrite	siderite	cassiterite	monazite	xenotime	ilmenite	tourmaline	
KBA-P08-5	◎	○			∘	・	∘	○	∘	
KBA-P14-1	◎	○			∘	∘		○		
KBD-03-4	○		・	◎						
KBD-11-2	◎	∘	○							
KBD-16-2	◎	∘	○							

[abbreviation] ◎→ abundant ○→ common

△→ rare　　・→ tiny

付表3　　化学分析結果一覧表

	unit	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Ce (ppm)	Eu (ppm)	La (ppm)	Nd (ppm)	Sm (ppm)	Tb (ppm)	Th (ppm)	U (ppm)	Y (ppm)	Gd (ppm)	Dy (ppm)	Pr (ppm)	Yb (ppm)	Lu (ppm)	Zr (ppm)	TiO2 (ppm)	Sc (ppm)
51	KBA-P08-3	308	120	210	699	5100	0.7	2500	1700	430	83	2500	640	4000	556	600	300	336	61	6700	7.22	16
52	KBA-P08-4	1324	190	690	2325	4500	0.8	2100	1300	410	120	2200	1600	6100	679	874	200	560	91.9	3900	23.87	30
53	KBA-P08-5	30800	570	940	2310	4200	1.2	2100	1400	390	160	2200	1600	4900	504	752	350	668	92.9	2600	23.47	36
54	KBA-P08-6	12600	220	770	2325	4700	1.2	2300	1400	450	200	2200	1300	6900	703	960	250	918	133	3000	25.81	36
55	KBA-P09-1	505	160	320	1061	8800	1.1	4100	2800	710	130	3900	960	7400	828	915	750	642	108	7600	10.43	23
56	KBA-P09-2	617	90	250	694	3600	0.5	1800	1200	350	84	1800	590	3000	375	432	170	331	50.9	3600	6.42	15
57	KBA-P09-3	2081	28	650	1579	11000	2	5600	4000	1000	310	5300	1800	9800	1190	1257	500	190	175	9600	15.22	34
58	KBA-P09-4	1452	270	670	1884	6900	1.5	3600	2600	640	240	3600	1800	7700	867	998	340	878	133	5100	17.23	32
59	KBA-P09-5	1570	240	860	2307	6300	1.4	3300	2300	610	250	3500	2200	8300	1018	1142	320	925	139	5000	23.8	34
60	KBA-P10-1	3400	90	290	705	1200	0.3	540	480	110	37	5500	120	1651	135	198	60	149	21.5	2500	5.36	15
61	KBA-P10-2	9100	190	620	1234	3800	10.3	1700	1300	340	89	1700	320	3700	364	461	200	360	50.8	7900	8.28	28
62	KBA-P10-3	3100	100	260	640	1100	<0.2	530	390	110	35	540	120	1521	151	186	100	132	20.1	2500	4.97	13
63	KBA-P10-4	4300	140	530	1116	2300	0.4	1100	810	220	70	1100	210	3300	238	386	120	265	38.8	5600	7.61	21
64	KBA-P10-5	6200	140	540	947	1500	0.3	700	430	150	48	700	140	1610	187	233	80	212	28.9	2200	8.17	17
65	KBA-P10-6	2200	96	200	430	662	<0.2	303	192	67	27	320	80	966	80.4	118	47	313	16.5	1154	4.03	10
66	KBA-P10-7	3100	78	180	354	859	<0.2	442	296	83	24	420	76	871	81.5	109	<20	93.7	13.7	2200	3.26	9.5
67	KBA-P10-8	11000	120	300	720	977	<0.2	425	347	97	33	450	83	1381	113	161	<20	126	17.7	3200	6.09	15
68	KBA-P10-9	6300	61	120	206	374	0.2	171	119	37	11	180	42	357	36.6	51.9	28	44.3	5.46	746	2.02	4.7
69	KBA-P10-10	11700	120	330	727	874	1.6	397	244	90	36	400	82	1536	135	182	<20	137	19.7	2200	5.97	12
70	KBA-P11-1	448	360	660	1876	5700	0.6	3500	2520	630	330	3600	2400	11200	1099	1392	300	310	199	6800	15.35	38
71	KBA-P11-2	187	220	370	1268	3900	0.5	1900	1100	400	150	2000	1100	6100	565	768	190	654	96.9	3800	9.74	24
72	KBA-P11-3	379	400	490	1499	6600	0.8	3000	2100	590	180	3200	1600	8400	847	1063	230	853	138	5900	12.26	31
73	KBA-P11-4	253	360	440	1605	4700	0.6	2200	2200	490	160	2400	1700	7600	738	945	200	729	112	4600	12.39	26
74	KBA-P12-1	759	210	450	996	3200	<0.2	1500	1000	300	80	1620	990	4200	424	579	160	383	63.5	3000	7.57	20
75	KBA-P12-2	278	130	130	305	842	<0.2	424	253	85	25	430	290	922	72	114	<20	105	15.6	612	2.05	7.8
76	KBA-P12-3	442	62	96	215	931	0.2	476	297	90	26	460	210	813	81.9	113	62	99.1	14.9	673	1.57	7.5
77	KBA-P12-4	248	50	130	308	873	<0.2	426	251	89	31	440	300	1137	105	146	<20	129	19.7	633	2.27	8.6
78	KBA-P13-1	712	82	150	355	622	<0.2	327	225	57	14	310	83	453	49.6	60	<20	46.9	6.83	977	2.66	9.9
79	KBA-P13-2	812	69	123	347	1029	<0.2	494	351	92	20	490	98	843	93.7	110	<20	75.5	10.6	1798	2.46	9.4
80	KBA-P13-3	681	33	62	131	449	<0.2	217	176	41	9	210	45	189	22.4	29.2	55	32	4.6	426	0.83	5.4
81	KBA-P13-4	783	52	98	296	554	<0.2	267	189	52	13	270	70	634	52	79.2	<20	50.3	7.47	1210	2.32	7.1
82	KBA-P13-5	5000	140	400	903	2100	0.3	1000	700	200	62	1000	230	2800	265	344	220	258	36.6	4400	6.75	17
83	KBA-P13-6	4800	130	370	885	2100	0.3	1000	700	200	60	970	220	2700	249	323	100	255	36.1	4400	6.47	18
84	KBA-P14-1	1182	260	460	1472	4700	0.7	2200	1400	410	110	2200	1100	5900	719	768	650	532	88.1	3100	12.15	22
85	KBA-P14-2	1477	64	250	1350	2400	0.4	1100	790	210	56	1100	520	5300	494	636	220	262	42.1	3800	10.21	12
86	KBA-P14-3	1025	95	360	1040	3500	0.5	1600	1000	290	80	1500	770	3700	399	534	300	397	62.8	2300	8.9	19
87	KBA-P14-4	2200	190	500	1454	3900	0.8	1800	1400	350	95	1800	1000	5000	496	638	450	461	74.1	2600	10.84	22
88	KBA-P14-5	231	24	87	274	973	<0.2	447	339	95	29	440	170	1060	106	148	<20	103	15.8	808	2.32	6.2
89	KBA-P14-6	888	93	300	829	2200	0.3	1100	790	200	71	1100	500	3200	313	402	110	243	43.3	2200	6.17	14
90	KBA-B01-1	138	25	67	342	790	<0.2	390	250	56	18	390	130	1095	87	136	44	89.7	15	777	2.3	
91	KBA-B01-2	224	31	86	482	980	<0.2	460	300	68	33	450	180	1457	116	186	47	146	21.7	831	3.27	
92	KBA-B01-3	437	47	170	993	1200	<0.2	560	380	96	31	590	360	2091	172	279	50	166	28.9	1029	5.81	
93	KBA-B01-4	6000	75	510	2075	2100	3.5	1200	710	160	76	1100	800	3552	335	508	130	334	50.5	1070	13	
94	KBA-B02-1	199	100	120	654	1600	<0.3	760	480	110	33	770	350	2086	199	260	60	164	27.9	1136	2.96	
95	KBA-B02-2	135	53	110	520	1300	<0.3	630	400	94	46	660	310	1993	158	248	58	191	28.6	1180	2.5	
96	KBA-B02-3	2200	120	490	2125	1900	3.6	1100	760	150	79	1100	1100	3310	324	445	91	355	49.3	1089	11.5	
97	KBA-B02-4	3700	87	370	1410	1300	2.6	630	460	98	46	720	610	2110	189	291	63	227	32.2	889	7.36	
98	KBA-B03-1	372	47	110	660	1700	<0.3	840	530	120	32	830	380	1844	190	240	63	144	24.6	1343	2.82	
99	KBA-B03-2	10300	290	830	2808	3800	<1.1	1800	1100	250	120	2200	2400	4511	492	742	160	505	102	1758	14	
100	KBA-B03-3	25000	230	900	2952	3000	<1.0	1400	750	180	100	1700	2400	4000	453	605	140	450	80.4	1558	13.7	
101	KBA-B03-4	26000	180	790	2449	2100	4.6	1200	880	160	89	1100	1700	3058	310	449	120	400	58.8	786	11.7	
102	KBA-B04-1	1900	83	210	837	2300	4.8	1100	650	160	65	1100	420	2945	247	368	92	320	49.7	1648	4.4	
103	KBA-B04-2	1300	44	110	595	1300	2.2	620	420	93	29	630	240	1827	145	222	50	196	24.6	1213	3.08	
104	KBA-B04-3	6250	27	150	463	858	1.2	406	298	74	25	370	160	1021	81	116	42	95.2	15.5	606	2.35	

	unit	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Ce (ppm)	Eu (ppm)	La (ppm)	Nd (ppm)	Sm (ppm)	Tb (ppm)	Th (ppm)	U (ppm)	Y (ppm)	Gd (ppm)	Dy (ppm)	Pr (ppm)	Yb (ppm)	Lu (ppm)	Zr (ppm)	TiO2 (ppm)	Sc (ppm)
1	KBA-P01-1	92	37	80	574	4500	1.2	2400	1100	1100	52	2200	170	1725	302	260	300	175	28.5	3500	8.81	9.9
2	KBA-P01-2	103	36	72	539	3500	2.5	1800	1200	1200	51	1600	150	1636	238	215	200	176	25.6	1595	7.84	7.2
3	KBA-P01-3	417	<10	220	1157	5400	5	2900	2000	2000	92	2700	260	3200	480	434	400	336	51.9	3300	17.63	18
4	KBA-P01-4	44	30	50	319	2100	0.4	1000	870	870	26	930	83	1066	123	135	91	117	18.2	1142	4.27	7.4
5	KBA-P01-5	179	24	99	437	2100	0.3	1100	790	790	32	980	99	1110	147	153	100	152	23.7	1071	5.91	8.8
6	KBA-P01-6	347	21	130	422	1700	0.3	810	670	670	27	760	90	1071	125	137	99	136	20.3	903	6.05	9.5
7	KBA-P01-7	533	19	130	515	2000	2	960	820	820	36	930	120	1182	133	169	200	165	25.2	1651	6.72	9.9
8	KBA-P01-8	706	6	30	113	357	<0.2	174	127	127	4.9	160	21	241	30.4	27.1	32	23.1	3.5	396	1.06	3.5
9	KBA-P02-1	152	170	170	655	3900	3	1800	1300	1300	54	1700	430	2500	355	363	310	234	38.1	2500	5.58	13
10	KBA-P02-2	289	170	290	1228	5600	1.3	2800	1900	1900	120	2600	900	4500	581	621	430	449	66.2	3500	9.3	12
11	KBA-P02-3	192	220	210	978	4700	1	2300	1500	1500	110	2100	720	3400	494	476	250	367	54.8	3400	6.98	18
12	KBA-P02-4	82	70	160	564	2500	0.4	1200	1000	1000	47	1100	480	1549	196	221	100	198	29.4	918	3.29	11
13	KBA-P02-5	159	110	270	926	5700	1.3	2900	2100	2100	120	2600	850	3800	536	540	480	453	65.9	2900	6.63	17
14	KBA-P02-6	808	70	170	629	3700	0.6	1800	1700	1700	63	1700	590	2100	259	292	160	240	36.1	1589	3.51	12
15	KBA-P03-1	119	150	280	1044	2900	0.7	1300	780	780	86	1400	990	4900	465	653	170	426	71.8	2800	8.21	18
16	KBA-P03-2	151	370	310	1112	3700	0.8	1700	1100	1100	97	1800	1100	5600	491	714	190	473	76.4	4200	8.15	23
17	KBA-P03-3	74	95	210	623	2000	0.5	890	640	640	61	1000	750	2700	264	391	110	293	47.5	1762	4.75	15
18	KBA-P03-4	62	120	510	398	5700	0.9	3400	1500	1500	150	3200	2500	5400	722	918	230	815	118	1785	8.64	24
19	KBA-P03-5	67	61	120	316	2200	0.4	1100	980	980	63	1100	510	2000	211	289	110	255	39.1	1775	2.55	13
20	KBA-P04-1	188	75	390	1119	2700	0.5	1200	1100	1100	150	1300	810	4400	331	522	120	646	107	2120	11.77	24
21	KBA-P04-2	213	95	290	1067	3500	0.6	1600	900	900	110	1500	560	5900	611	822	150	590	97.1	4200	14.31	22
22	KBA-P04-3	92	46	210	719	1700	0.4	780	470	470	81	790	370	3100	243	354	90	392	58.3	1333	7.93	16
23	KBA-P04-4	141	24	110	380	1400	0.3	630	480	480	63	630	180	2600	227	352	70	294	44.7	1558	5.6	11
24	KBA-P04-5	84	42	150	562	1300	0.3	590	470	470	56	600	220	2600	213	306	90	273	40.6	1612	7.04	13
25	KBA-P04-6	103	32	130	469	1300	0.3	610	560	560	54	620	210	1974	186	274	100	237	34.6	1612	5.52	11
26	KBA-P04-7	86	16	140	594	1500	2.4	640	510	510	74	620	160	3700	262	443	70	339	52.2	2400	9.39	11
27	KBA-P04-8	64	15	86	295	770	<0.2	320	250	250	48	340	98	2000	154	257	<20	242	35.4	851	4.34	7.3
28	KBA-P04-9	110	28	170	597	1000	<0.2	420	247	247	58	440	160	2500	193	318	60	252	39.6	1111	8.12	10
29	KBA-P05-1	745	110	340	1103	3600	1	1700	1400	1400	160	1700	730	6100	628	815	250	690	105	4700	13.41	25
30	KBA-P05-2	1558	180	410	1511	4100	0.7	1800	1200	1200	140	1800	800	8700	727	1053	300	692	120	5200	16.82	25
31	KBA-P05-3	732	130	380	1257	4100	0.7	1800	1400	1400	140	1700	730	6500	619	901	290	719	114	3500	16.49	26
32	KBA-P05-4	695	84	350	1226	5000	0.8	2200	1400	1400	160	2200	700	8600	778	1040	320	798	129	6300	14.17	27
33	KBA-P05-5	524	14	330	1118	4700	1.2	2300	1700	1700	210	2200	690	7700	698	949	300	909	132	6500	13.75	28
34	KBA-P05-6	470	100	320	1166	4300	0.7	1900	1400	1400	130	1900	570	7300	639	865	260	673	108	5200	13.59	26
35	KBA-P05-7	544	88	300	992	4600	0.7	2100	1400	1400	140	2000	580	6800	657	863	240	701	115	4500	12.02	25
36	KBA-P05-8	319	110	250	857	2400	0.4	1100	820	820	99	1100	400	4600	358	559	100	436	66	2300	8.12	16
37	KBA-P06-1	192	110	190	702	3100	0.5	1500	1000	1000	66	1500	540	3100	395	469	70	291	49.7	2500	6.54	13
38	KBA-P06-2	502	110	190	648	4000	0.7	1800	1400	1400	70	1800	500	3500	403	455	400	312	51	4000	5.76	15
39	KBA-P06-3	444	100	170	559	5200	0.7	2500	1600	1600	87	2400	530	3600	517	560	290	354	62.8	6100	7.14	17
40	KBA-P06-4	433	230	670	2450	6100	1.3	3200	1900	1900	260	3400	2100	10400	1163	1356	350	1000	162	4700	28.61	31
41	KBA-P06-5	16700	340	800	2232	3800	1.1	2100	1100	1100	150	2200	2000	4700	635	778	190	603	93.7	2300	23.41	31
42	KBA-P06-6	12000	250	660	1971	4600	0.7	2300	1500	1500	120	2300	1500	5400	559	771	230	572	89.1	2600	19.77	26
43	KBA-P07-1	747	240	570	1320	4500	1.2	2300	1300	1300	170	2400	1500	5500	540	725	220	617	90.7	4400	8.39	28
44	KBA-P07-2	884	110	280	706	1700	0.4	820	580	580	56	890	570	2400	233	311	90	225	33.1	1688	4.24	14
45	KBA-P07-3	1045	270	410	966	3200	0.6	1400	1000	1000	79	1500	940	3900	421	536	240	370	59.1	2700	5.99	20
46	KBA-P07-4	2000	260	510	1241	2800	0.6	1300	1100	300	91	1400	1200	3700	339	473	150	371	54.3	2400	6.71	2
47	KBA-P07-5	862	180	410	922	2600	0.6	3200	830	240	69	1300	870	3100	347	448	140	305	48.9	1797	6.66	18
48	KBA-P07-6	3800	460	990	2183	6900	1.2	3200	2200	650	180	3400	2400	8900	1064	1166	350	761	126	6200	14.41	33
49	KBA-P08-1	492	160	330	976	5900	0.7	2900	1800	510	120	2800	940	5200	680	734	300	524	86.8	4200	8.66	21
50	KBA-P08-2	1851	320	590	1734	8500	1.1	4000	2800	720	170	3900	1500	8500	974	1068	400	738	128	7100	14.45	31

	unit	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Ce (ppm)	Eu (ppm)	La (ppm)	Nd (ppm)	Sm (ppm)	Tb (ppm)	Th (ppm)	U (ppm)	Y (ppm)	Gd (ppm)	Dy (ppm)	Pr (ppm)	Yb (ppm)	Lu (ppm)	Zr (ppm)	TiO2 (ppm)	Sc (ppm)
105	KBA-B05-1	293	87	200	658	1300	<0.3	630	470	98	28	680	550	1513	151	196	70	124	22	792	1.76	
106	KBA-B05-2	2300	240	930	2728	2300	<0.7	1400	990	210	110	1500	2800	3938	381	523	120	401	62.1	944	6.38	
107	KBA-B05-3	113000	160	770	1811	1700	3.4	1000	700	130	73	1000	1200	2694	267	192	77	255	33.1	1251	3.28	
108	KBA-B05-4	116000	240	660	1432	930	2.9	310	250	73	37	540	570	1520	141	214	56	158	16.1	772	6	
109	KBA-B06-1	1700	99	260	652	870	1.8	380	300	72	31	440	310	1094	98	411	50	114	17.2	1061	7.45	
110	KBA-B06-2	1500	47	140	482	530	1.1	220	170	44	16	250	160	705	57	88	29	61.4	10.5	710	1.97	
111	KBA-B06-3	4700	74	210	608	670	1.3	280	260	56	21	320	230	933	74	117	42	84.6	14.2	942	2.54	
112	KBA-B06-4	4700	48	160	489	480	1.0	200	180	41	15	240	190	699	54	83	38	72	10.7	639	1.77	
113	KBA-B07-1	16900	160	820	2425	2000	3.9	1100	700	160	84	1100	1500	3210	304	458	170	359	55.2	1104	10.8	
114	KBA-B07-2	782	61	170	800	1400	<0.3	720	410	110	32	740	430	2062	184	260	64	149	27.3	1098	3.4	
115	KBA-B07-3	16000	200	910	2565	2500	<0.6	1600	700	210	100	1400	1700	4071	444	613	150	384	61.2	1555	13.7	
116	KBA-B08-1	286	100	160	788	1800	<0.3	890	530	130	36	930	460	2352	220	293	110	176	31.2	1176	3.24	
117	KBA-B08-2	2400	150	590	2092	2000	4.5	1300	630	170	90	1200	1500	3427	321	502	120	316	56.9	1197	10.2	
118	KBA-B08-3	12000	130	520	1934	1900	3.3	1100	540	150	72	1000	1300	2982	329	417	120	273	43	1485	8.84	
119	KBA-B09-1	453	73	140	735	2100	<0.3	1100	580	160	40	1100	400	2633	256	336	71	172	29.7	2058	3.41	
120	KBA-B09-2	3200	160	370	1311	3800	5.9	2200	1500	290	100	1900	1200	3950	450	520	290	404	62.4	2421	5.73	
121	KBA-B09-3	35200	220	870	2450	2800	<0.7	1800	920	220	110	1600	1800	3963	392	545	130	417	61.2	1533	12.1	
122	KBA-B09-4	47000	110	440	1294	1800	3.2	930	580	130	55	960	670	2274	209	282	75	232	30.5	1319	5.75	
123	KBA-B10-1	1200	62	160	832	1700	3.3	870	580	130	41	890	490	2549	224	321	80	204	35.3	1304	3.51	
124	KBA-B10-2	29000	140	540	1959	1900	3.5	990	630	150	74	1100	940	2849	236	406	76	261	44.8	1165	11.3	
125	KBA-B10-3	6200	93	340	1347	2800	3.6	1600	780	220	91	1400	1000	4009	408	476	140	369	56.3	2198	5.87	
126	KBA-B10-4	36000	91	440	1784	1700	2.7	920	560	130	63	960	540	2759	247	344	80	280	38	1607	9.63	
127	KBA-B11-1	2600	230	500	1542	7800	8.3	3800	2600	530	180	4300	2200	6987	998	825	420	622	131	5066	6.62	
128	KBA-B11-2	9000	240	520	1675	5700	6.2	3500	2300	430	140	2800	1800	5233	725	698	380	530	79.4	2882	7.43	
129	KBA-B11-3	46000	220	800	2284	2900	4.1	1800	990	230	110	1700	1800	3927	418	568	140	402	60.3	1453	10.1	
130	KBA-B12-1	2500	26	48	141	362	0.5	161	147	38	7.9	162	39	350	32	38.9	25	27.8	4.24	1088	0.65	
131	KBA-B12-2	1300	16	35	90	168	<0.2	70.4	62	14	3.3	69	23	126	14	14.6	<20	13	1.91	788	0.37	
132	KBA-B12-3	104	7	3	14	74	0.5	24.3	25	4.4	1	25	6.4	29	2.2	3.3	<20	3.8	0.65	752	0.09	
133	KBA-B13-1	2200	64	150	397	674	<0.2	315	210	58	20	290	78	773	62	90.3	30	72.1	11.7	1239	2.29	
134	KBA-B13-2	1400	64	140	408	470	0.7	207	179	40	16	210	54	653	51	73.7	26	57.3	9.12	740	2.55	
135	KBA-B13-3	2000	51	120	321	411	0.6	182	162	35	13	180	45	574	42	63.6	32	51.6	7.98	642	1.93	
136	KBA-B13-4	15000	67	310	450	596	0.7	277	229	52	15	240	51	552	50	62.1	23	51	6.81	578	1.29	
137	KBA-B13-5	116000	210	1600	1824	1400	2.3	770	440	120	36	710	140	1469	173	190	90	142	11.1	1212	3.63	
138	KBA-B14-1	2500	100	200	634	990	1.2	430	370	74	22	400	110	1066	88	127	40	84.3	13.6	1340	2.86	
139	KBA-B14-2	3800	130	310	884	1300	<0.2	570	410	98	32	540	150	1511	124	185	<20	120	18.8	2083	3.71	
140	KBA-B14-3	3800	69	130	374	523	0.7	239	197	43	13	220	55	562	48	59.6	20	47	7.08	1021	1.72	
141	KBA-B14-4	5000	40	85	252	241	0.4	122	97	21	6.3	98	23	275	25	32.2	<20	23.1	3.1	416	1.28	
142	KBA-B14-5	105000	280	410	497	539	1.7	271	170	52	13	220	51	426	46	53.8	<20	46.5	4.11	438	1.29	
143	KBA-B14-6	110000	220	400	544	730	1.4	320	250	56	15	280	57	543	59	67.1	31	55.5	4.4	729	1.52	
144	KBA-B15-1	2000	63	100	322	453	0.7	223	152	40	12	200	56	525	47	63.3	34	46.9	6.81	780	1.86	
145	KBA-B15-2	80000	250	710	1644	2300	3.4	1300	800	170	55	990	220	2222	270	255	140	199	23.2	2766	5.17	
146	KBA-B15-3	29000	130	280	714	1100	1.7	500	380	87	24	460	98	1117	112	137	37	89.6	12.1	1524	2.35	
147	KBA-B15-4	41000	150	290	802	1400	2.1	720	400	95	21	650	100	1127	137	148	50	77.4	9.98	2543	3.17	
148	KBD-01-1	78	59	300	65	34000	3	12000	7100	2000	11	9900	1100	13200	1847	1447	1700	850	303	6800	5.99	160
149	KBD-02-1	156	250	340	1531	7900	1.1	4100	2500	600	140	3300	350	5000	847	696	650	559	84.1	5300	19.13	37
150	KBD-02-2	122	73	140	125	2500	4.7	1200	1000	200	41	1000	120	3050	229	242	180	154	25.2	1700	8.41	17
151	KBD-02-3	985	410	890	201	6300	0.7	3200	2000	480	120	2800	340	5870	711	845	550	733	111	4700	32.68	44
152	KBD-02-4	2700	330	720	285	15000	21.9	8800	5400	1200	310	6500	870	9580	1594	1373	1200	320	196	6200	27.22	50
153	KBD-02-5	2900	240	620	297	21000	18.2	13000	5800	1300	280	10000	950	11200	2038	1343	1500	940	169	5700	19.91	28
154	KBD-03-1	<5	<4	6	24	567	1.6	283	142	29	5.6	170	22	107	18	16.6	<20	8.2	1.28	87	0.95	6.3
155	KBD-03-2	16	<4	10	30	774	2.6	333	237	44	5.6	190	16	142	30.3	28.3	<20	12	1.65	147	0.86	7.7
156	KBD-03-3	850	300	400	125	11000	1.5	5600	3700	790	190	4500	440	5500	1037	951	900	789	112	4450	19.48	43
157	KBD-03-4	2600	220	760	305	22000	2.7	13000	6500	1400	430	10000	1000	12500	2092	1333	2100	846	186	5830	13.2	36
158	KBD-04-1	31	10	13	70	251	0.6	122	90	18	2.8	96	11	112	21	18.8	<20	10.2	1.6	226	0.82	3.5

	unit	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Ce (ppm)	Eu (ppm)	La (ppm)	Nd (ppm)	Sm (ppm)	Tb (ppm)	Th (ppm)	U (ppm)	Y (ppm)	Gd (ppm)	Dy (ppm)	Pr (ppm)	Yb (ppm)	Lu (ppm)	Zr (ppm)	TiO2 (ppm)	Sc (ppm)
159	KBD-04-2	201	20	34	136	646	<0.2	342	212	45	9.1	240	23	312	37.2	39.7	<20	27.7	4.38	652	14.51	3.7
160	KBD-04-3	32	15	22	123	367	0.8	178	136	26	4.8	140	16	202	26.9	25.4	<20	17.6	2.71	376	1.48	2.6
161	KBD-04-4	866	52	88	401	2000	7.3	1100	630	120	20	840	77	1012	175	146	150	87.2	14.8	7300	5.69	11
162	KBD-04-5	2100	54	120	283	1600	6.8	770	590	93	16	540	56	646	103	83.4	80	59	9.29	10600	3.77	11
163	KBD-04-6	3100	39	140	239	2500	7	1400	780	150	19	1200	76	543	143	110	37	42.8	6.67	6500	2.71	10
164	KBD-05-1	15	13	17	80	285	0.4	132	99	19	2.2	110	8.9	81	20.1	14.6	<20	9	1.33	211	1.4	2.6
165	KBD-05-2	67	18	29	119	311	1	157	99	21	4.3	110	13	123	16.5	17.2	<20	14.2	2.15	389	1.49	3.3
166	KBD-05-3	133	39	60	267	739	2.2	373	271	50	9.8	270	33	347	40.9	49	<20	37.4	5.7	1325	3.14	7.4
167	KBD-05-4	80	25	32	140	682	3.2	352	257	46	7.2	220	24	162	35.5	27.7	<20	17.8	3.1	852	1.89	13
168	KBD-05-5	753	56	78	314	1500	<0.2	720	590	91	20	550	59	799	103	109	81	78.7	12.7	2700	3.61	9.5
169	KBD-05-6	3900	53	110	320	1200	5.5	670	370	69	12	490	49	737	107	96.7	90	55.2	8.94	5300	3.09	9.1
170	KBD-06-1	96	4	5	29	141	0.6	64.9	50	8.5	1.3	47	5.5	61	5.6	8.5	<20	4.9	0.73	829	0.54	1.1
171	KBD-06-2	103	<4	5	24	128	<0.2	60.2	49	7.9	1.6	46	6	57	6.2	5.7	<20	4.5	0.66	873	0.48	1.3
172	KBD-06-3	772	19	30	89	840	5.9	410	310	46	7.1	250	28	10600	52.7	41.5	67	23.7	4.28	270	1.88	6.1
173	KBD-06-4	799	32	40	127	850	5.2	420	320	46	7.4	270	28	8200	56.8	42.5	34	24	4.31	287	2.62	7.2
174	KBD-06-5	528	22	63	187	2100	4.7	1300	590	110	15	1000	65	2900	143	125	100	54.2	8.69	819	2.25	5.5
175	KBD-07-1	55	7	7	88	160	0.4	70.8	58	10	2.2	54	5.3	72	15.4	8.8	<20	6.9	1.05	273	0.63	1.7
176	KBD-07-2	104	16	24	114	290	0.8	150	91	19	3	110	10	138	23.6	20.4	<20	13.2	2.2	555	1.41	3
177	KBD-07-3	48	10	11	62	153	0.8	71.2	62	11	1.9	52	9.9	72	7.5	11.9	<20	6.3	0.98	333	0.74	5.3
178	KBD-07-4	280	53	78	489	1300	3.9	610	450	79	15	470	39	717	90.7	96.1	74	54.3	8.52	2300	5.5	13
179	KBD-07-5	2300	64	120	462	1400	6	640	530	79	15	450	46	779	94.1	98.4	70	60.1	9.15	8700	5.6	11
180	KBD-07-6	5700	70	230	446	1200	5.6	560	430	70	15	380	41	721	84	86.1	90	61.6	8.9	7900	3.06	11
181	KBD-07-7	7100	61	190	388	1200	5.7	770	330	68	11	490	43	595	89.8	82	75	46	6.8	6400	2.78	9.5
182	KBD-08-1	56	<4	2	3	535	<0.2	274	192	43	10	230	39	508	51	60.9	23	43.2	6.69	440	0.28	1.7
183	KBD-08-2	57	<4	4	<2	1200	4.3	540	422	89	25	510	97	1180	134	183	43	114	19.1	1109	0.27	24
184	KBD-08-3	10	<4	<1	18	1800	1.7	820	480	87	14	700	63	807	122	112	180	50.8	8.56	1386	0.48	6.2
185	KBD-09-1	21	5	7	52	427	0.6	222	152	28	3.9	180	15	122	22.8	17.8	<20	9	1.3	331	0.92	1.8
186	KBD-09-2	15	4	3	28	205	0.4	93	76	12	1.4	89	7.7	36	10.7	1.9	<20	3	0.43	183	0.62	1.1
187	KBD-09-3	34	8	35	202	6900	0.7	4900	2320	390	53	3500	290	1624	465	305	400	101	12.1	2700	5.13	6.6
188	KBD-09-4	39	7	46	264	5200	0.6	3500	1800	290	43	2500	200	1345	357	243	290	95.1	11.8	1712	6.32	8.1
189	KBD-09-5	29	7	29	146	4400	3.3	3000	1500	250	36	2200	160	973	298	181	190	53.9	7.42	2200	3.19	6.1
190	KBD-09-6	349	10	62	213	7600	0.9	4300	2400	390	60	4200	400	1919	522	350	640	118	20.7	2500	5.48	7.8
191	KBD-10-1	25	9	10	72	1100	1	570	330	60	7.1	470	32	257	57.8	47.4	70	15.4	2.27	576	1.67	2.2
192	KBD-10-2	10	10	12	99	1200	<0.2	570	430	62	9.6	510	42	305	67.4	50.7	60	23	3.63	438	2.19	2.7
193	KBD-10-3	17	<4	13	80	1600	<0.2	870	550	91	11	720	53	341	80.9	63.4	80	24.1	3.48	582	2.05	2.3
194	KBD-10-4	22	6	22	115	3800	0.5	2700	1300	220	35	2000	150	976	288	201	300	71.1	9.27	1202	3.12	5.6
195	KBD-10-5	19	19	19	103	3200	0.3	1900	980	170	21	1600	110	951	209	186	130	54	7.95	873	2.77	6.6
196	KBD-11-1	26	31	44	235	554	0.2	270	215	36	9	200	27	379	34.6	44.8	<20	35	5.23	375	2.08	4.1
197	KBD-11-2	31	25	37	173	551	1	247	206	42	16	190	37	727	61.3	83.6	34	69.4	11.2	300	1.89	3.4
198	KBD-11-3	95	48	71	404	770	1.7	350	240	60	23	280	48	1411	108	163	<20	118	19	639	3.71	5.4
199	KBD-11-4	32	27	48	206	900	<0.2	300	270	60	28	260	57	1701	135	201	<20	150	24.3	360	1.47	3.6
200	KBD-12-1	45	20	29	149	417	<0.2	196	148	32	10	150	23	601	46.6	68.1	<20	55.9	8.63	339	1.36	3.3
201	KBD-12-2	29	8	10	63	243	<0.2	99.5	91	17	4.3	83	10	228	16.7	27.9	<20	22	3.31	186	0.68	1.7
202	KBD-12-3	32	<4	10	88	219	0.3	93.8	85	14	1.7	82	6	70	8	9.4	<20	6.2	0.94	230	0.66	2.4
203	KBD-12-4	25	9	15	122	501	<0.2	256	196	34	4.7	160	11	146	30.4	23.4	<20	10.5	1.68	325	1.11	3.6
204	KBD-13-1	39	5	3	19	56	0.4	22.5	19	3.3	0.6	17	3.3	29	4.5	5.5	<20	2.8	0.42	383	0.31	1.7
205	KBD-13-2	65	<4	1	27	35	<0.2	12.3	9	1.9	<0.5	9	1.8	39	5.3	2.6	<20	1	0.17	233	0.09	1.1
206	KBD-13-3	83	6	7	98	77	0.5	31.7	25	5.2	1.4	23	5	84	10.6	8.9	<20	7.6	1.15	563	0.2	2.4
207	KBD-13-4	346	36	60	382	1300	1.8	6640	470	80	12	460	26	539	93	75	90	38	5.81	1156	3.49	8.4
208	KBD-14-1	19	<4	1	8	47	0.3	19.7	18	2.8	<0.5	14	1.7	7	5.5	2	<20	1	0.14	225	0.15	1.1
209	KBD-14-2	50	4	2	10	56	0.5	23.7	18	3.4	<0.5	15	2	12	5.1	1.5	<20	1.6	0.27	360	0.09	1.2
210	KBD-14-3	332	26	13	30	219	1.3	105	85	14	1.6	56	8.2	62	4.1	12.4	<20	6.2	0.95	2300	0.71	2.5
211	KBD-14-4	299	22	9	23	179	1.1	83.4	74	11	1.3	47	6.1	42	14	4.7	<20	4.1	0.61	1473	0.51	1.9
212	KBD-15-1	26	8	8	63	115	0.3	51.5	44	7.9	1.7	42	5.3	86	10.4	12.5	<20	7.2	1.09	224	0.69	2

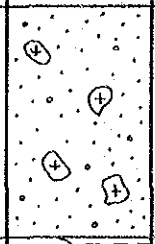
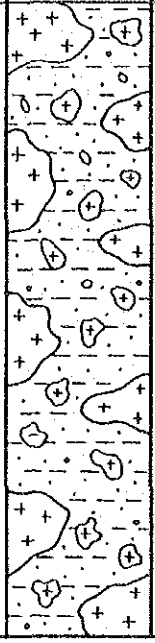
unit	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Ce (ppm)	Eu (ppm)	La (ppm)	Nd (ppm)	Sm (ppm)	Tb (ppm)	Th (ppm)	U (ppm)	Y (ppm)	Gd (ppm)	Dy (ppm)	Pr (ppm)	Yb (ppm)	Lu (ppm)	Zr (ppm)	TiO2 (ppm)	Sc (ppm)
213 KBD-15-2	56	34	24	46	588	<0.2	297	224	32	3.9	240	16	63	5.6	9.2	29	11.3	1.75	138	0.71	5.2
214 KBD-15-3	31	7	7	177	90	<0.2	39.9	33	6.3	1.3	33	4.5	136	31.3	24	<20	7.2	1.08	622	2.62	1.6
215 KBD-16-1	43	4	2	10	47	0.4	21.8	18	3	<0.5	12	2.7	14	4	1.2	<20	1.7	0.25	430	0.28	1.2
216 KBD-16-2	52	7	3	14	68	0.6	31.5	25	4.3	0.7	17	3.2	22	5.2	3	<20	2.4	0.37	735	0.36	1.6
217 KBD-16-3	133	21	10	17	169	1.2	82.8	66	13	1.4	42	7.3	33	2	4.4	<20	5.7	9	1179	0.36	3
218 KBD-16-4	486	22	7	31	181	1.2	96.3	72	12	1.4	47	6.9	83	18.4	14	<20	4.5	0.71	3400	0.68	1.7

KBA - P01

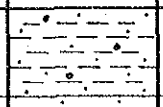
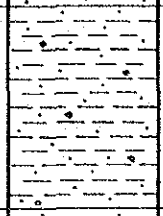
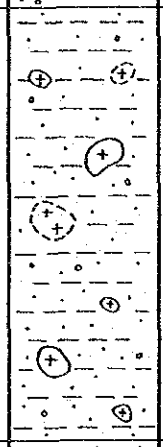
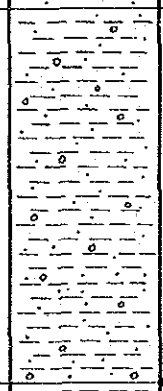
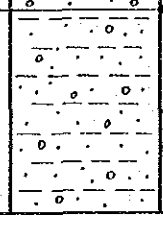
Depth (m)	Column	Description	Sample No.	Depth (m)
0.2		reddish brown coarse - grained granitic sand	KBA-P01-1	
0.3		black humic silt with coarse - grained sand		
0.6		dark brown silt with fine - grained sand		0.6
		dark brown coarse - grained granitic sand with silt pebble size gravel containing 10 to 20%	KBA-P01-2	1.0
1.5			KBA-P01-3	1.5
		reddish brown to orange weathered granitic soil, sand and boulder weathered soften granitic boulder (10 to 30cm in diameter) containing 10 to 15% pebble to cobble gravel of granite, quartz vein, aplite is 20 to 30% matrix : orenge silt with rich coarse - grained granitic sand	KBA-P01-4	2.0
			KBA-P01-5	2.5
			KBA-P01-6	3.0
			KBA-P01-7	3.5
3.8		At 3.80m in depth groundwater run out 5 litter/minute	KBA-P01-8	3.8
4.0		white to gray weathered clayey meta - sediments		4.0

付図1　　A－1地区ピット柱状図

KBA-P02

Depth (m)	Column	Description	Sample No.	Depth (m)
0.8		*brown silt rich coarse-grained sand with granite cobble*	KBA-P02-1	0.5
			KBA-P02-2	1.0
		*granite boulder bed* *boulders : 60 to 100cm in diameter, the biggest one more than 1.5m* *matrix : red brown silt and granitic coarse-grained sand*	KBA-P02-3	1.5
			KBA-P02-4	2.0
			KBA-P02-5	2.5
3.0			KBA-P02-6	3.0

KBA - P04

Depth (m)	Column	Description	Sample No.	Depth (m)
0.3		dark brown sandy silt to sandy clay	KBA-P04-1	0.5
1.0		dark reddish brown to brown sandy silt to sandy clay	KBA-P04-2	1.0
2.5		reddish brown silt to fine sand with strong weathered granite pebble to cobble (less than 20% in volume) size of gravel is ranged from 5 to 50cm	KBA-P04-3	1.5
			KBA-P04-4	2.0
			KBA-P04-5	2.5
3.8		dark reddish brown to brown sandy silt with coarse-grained sand to granule size of granitic material	KBA-P04-6	3.0
			KBA-P04-7	3.5
			KBA-P04-8	3.8
		At 3.8m groundwater exudes 5 to 10 litter/minute		
4.5		reddish brown to bluish gray stiff sandy silt with abundant coarse quartz grain and granite material in granule size	KBA-P04-9	4.5

KBA－P03

Depth (m)	Column	Description	Sample No.	Depth (m)
0.3		dark reddish brown to dark brown sandy silt and fine sand	KBA-P03-1	0.3
1.6		dark reddish brown clay to sandy clay with weathered granite in cobble to pebble size (5 to 30cm in diameter) which contained less than 30%	KBA-P03-2	1.0
			KBA-P03-3	1.5
2.3		granite boulder and gravel bed : weak to hard weathered granite boulders are contained less than 40% matrix : dark reddish brown sandy silt to sandy clay	KBA-P03-4	2.0
			KBA-P03-5	2.3
2.5		huge granite boulder		2.5

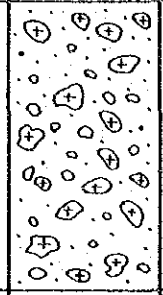
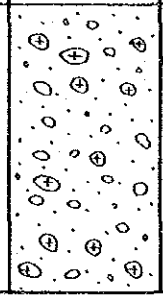
KBA-P05

Depth (m)	Column	Description	Sample No.	Depth (m)
0.1		black fumic top soil		0.1
			KBA-P05-1	0.5
1.7		reddish brown to orange silty sand strong weathered granite pebbles 2 to 5cm in diameter scattering at 0.50m in depth weathered granite pebble bed existing	KBA-P05-2	1.0
			KBA-P05-3	1.5
2.0			KBA-P05-4	2.0
		two pieces of weathered granite boulder more than 1m in size jutting out		
		gray to light gray medium to coarse-grained granitic sand, containing quartz feldspar and tourmaline grains, with hard weathered granite gravel	KBA-P05-5	2.5
			KBA-P05-6	3.0
3.3			KBA-P05-7	3.5
		⇦ below 3.40m groundwater flows out slightly white to light brown sand & gravel bed gravel : argillized granith and tourmaline quartz vein in 5 to 30cm diameter matrix : coarse-grained sand with white clay (Kaolinite?)	KBA-P05-8	
4.0				4.0

KBA - P06

Depth (m)	Column	Description	Sample No.	Depth (m)
0.7		reddish to light brown medium to coarse-grained sand composed quartz and feldspar	KBA-P06-1	0.5
1.5		gray to white clayey medium-grained sand composing quartz, feldspar and tourmaline At 1.25m groundwater flows out about 20 litter/minute and below 1.5m 200 to 300 litter/minute	KBA-P06-2 KBA-P06-3	1.0 1.5
2.8		white sand & gravel bed gravel : pebble to cobble size composing granite, meta-sediments and quartz vein matrix : coarse-grained granitic sand with kaolinite	KBA-P06-4 KBA-P06-5 KBA-P06-6	2.0 2.5 2.8
3.0		white to light gray bed rock (argillized semi-schist)		

KBA - P07

Depth (m)	Column	Description	Sample No.	Depth (m)
0.3		light brown fine to medium-grained quartz rich sand with silt	KBA-P07-1	0.3
1.0		light brown boulder gravel bed gravel : subangular to angular non-weathered granite boulder in 3 to 70cm diameter (maximum size more than 1m) dominating more than 70% in volume matrix : light brown silt with coarse sand	KBA-P07-2	1.0
2.0		brown cobble to boulder gravel bed with silty sand weak to hard weathered granite gravel in 3 to 25cm diameter which slightly smaller than upper layer	KBA-P07-3	1.5
			KBA-P07-4	2.0
3.0		⇦ At 2.20m groundwater exudes less than 10 litter/minute light brown gravel and sand bed gravel is well rounded and smaller than upper layer all most of gravel are granite and 2 to 15cm in diameter matrix : medium to coarse - grained quartz-felspathic sand	KBA-P07-5	2.5
			KBA-P07-6	3.0

KBA - P08

Depth (m)	Column	Description	Sample No.	Depth (m)
0.2		dark brown fumic silty sand		
0.9		reddish brown fine to medium - grained sand with silty and clay	KBA-P08-1	0.5
			KBA-P08-2	1.0
1.5		light brown silt with fine to medium sand	KBA-P08-3	1.5
2.5		white gravel bed commonly 1 to 15cm in size (maximum 20cm) well rounded gravel derived from quartz vein ≫ aplite, granite, meta - sandstone and meta - slate Below 2.3m groundwater rushes out about 500 litter/minute	KBA-P08-4	2.0
			KBA-P08-5	2.5
3.0		white coarse - grained sand bed composing almost quartz, feldspar and black minerals gravel is very rare in this bed	KBA-P08-6	3.0

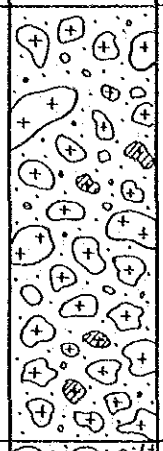
KBA - P09

Depth (m)	Column	Description	Sample No.	Depth (m)
0.2		black fine - grained sand with humus	KBA-P09-1	0.6
0.6		reddish brown fine to medium - grained sand with silt		
1.0		light gray silt with fien - grained sand	KBA-P09-2	1.0
1.8		▽ light gray silt and coarse - grained sand Below 1.80m groudwater and gravel flow out about 400 litter/minute	KBA-P09-3	1.5
			KBA-P09-4	2.0
2.5		gray to white gravel and sand bed gravel : granule to pebble size, well rounded, quartz vein, granite ≫ meta - sediments matrix : coarse - grained quart rich sand	KBA-P09-5	2.5

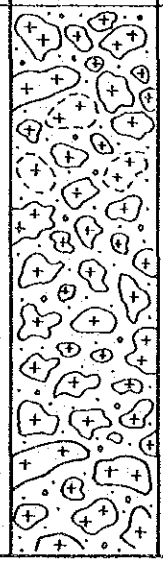
KBA-P10

Depth (m)	Column	Description	Sample No.	Depth (m)
0.1		*black silty top soil*		
		dark reddish brown to reddish brown sandy silt to sand clay with coarse grained quartz sand	KBA-P10-1	0.5
			KBA-P10-2	1.0
			KBA-P10-3	1.5
2.0			KBA-P10-4	2.0
2.5		*reddish brown sandy silt to clay with strong weathered granite cobble less than 20% in volume*	KBA-P10-5	2.5
3.0		*brown to reddish brown very stiff sandy silt to silt with granite material in size of coarse-grained sand to granule*	KBA-P10-6	3.0
		light gray to yellowish brown medium- to fine-grained sand to clay with granule size of granite material (quartz, feldspar, tourmaline, etc)	KBA-P10-7	3.5
			KBA-P10-8	4.0
			KBA-P10-9	4.5
			KBA-P10-10	
5.0		*at 5.00m groundwater exudes from bottom of pit*		5.0

KBA - P11

Depth (m)	Column	Description	Sample No.	Depth (m)
		dark brown to brown cobble to boulder gravel bed subrounded to subangular gravel in size of 3 to 40cm more than 75% in volume partly involving huge boulder more than 1.5m in diameter granite > meta - sedimeats matrix : fine - to medium - grained sand derived from granite	KBA-P11-1	0.5
			KBA-P11-2	1.0
1.5			KBA-P11-3	1.5
2.0		ditto gravels packed each other closer than upper layer huge granite boulder more than 2.5m in diameter covers at the bottom of 2m depth	KBA-P11-4	2.0

KBA - P12

Depth (m)	Column	Description	Sample No.	Depth (m)
0.1		black top soil with humus		
		dark brown cobble to boulder bed 3 to 60cm sized subangular granite gravel more than 70 to 80% in volume half of them turned into soften by strong weathering below 1m depth gravels packed closer than upper part matrix : silty clay and coarse - grained granitic sand	KBA-P12-1	0.5
			KBA-P12-2	1.0
			KBA-P12-3	1.5
2.0			KBA-P12-4	2.0

KBA - P13

Depth (m)	Column	Description	Sample No.	Depth (m)
0.2		dark gray silt and fine-grained sand		
		light brown medium- to coarse-grained sand mainly composing quartz, feldspar, tourmaline and abundance of muscovite	KBA-P13-1	0.5
			KBA-P13-2	1.0
1.2		At 1.10m groundwater flows out about 30 litter/minute		
		below 1.50m groundwater rushes out with gravel and sand about 400 litter/minute	KBA-P13-3	1.5
2.0		gray clay rich fine-grained sand with abundant of muscovite	KBA-P13-4	2.0
2.5		gray to white coarse-grained sand with cobble at sized granite and quartz gravel	KBA-P13-5	2.5
3.0		gray to white coarse-grained quartz rich sand with small amount of quartz and granite gravel	KBA-P13-6	3.0

KBA - P14

Depth (m)	Column	Description	Sample No.	Depth (m)
0.1		light brown top soil (sandy silt)		
		light brown to reddish brown sandy silt with coarse-grained granitic sand	KBA-P14-1	0.5
			KBA-P14-2	1.0
			KBA-P14-3	1.5
			KBA-P14-4	2.0
2.0		below 2.0m groundwater exudes less than 10 litter/minute		
		grayish blue to light bluish gray partly reddish brown sandy silt with coarse-grained granitic sand some blocks of granitic gravel scattering between 2.00 to 2.40m these weathered granite gravels look like weathered bed rock in situ	KBA-P14-5	2.5
			KBA-P14-6	3.0
3.0				

KBA-BO1

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brown soil with medium-grained sand	KBA-BO1-1	11.1	55.6	138	25	67	342	1530.0	1339.7	105.1	2974.8	390.0	130.0	777.0	2.3
3.04		brown clay with medium-grained sand	KBA-BO1-2	8.9	37.1	224	31	86	482	1855.0	1815.6	149.1	3819.7	460.0	180.0	831.0	3.3
4.27		brownish gray stiff clay with coarse-grained sand and rock fragment	KBA-BO1-3	8.6	50.2	497	47	170	993	2276.0	2572.4	203.1	5051.5	590.0	360.0	1029.0	5.8
5.29		gravel bed	KBA-BO1-4	9.7	75.8	6000	75	510	2075	4300.0	4458.5	414.5	9173.0	1100.0	800.0	1070.0	13.0
		gray shale															

付図2　　A－1地区ボーリング柱状図

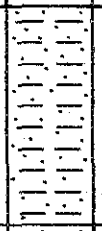
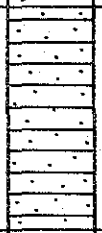
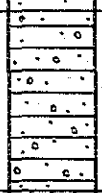
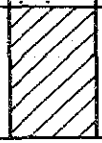
KBA-B02

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brown soil with medium-grained sand	KBA-B02-1	10.9	40.2	199	100	120	654	3010.0	2543.7	232.2	5785.9	770.0	350.0	1136.0	3.0
2.74		gray clay with medium-grained sand	KBA-B02-2	9	40.6	135	53	110	520	2482.0	2466.1	204.2	5152.3	660.0	310.0	1180.0	2.5
4.27		gravel bed	KBA-B02-3	9.8	72.2	2200	120	490	2125	4001.0	4172.3	406.6	8579.9	1100.0	1100.0	1089.0	11.5
5.03			KBA-B02-4	5.9	60.2	3700	87	370	1410	2551.0	2668.0	237.6	5456.6	720.0	610.0	889.0	7.4
		greenish gray Shale															

KBA-B03

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
0.91		brown soil with fine-grained sand	KBA-B03-1	3.6	21.1	372	47	110	660	3253.0	2258.1	222.2	5733.3	830.0	380.0	1343.0	2.8
2.44		gravel bed	KBA-B03-2	17.8	193.4	10300	290	830	2808	7110.0	5876.0	613.1	13599.1	2200.0	2400.0	1758.0	14.0
3.96			KBA-B03-3	20.4	134.4	25000	230	900	2952	5470.0	5153.4	554.0	11177.4	1700.0	2400.0	1558.0	13.7
5.18			KBA-B03-4	15.2	78.4	26000	180	790	2449	4460.0	3981.8	403.6	8845.4	1100.0	1700.0	786.0	11.7
		gray shale															

KBA-B04

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brown soil with fine-grained sand	KBA-804-1	11.1	38.4	1900	83	210	837	4302.0	3691.3	316.0	8309.3	1100.0	420.0	1648.0	4.4
3.04		gray stiff clay with medium-grained sand	KBA-804-2	16.4	37.5	1300	44	110	595	2483.0	2214.0	176.2	4874.1	630.0	240.0	1213.0	3.1
4.27		brwnish gray stiff clay with coarse-grained sand & rock fragment	KBA-804-3	6.1	39.5	6250	27	150	463	1678.0	1252.5	107.2	3037.7	370.0	160.0	606.0	2.4
5.18		brownish gray shale															

KBA-B05

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brown soil with coarse-grained sand and rock fragment	KBA-B05-1	11.3	51.4	293	87	200	658	2568.0	1860.5	179.1	4607.0	680.0	550.0	792.0	1.8
3.05		gravel bed	KBA-B05-2	7.3	71.2	2300	240	930	2728	5020.0	4936.1	491.7	10447.8	1500.0	2800.0	944.0	6.4
4.57			KBA-B05-3	10.9	122.3	113000	160	770	1811	3607.0	3185.1	343.4	7135.5	1000.0	1200.0	1251.0	3.3
5.18			KBA-B05-4	3	41.2	116000	240	660	1430	1619.0	1917.9	180.9	3717.8	540.0	570.0	772.0	6.0
5.79		greenish gray shale															

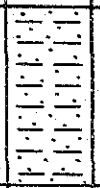
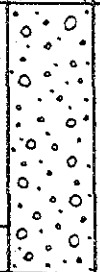
KBA-B06

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brownish soil with coarse-grained sand and small amount of rock fragment	KBA-B06-1	11	35.9	1700	99	260	652	1672.0	1642.2	130.8	3445.0	440.0	310.0	1061.0	7.5
3.05		brownish gray stiff clay with fine-grined sand and laterific soil	KBA-806-2	11.6	46.9	1500	47	140	482	993.0	869.7	74.1	1936.8	250.0	160.0	718.0	2.0
4.57		brwnish gray stiff caly with coarse-grained Sand, rock fragment and lateritic soil	KBA-806-3	9.9	50.8	4700	74	210	608	1308.0	1154.3	96.3	2558.6	320.0	230.0	492.0	2.5
5.64			KBA-806-4	3.6	30.7	4700	48	160	489	939.0	869.4	70.0	1878.4	240.0	190.0	639.0	1.8
		brownish gray weathered Shale															

KBA-B07

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brown soil with coarse-grained sand	KBA-B07-1	10.6	55.1	782	61	170	800	2704.0	2504.5	216.3	5424.8	740.0	430.0	1098.0	3.4
3.05		gravel bed	KBA-B07-2	9.5	38.7	16900	160	820	2425	4130.0	4097.2	391.9	8619.1	1100.0	1500.0	1104.0	10.8
3.96			KBA-B07-3	10.4	191.7	16000	200	910	2565	5160.0	5142.2	544.6	10846.8	1400.0	1700.0	1555.0	13.7
		gray weathered shale															

KBA-B08

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.22		brown soil with medium-grained Sand	KBA-B08-1	10.2	49.2	286	100	160	788	3460.0	2859.1	258.3	6577.4	930.0	480.0	1176.0	3.2
2.74		gravel bed (dense)	KBA-1 B08-2	17.3	86.7	2400	150	590	2092	4220.0	4316.9	415.5	8952.4	1200.0	1500.0	1197.0	10.2
3.05			KBA-B08-3	3.7	93.8	12000	130	520	1934	3810.0	3727.0	404.3	7941.3	1000.0	1300.0	1485.0	8.8
		gray weathered Shale															

KBA-B09

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brown soil with medium-grained sand	KBA-809-1	8.9	37.1	453	73	140	735	4011.0	3177.0	296.3	7484.3	1100.0	400.0	2058.0	3.4
2.44			KBA-809-2	2.9	60.2	3200	160	370	1311	8080.0	4948.4	555.9	13584.3	1900.0	1200.0	2421.0	5.7
3.96		gravel bed	KBA-809-3	12.2	79.5	35000	220	870	2450	5870.0	5002.2	502.7	11374.9	1600.0	1800.0	1533.0	12.1
4.42			KBA-809-4	4.9	58.4	47000	110	440	1294	3515.0	2827.6	267.2	6609.8	960.0	670.0	1319.0	5.8
		brownish gray weathered shale															

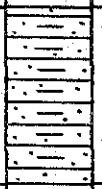
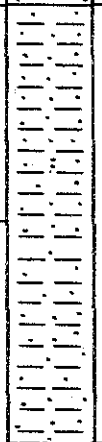
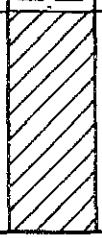
KBA-B10

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brown soil with medium-grained sand	KBA-B10-1	10.2	37.1	1200	82	160	832	3360.0	3116.4	268.3	6744.7	890.0	490.0	1304.0	3.5
3.05			KBA-B10-2	7.9	177.8	29000	140	540	1959	3746.0	3573.8	313.5	7633.3	1100.0	940.0	1165.0	11.3
4.57		gravel bed	KBA-B10-3	11	43.3	6200	93	340	1347	5540.0	4922.3	502.6	10964.0	1400.0	1000.0	2198.0	5.9
6.10			KBA-B10-4	9.1	46.2	36000	91	440	1784	3390.0	3433.0	312.7	7135.7	960.0	540.0	1607.0	9.6
		weathered shale															

KBA-B11

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.22		brown soil with fine-grained sand	KBA-B11-1	10.1	64.8	2600	230	500	1542	15150.0	8585.0	1186.3	24921.3	4300.0	2200.0	6066.0	6.6
2.13		medium-grained sand with brown soil	KBA-B11-2	5.9	71.6	9000	240	520	1675	12310.0	6553.4	871.2	19734.6	2800.0	1800.0	2882.0	7.4
3.20		gravel bed	KBA-B11-3	16.9	256.2	46000	220	800	2204	6060.0	4971.3	532.1	11563.4	1700.0	1800.0	1453.0	10.1
		weathered shale															

KBA-B12

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.22		brown stiff clay with lateritic soil and fin-grained sand	KBA-B12-1	8.4	23.7	2500	26	48	141	725.0	423.4	40.4	1188.8	160.0	39.0	1088.0	0.7
2.74		lateritic soil with coarse-grained sand	KBA-B12-2	7.7	29.3	1300	16	35	90	324.4	158.6	17.4	500.4	69.0	23.0	788.0	0.4
4.27			KBA-B12-3	4	24.9	104	7	3	14	137.7	39.3	3.7	180.6	25.0	6.4	752.0	0.1
5.79		brownish gray weathered shale															

KBA-B13

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.72		brown soil with fine-grained sand	KBA-B13-1	9.2	33.7	2200	64	150	397	1287.0	952.8	82.1	2321.9	290.0	78.0	1239.0	2.3
2.74		gray clay with coarse-grained sand	KBA-B13-2	10.8	37.9	1400	64	140	408	922.0	798.2	67.7	1787.9	210.0	54.0	740.0	2.6
4.26		brown stiff clay with small amount of corse-grained sand	KBA-B13-3	15.5	47.2	2000	51	120	321	822.0	701.2	55.6	1578.8	180.0	45.0	642.0	1.9
5.79		reddish brwn stiff clay	KBA-B13-4	9.8	39.3	15000	67	310	450	1177.0	675.4	65.7	1918.1	240.0	51.0	578.0	1.3
6.71		gravel bed with some of quartz	KBA-B13-5	4.6	48.8	116000	210	1600	1824	2810.0	1819.0	211.3	4840.3	710.0	140.0	1212.0	3.6
		brown weathered shale															

KBA-B14

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.22		medium-grained sand with brown soil	KBA-B14-1	11.4	30	2500	100	200	634	1904.0	1297.7	111.2	3312.9	400.0	110.0	1340.0	2.9
2.74		coarse-grained sand with gray stiff clay	KBA-B14-2	14.9	31.5	3800	130	310	884	2388.0	1842.8	156.1	4386.9	540.0	150.0	2083.0	3.7
4.27		grayish brown stiff clay with coarse-grained sand	KBA-B14-3	10.3	17.9	3800	69	130	374	1022.0	680.0	61.7	1763.7	220.0	55.0	1021.0	1.7
5.79			KBA-B14-4	8.7	21.9	5000	40	85	252	471.0	335.9	31.7	838.6	98.0	23.0	416.0	1.3
7.01		brownish gray stiff clay	KBA-B14-5	6.3	34.7	105000	280	410	497	1042.0	535.0	60.7	1637.7	220.0	51.0	438.0	1.3
7.47		gravel bed containot quartz and rock fragment	KBA-B14-6	5.2	77.9	110000	220	400	544	1387.0	677.4	75.4	2139.8	280.0	57.0	729.0	1.5
8.53		greenish gray weathered shale															

KBA-B15

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brown soil with medium-grained sand	KBA-B15-1	10	33.7	2000	63	100	322	902.0	646.6	59.7	1608.3	200.0	56.0	780.0	1.9
3.05		coarse-grained sand with gray soil	KBA-B15-2	10.7	63.3	80000	250	710	1644	4710.0	2708.8	328.4	7747.2	990.0	220.0	2766.0	5.2
3.96			KBA-B15-3	4.9	33.5	29000	130	280	714	2104.0	1360.9	137.7	3602.6	460.0	98.0	1524.0	2.4
4.57		coarse-grained sand with small amount of quartz gravel	KBA-B15-4	6.2	41.8	41000	150	290	802	2665.0	1368.4	160.1	4193.5	650.0	100.0	2543.0	3.2
6.10		white weathered granite (kaolinized)															

KBD - 01

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	To (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.22		brown soil with some of fine-grained sand	KBD -01-1	34.0	3.5	78	59	300	65	56800	15960	1861	74621	9900	1100	6800	5.99
5.48		reddish brown clay with some of lateritic soil															
6.71		medium-grained sand and lateritic soil															
10.36		medium-grained sand with reddish brown soil															
10.67	+ + +	kaolinized granite	—														

付図3　　D－1地区ボーリング柱状図

KBD-02

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		gray clay	KBD-02-1	17.2	12	156	250	340	1531	15750	6376.1	998.1	23114.2	3300	350	5300	19.13
3.04		brownish gray stiff clay with medium-grained sand															
5.79		brownish gray stiff clay	KBD-02-2	29.3	9	122	73	140	125	5080	3498.2	274.7	8852.9	1000	120	1700	8.41
7.31		gray clay with medium-grained sand and some of small gravel	KBD-02-3	26.1	7	905	410	890	201	13030	7603	831.7	21464.7	2800	340	4700	32.68
8.84		gray clay															
10.34		gray clay with medium-grained sand and some of small gravel	KBD-02-4	13.7	8	2700	330	720	285	31600	11519	1925.9	45044.9	6500	870	6200	27.22
14.02		gray clay	KBD-02-5	23.7	7	2900	240	620	297	42600	13680	2336.2	58616.2	10000	950	5700	19.91
14.33	+ + +	wite weathered granite	—														

KBD - 03

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
1.52		brownish soil with some of fine-grained sand															
4.57		gray soil with some of fine-grained sand	KBD -03-1	15.3	40.5	-5	-4	6	24	1026	139.38	25.2	1190.58	170	22	87	0.95
5.79		brownish gray stiff clay with some of lateritic soil	KBD -03-2	8.9	36.5	16	-4	10	30	1393	191.65	38.5	1623.15	190	16	147	0.86
7.31		gray clay with medium-grained sand	KBD -03-3	11.3	6	850	300	400	125	21990	7395	1228.5	30613.5	4500	440	4450	19.48
8.84		gray soil with medium-grained sand and some of small quartz gravel															
10.34		medium-grained sand with some of gray soil	KBD -03-4	41.1	8.5	2600	220	760	305	45000	14901	2524.7	62425.7	10000	1000	5830	13.2
12.80		gravel bed with some of quartz															
12.95		schistose meta-sediments															

KBD-04

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
3.05		gray mud with some of fine-grained sand	KBD-04-1	10.4	16	31	10	13	70	486	146.1	24.4	656.5	96	11	226	0.82
5.79			KBD-04-2	6.9	17.5	201	20	34	136	1250	387.48	46.4	1683.88	240	23	652	14.51
7.31		gray clay with medium-grained sand	KBD-04-3	5.2	40	32	15	22	123	712	250.31	32.5	994.81	140	16	376	1.46
10.34		brownish gray stiff clay with lateritic soil	KBD-04-4	19.7	44	866	52	88	401	4000	1271	202.3	5473.3	840	77	7300	5.69
11.88		medium-grained sand with gray clay	KBD-04-5	6.8	28.3	2100	54	120	283	3133	808.69	125.8	4067.49	540	56	10600	3.77
12.95		gravel bed with some of quartz gravel	KBD-04-6	10	43	3100	39	140	239	4917	712.47	169	5798.47	1200	76	6500	2.71
	+ + + +	brown weathered granite															

KBD - 05

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
3.05		brownish gray mud with small amount of fine-grained sand	KBD -05-1	9.9	7	15	13	17	80	540	108.53	22.7	671.23	110	8.9	211	1.4
5.79			KBD -05-2	7.7	11	67	18	29	119	593	159.85	21.8	774.65	110	13	389	1.49
8.84		brownish gray stiff clay with small amount of lateritic soil	KBD -05-3	14.4	23	133	39	60	267	1438	446.5	52.9	1937.4	270	33	1325	3.14
10.36		gray clay with medium grained sand	KBD -05-4	6.1	21	80	25	32	140	1342	223.6	45.9	1611.5	220	24	852	1.89
11.89		gravel bed with some of quartz gravel	KBD -05-5	5.9	40.5	753	56	78	314	2982	1008.9	123.1	4114	550	59	2700	3.61
12.50			KBD -05-6	5.1	30.2	3900	53	110	320	2399	906.94	124.5	3430.44	490	49	5300	3.09
	+ + +	brown weathered granite															

KBD-06

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray mud with fine-grained sand	KBD-06-1	9.3	40	96	4	5	29	269.4	76.23	7.5	353.13	47	5.5	829	0.54
4.27			KBD-06-2	7.5	26.8	103	-4	5	24	250.1	69.16	7.9	327.16	46	5	873	0.48
7.32		brownish gray soil with fine-grained sand	KBD-06-3	18	49	772	19	30	89	1673	10675.58	65.7	12414.28	250	28	270	1.88
8.84		medium-grained sand with gray mud and small amount of small quartz gravel	KBD-06-4	4.6	31	799	32	40	127	1670	8278.01	69.4	10017.41	270	28	287	2.62
10.06		brownish gray clay with coarse-grained sand and small amount of small quartz	KBD-06-5	18.9	68	528	22	63	187	4200	3093.39	162.7	7456.09	1000	65	819	2.25
	+ + +	brown weathered granite															

KBD-07

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray mud with fine-grained sand	KBD-07-1	6	6.5	55	7	7	88	303.8	90.45	18	412.25	54	5.3	273	0.63
5.80			KBD-07-2	6.6	19.5	104	16	24	114	555	176.8	27.4	759.2	110	10	555	1.41
7.32			KBD-07-3	6.4	18.5	48	10	11	62	302.2	96.48	10.2	408.88	52	9.9	333	0.74
8.53		gray clay with medium-grained sand	KBD-07-4	8.1	17.5	280	53	78	489	2513	888.92	109.6	3511.52	470	39	2300	5.5
10.06		coarse grained sand with gray soil	KBD-07-5	10.4	26	2300	64	120	462	2719	957.65	115.1	3791.75	450	46	8700	5.6
11.58			KBD-07-6	10.3	38.5	5700	70	230	446	2350	888.6	104.6	3343.2	380	41	7900	3.06
13.11		gravel bed (quartz)	KBD-07-7	13.3	55	7100	61	190	388	2443	739.3	106.5	3288.8	490	43	6400	2.78
	+ + +	White weathered granite															

KBD – 08

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray mud with fine-grained sand	KBD -08-1	6	16.8	56	-4	2	3	1067	620.49	61.1	1748.59	230	39	440	0.28
5.79		brownish gray clay with coarse-grained sand	KBD -08-2	14.2	48	57	-4	4	-2	2292	1520.1	164.3	3976.4	510	97	1109	0.27
7.31			KBD -08-3	12.7	41	10	-4	-1	18	3367	984.56	137.7	4489.26	700	63	1386	0.48
8.23		schistose mera-sediment	—														

KBD-09

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray mud with fine-grained sand	KBD-09-1	8.7	29	21	5	7	52	834	151.9	27.3	1013.2	180	15	331	0.92
5.79		gray clay with fine- to medium-grained sand	KBD-09-2	14.8	50	15	4	3	28	391	42.43	12.5	445.93	89	7.7	183	0.62
7.62		medium-grained sand with gray clay	KBD-09-3	8.1	50	34	8	35	202	14890	2048.7	518.7	17457.4	3500	290	2700	5.13
9.14		gray clay with coarse-grained sand and small gravel	KBD-09-4	10	51	39	7	46	264	11080	1703	400.6	13183.6	2500	200	1712	6.32
10.36			KBD-09-5	8.7	38.5	29	7	29	146	9340	1231.42	337.3	10908.72	2200	160	2200	3.19
11.58		gravel bed cosist of coarse-grained sand & some of quartz gravel	KBD-09-6	11.2	130	349	10	62	213	15330	2415.5	582.9	18328.4	4200	400	2500	5.48
12.19	+ + +	weathered granite	—														

KBD - 10

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray very fine silty clay	KBD -10-1	12	46	25	9	10	72	2130	324.27	65.9	2520.17	470	32	576	1.67
5.79		gray sand clay with Small gravel	KBD -10-2	9.7	120	10	10	12	99	2322	385.03	77.1	2784.13	510	42	438	2.19
7.32		brownish gray clay	KBD -10-3	10.4	115	17	-4	13	80	3191	434.28	92	3717.28	720	53	682	2.05
8.84		gray sandy clay with quartz fragment	KBD -10-4	12.1	205	22	6	22	115	8320	1262.97	323.5	9906.47	2000	150	1202	3.12
10.36		brownish gray stiff clay	KBD -10-5	7.6	64	19	19	19	103	6380	1205.55	230.3	7815.85	1600	110	873	2.77
		brownish gray shale															

KBD – 11

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray clay with very fine-grained sand	KBD -11-1	6.4	41.5	26	31	44	235	1080	468.13	43.8	1591.93	200	27	375	2.08
5.79			KBD -11-2	8.2	71	31	25	37	173	1080	894.6	78.3	2052.9	190	37	300	1.89
7.32		brownish gray clay with medium-grained sand	KBD -11-3	8.9	57	95	48	71	404	1425	1716.4	132.7	3274.1	280	48	639	3.71
8.84		brownish gray coarse sandy clay with quartz fragment	KBD -11-4	8.7	125	32	27	48	206	1535	2079.9	163.1	3778	260	57	360	1.47
		brownish gray weathered granite															

KBD - 12

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray mud with some of fine-grained sand	KBD -12-1	6.4	34.8	45	20	29	149	798	736.93	56.7	1591.63	150	23	339	1.36
5.49		gray mud with some of coarse-grained sand	KBD -12-2	5.9	105	29	8	10	63	455.5	282.91	21.1	759.51	83	10	186	0.68
8.53		gray clay with some of coarse-grained sand	KBD -12-3	11.4	41.2	32	-4	10	88	416.8	88.94	10	515.74	82	6	230	0.66
9.75		brown weathered granite or residual soil	KBD -12-4	3.3	104	25	9	15	122	992	185.18	35.2	1212.38	160	11	325	1.11
		white weathered kaolinized granite															

KBD -13

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray clay with very fine-grained sand	KBD -13-1	7.2	21.5	39	5	3	19	105.8	39.42	5.5	150.72	17	3.3	383	0.31
5.79		gray clay	KBD -13-2	8.2	6	65	-4	1	27	63.2	43.87	5.5	112.57	9	1.8	233	0.09
7.32		gray clay with medium-grained sand	KBD -13-3	4.6	9	83	6	7	98	143.9	104.05	12.5	260.45	23	5	563	0.2
9.75		brownish gray silty clay with coarse-grained sand, iron concretion strong	KBD -13-4	12.4	28	346	36	60	382	8588	666.21	106.8	9361.01	460	26	1156	3.49
	+ + +	brownish gray weathered granite															

KBD – 14

Depth (m)	Column	Description	Sample No.	Volume of Sample (g)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray mud with some of fine-grained sand	KBD -14-1	6.1	25.5	19	-4	1	8	92.5	11.24	5.9	109.64	14	1.7	225	0.15
5.79			KBD -14-2	9.2	27	50	4	2	10	106.1	16.57	5.7	128.37	15	2	360	0.09
8.84		gray mud with some of medium-to coarse-grained sand	KBD -14-3	7.5	80	332	26	13	30	428	84.05	7	519.05	56	8.2	2300	0.71
9.75			KBD -14-4	3.1	62	299	22	9	23	352.4	53.31	16.4	422.11	47	6.1	1473	0.51
	+ + +	granite															

KBD-15

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray mud with some of fine-grained sand	KBD -15-1	7.3	46	26	8	8	63	223.4	108.79	12.4	344.59	42	5.3	224	0.69
5.79			KBD -15-2	6.4	66	56	34	24	46	1170	90.45	9.6	1270.05	240	16	138	0.71
7.01		brownish gray hard stiff clay with some of coarse-grained sand	KBD -15-3	11.6	73	31	7	7	177	174.2	169.88	32.7	376.78	33	4.5	622	2.62
	+ +	white weathered granite															

KBD-16

Depth (m)	Column	Description	Sample No.	Volume of Sample (ℓ)	Weight of Sample (g)	Sn (ppm)	W (ppm)	Ta (ppm)	Nb (ppm)	Cerium G (ppm)	Yittrium G (ppm)	Terbium G (ppm)	Total REE (ppm)	Th (ppm)	U (ppm)	Zr (ppm)	TiO_2 (%)
2.74		gray mud with some of fine-grained sand	KBD-16-1	7.2	101	43	4	2	10	94.8	18.35	4.5	117.65	12	2.7	430	0.28
5.79			KBD-16-2	6.3	88	52	7	3	14	133.8	29.37	6.5	169.67	17	3.2	735	0.36
8.84		gray mud with some of fine-grained sand and shell	KBD-16-3	5.9	108	133	21	10	17	335.8	55.1	4.6	395.5	42	7.3	1179	0.36
13.41		gray soft and high water content mud with some of fine-grained sand and shell Slightly lower core recovery	KBD-16-4	13.2	57	406	22	7	31	366.3	103.91	21	491.21	47	6.9	3400	0.68
	+ +	brown granite															

488 | 489 | 98°54′ | 490 | 98°55′ | 491

10°39′

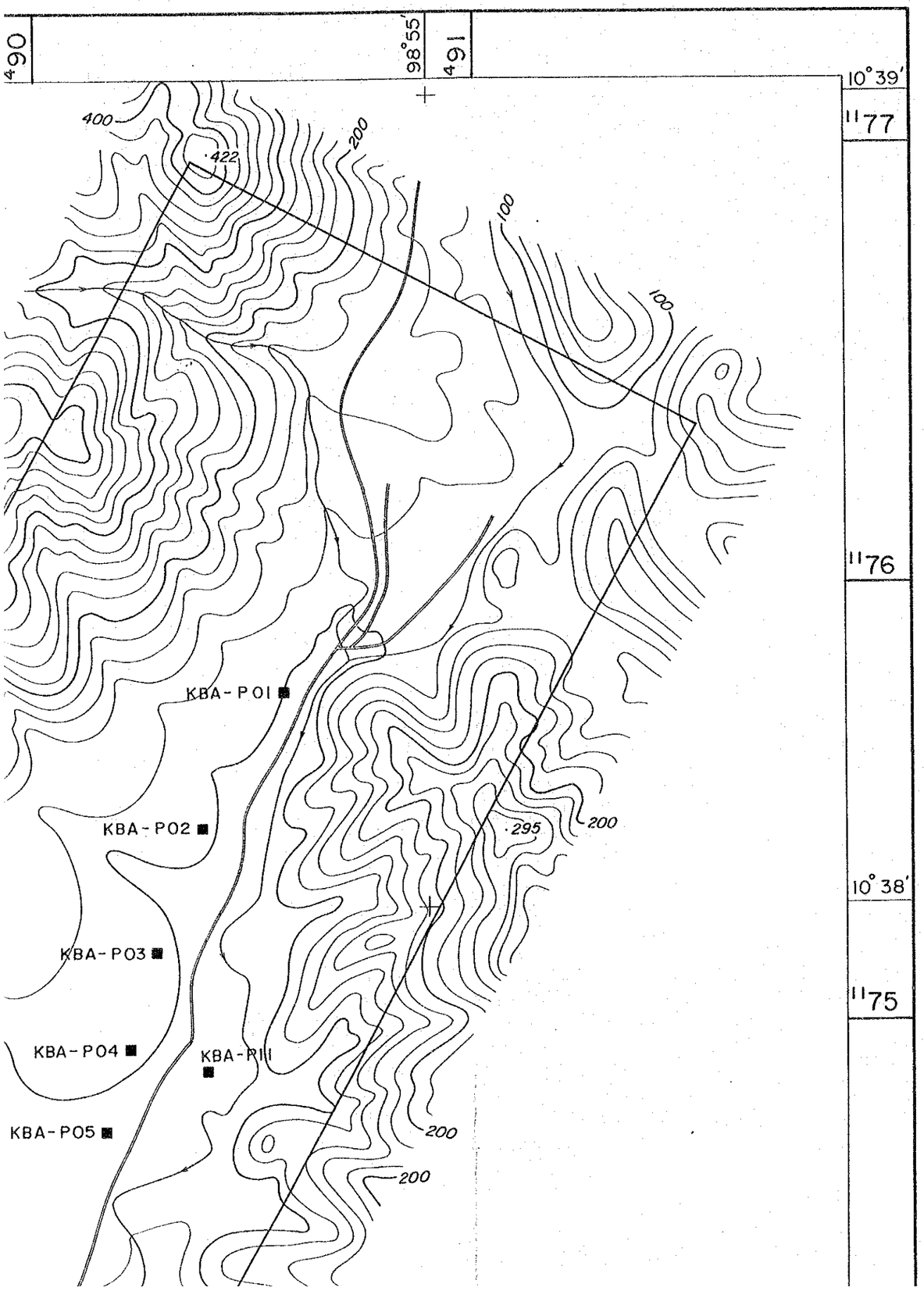
1177

1176

10°38′

1175

400 200 422 100 100 400 400 300 300 300 300 KBA-P01 KBA-P02 295 200 KBA-P03 KBA-P04 KBA-R11 KBA-P05 200 200 KBA-B01

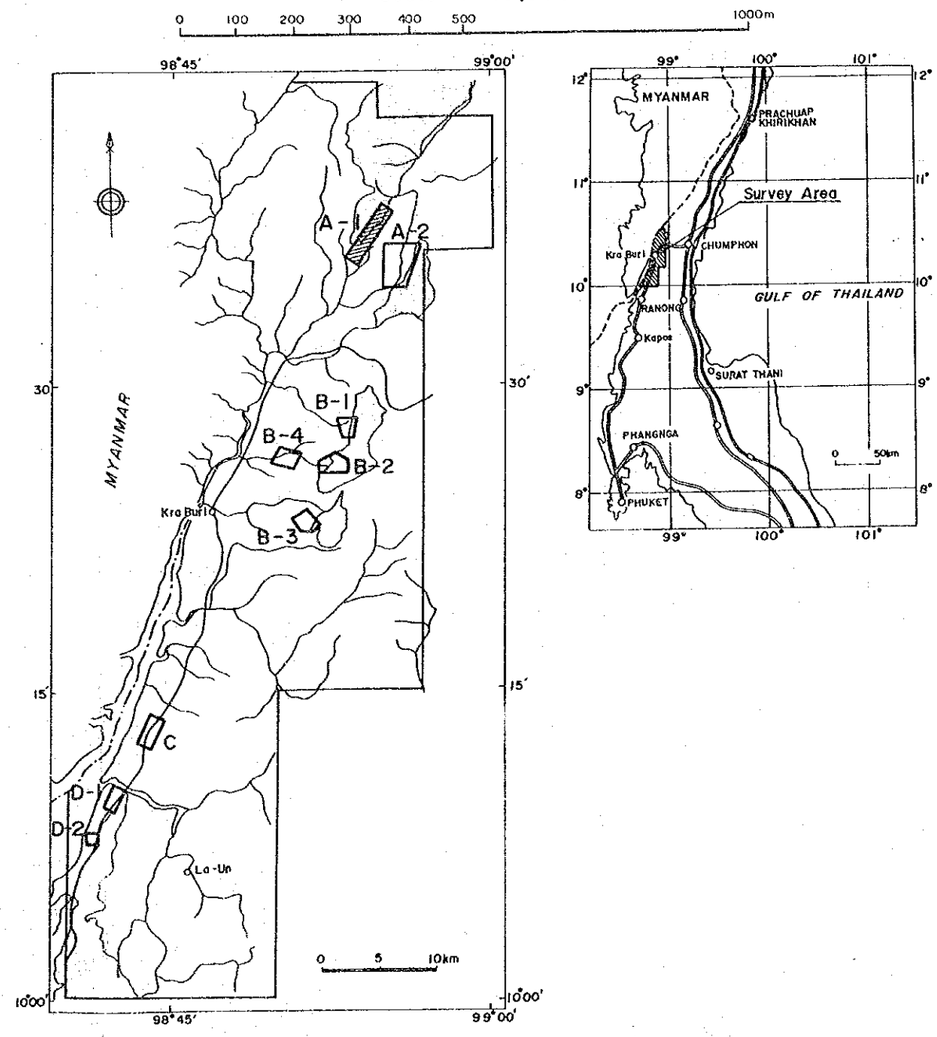


PL - 1

MINERAL EXPLORATION OF THE KRA BURI AREA, THAILAND PHASE III

LOCALITY MAP OF PIT, DRILLING SURVEY IN AREA A-1

Scale 1 : 10,000



JAPAN INTERNATIONAL COOPERATION AGENCY

METAL MINING AGENCY OF JAPAN

Nov. 1993

10°38'

11°75

11°74

10°37'

11°73

KBA-P02

KBA-P03

KBA-P04

KBA-P11

KBA-P05

KBA-B01

KBA-B02

KBA-P12

KBA-P06

KBA-B04

KBA-B03

KBA-P14

KBA-P07

KBA-B06

KBA-B05

Khlong Nam Kho

KBA-B07

KBA-P08

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KBA-B11

KBA-B13

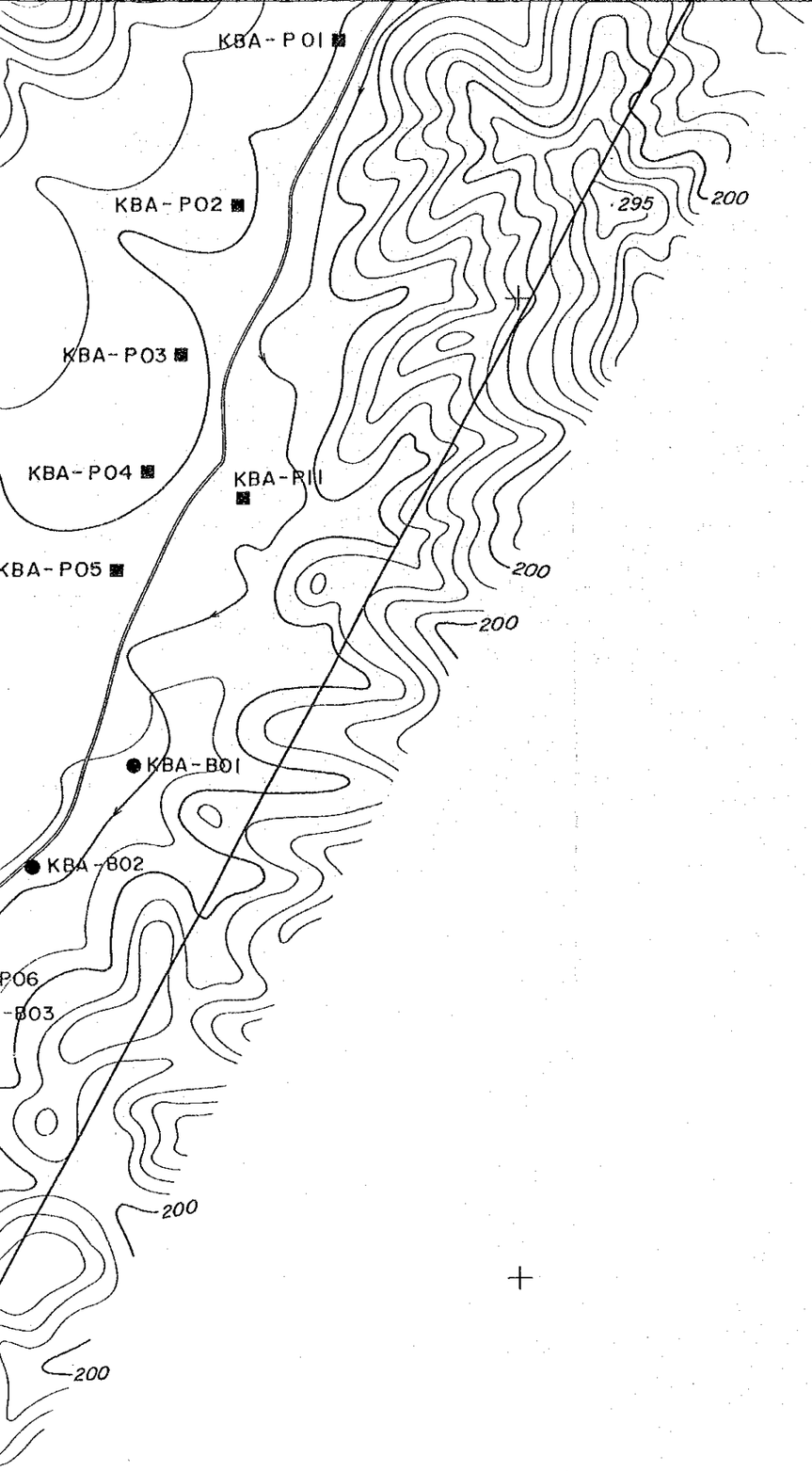
KBA-B09

300

295

200

100



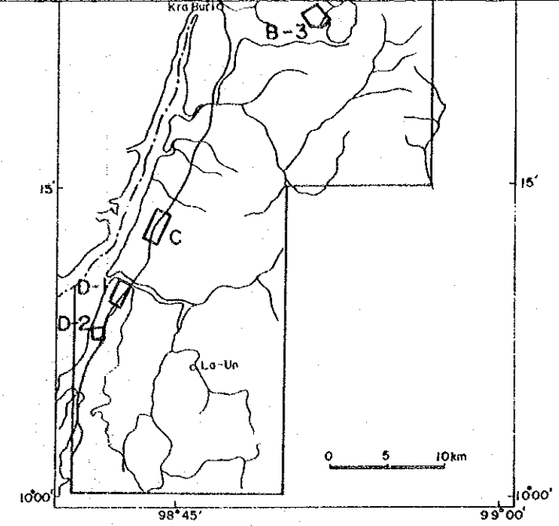
10°38'

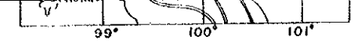
11°75

11°74

10°37'

11°73





JAPAN INTERNATIONAL COOPERATION AGENCY

METAL MINING AGENCY OF JAPAN

Nov. 1993

KBA-P14
KBA-P07
KBA-B06
KBA-B05
Khlong Nam Kh
200
200
200
KBA-B07
KBA-P08
KBA-B08
KBA-B12
KBA-P10
KBA-B11
KBA-B13
KBA-B09
KBA-B14
KBA-P09
KBA-P13
KBA-B15
KBA-B10
100
100
100
100
100
100
100
10°37'
11°73
11°72
10°36'
488
489
98°54'
490
98°55'
491

10°37'

1173

1172

10°36'

4916

98°55'

4906

200

200

465
98°41'
466
467
98°42'
468
1125
1124
10°10'
1123
Ko Khwang
KRA BURI
100
KHLONG LA-UN
Ban
KBD-14
KBD-15
KBD-13
KBD-16
KBD-12
KBD-11
KBD-05
KBD-07
KBD-04
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KBD-06
KBD-02
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KBD-09
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KBD-08
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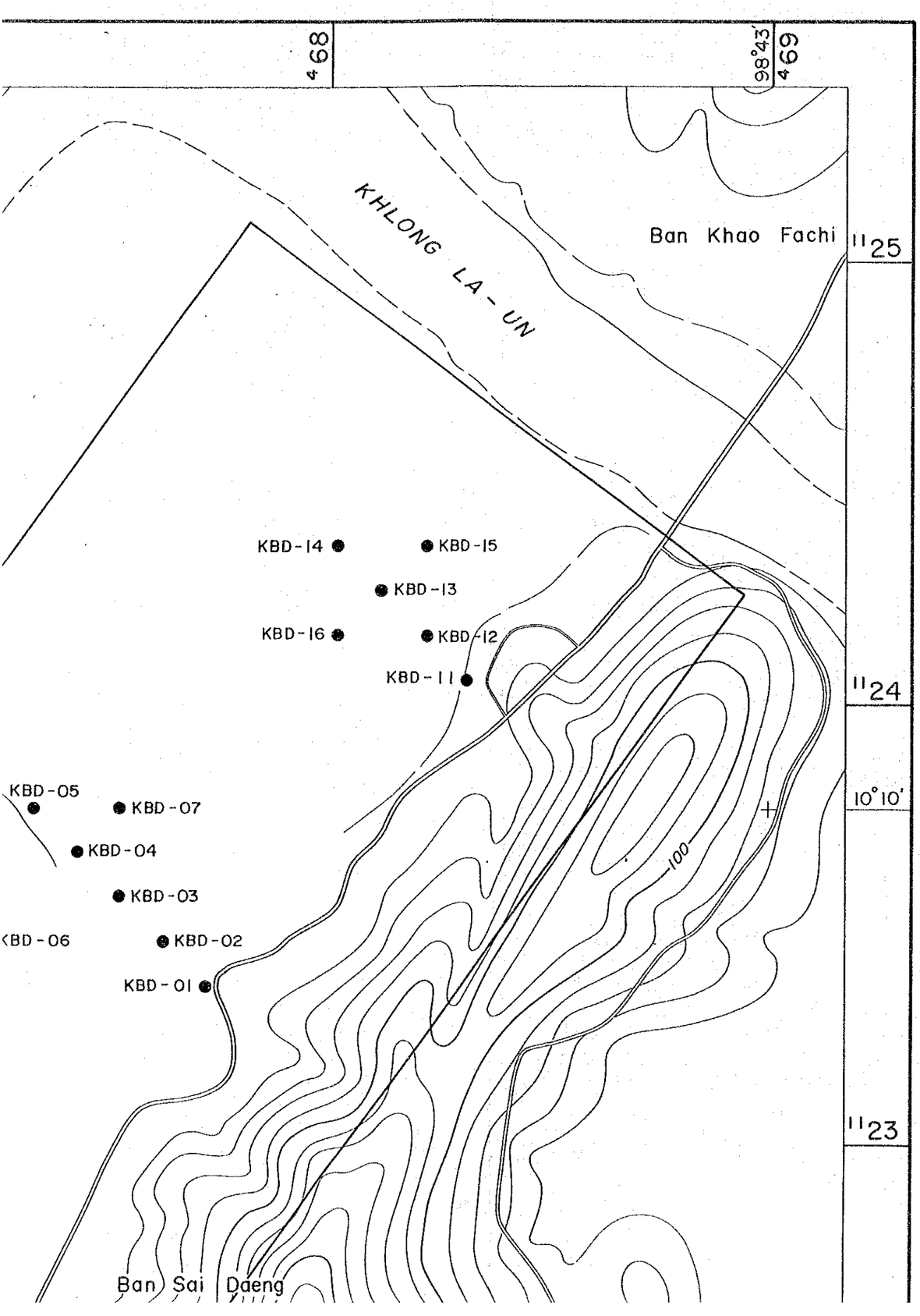
Ban Sai Daeng

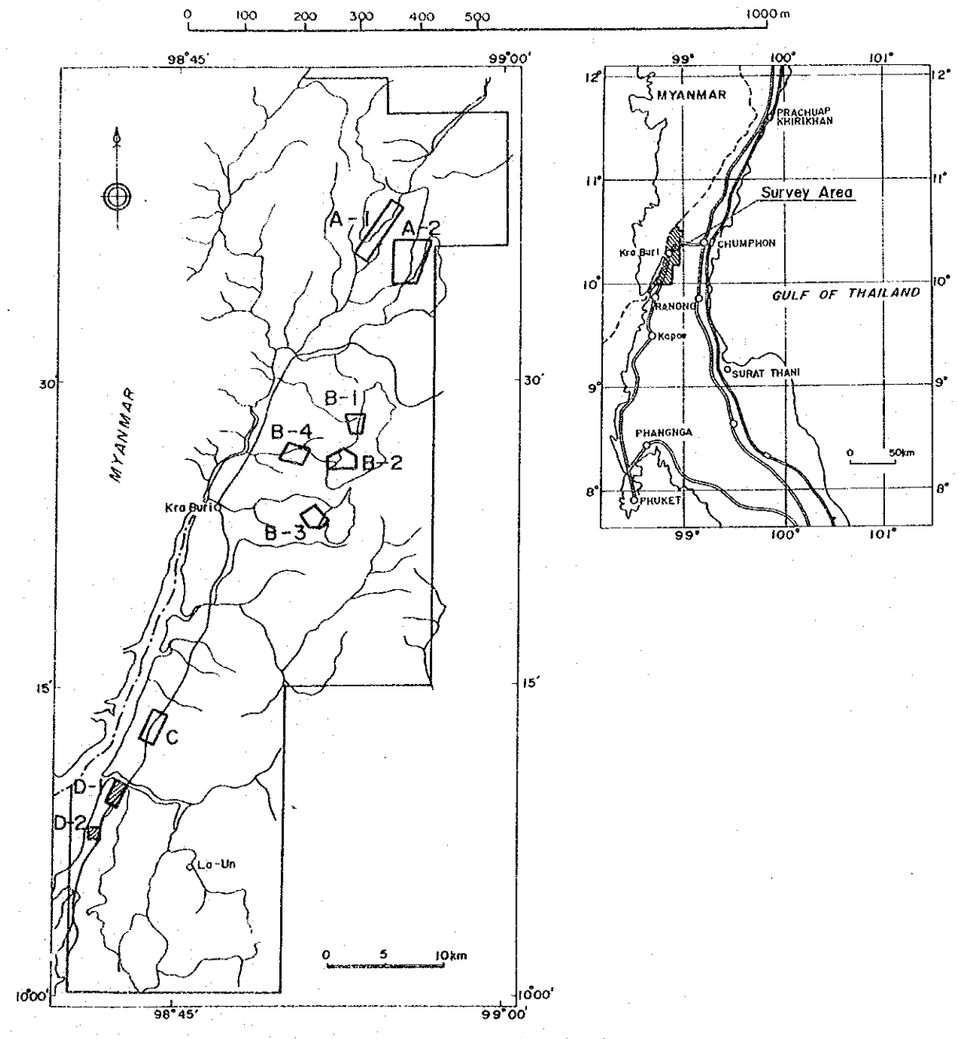


PL - 2

MINERAL EXPLORATION OF THE KRA BURI AREA, THAILAND PHASE III

LOCALITY MAP OF DRILLING SURVEY IN AREA D - I

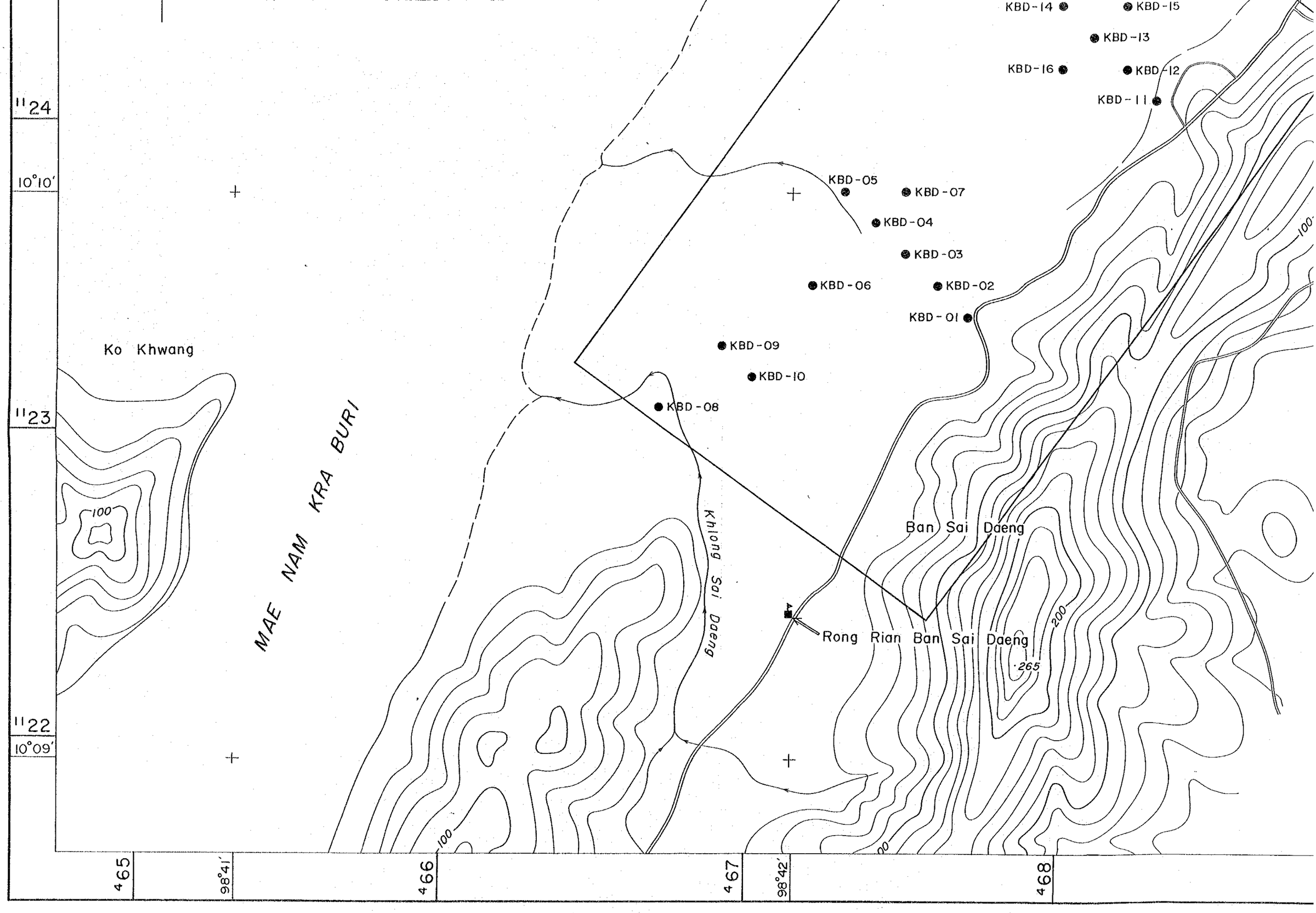
Scale 1 : 10,000



JAPAN INTERNATIONAL COOPERATION AGENCY

METAL MINING AGENCY OF JAPAN

Nov. 1993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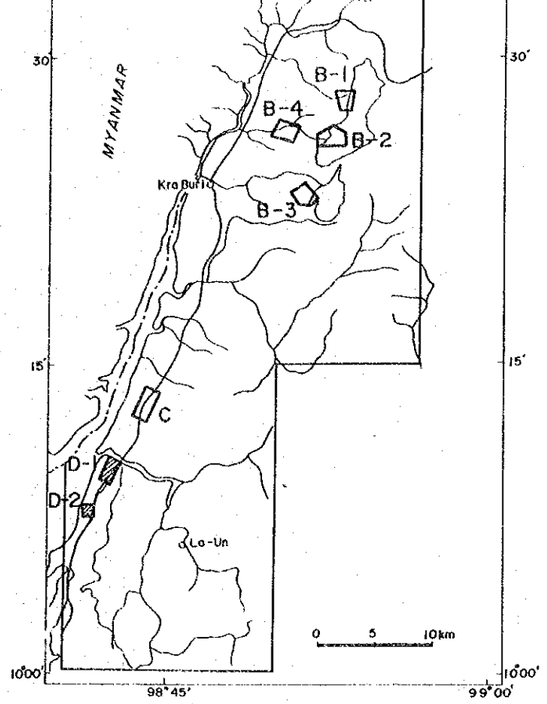
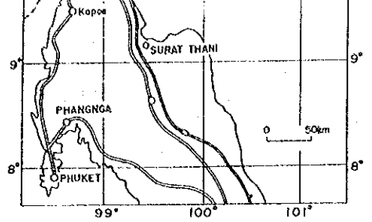
KBD-15
KBD-13
KBD-16
KBD-12
KBD-11
KBD-05
KBD-07
KBD-04
KBD-03
KBD-06
KBD-02
KBD-01
KBD-09
KBD-10
KBD-08
11°24'
10°10'
11°23'
Ko Khwang
MAE NAM KRA BURI
Khlong Sai Daeng
Ban Sai Daeng
Rong Rian Ban Sai Daeng
100
200
265
11°22'
10°09'
465
98°41'
466
467
98°42'
468

KBD-14
KBD-15
KBD-13
KBD-16
KBD-12
KBD-11
BD-05
KBD-07
KBD-04
KBD-03
D-06
KBD-02
KBD-01
100
Ban Sai Daeng
ong Rian Ban Sai Daeng
200
265
20
11°24
10°10'
11°23
11°22
10°09'
468
98°43'
469

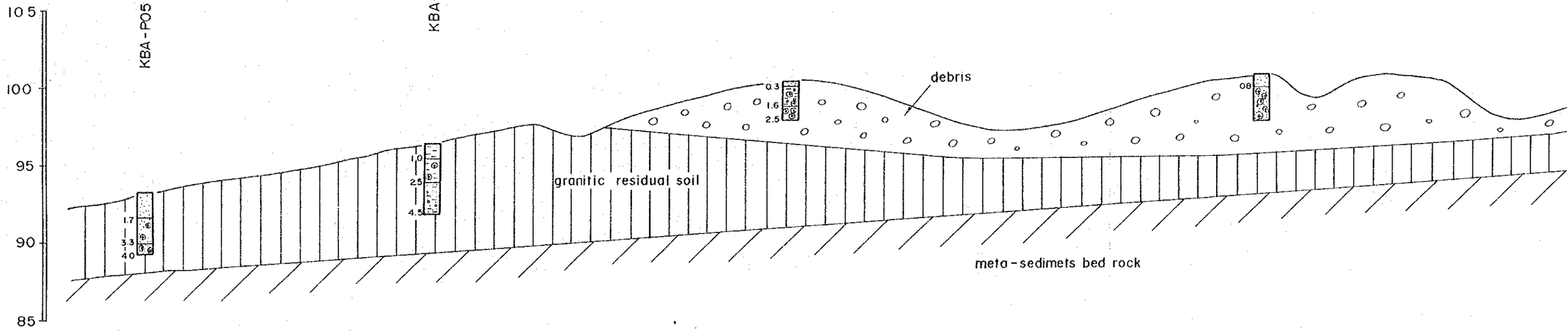




JAPAN INTERNATIONAL COOPERATION AGENCY

METAL MINING AGENCY OF JAPAN

Nov. 1993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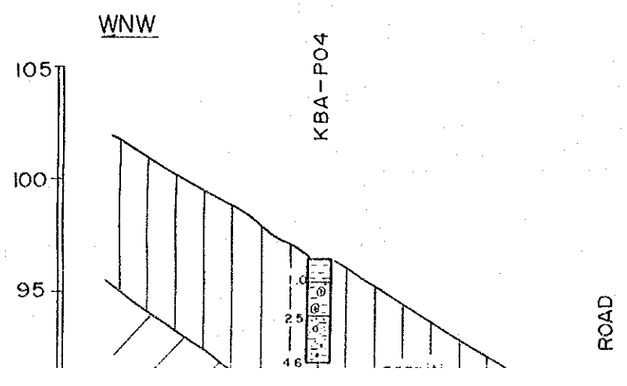
KBA-P05
KBA-P04
KBA-P03
KBA-P02
105
100
95
90
85
1.7
3.3
4.0
1.0
2.5
4.5
0.3
1.6
2.5
0.8
debris
granitic residual soil
meta-sedimets bed rock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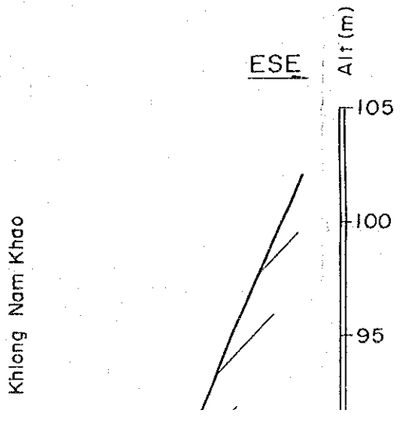
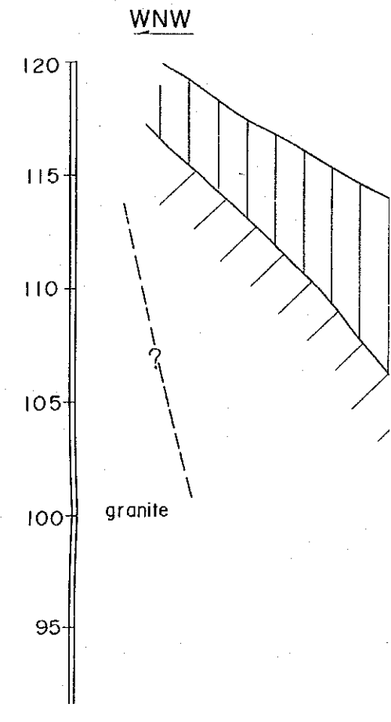
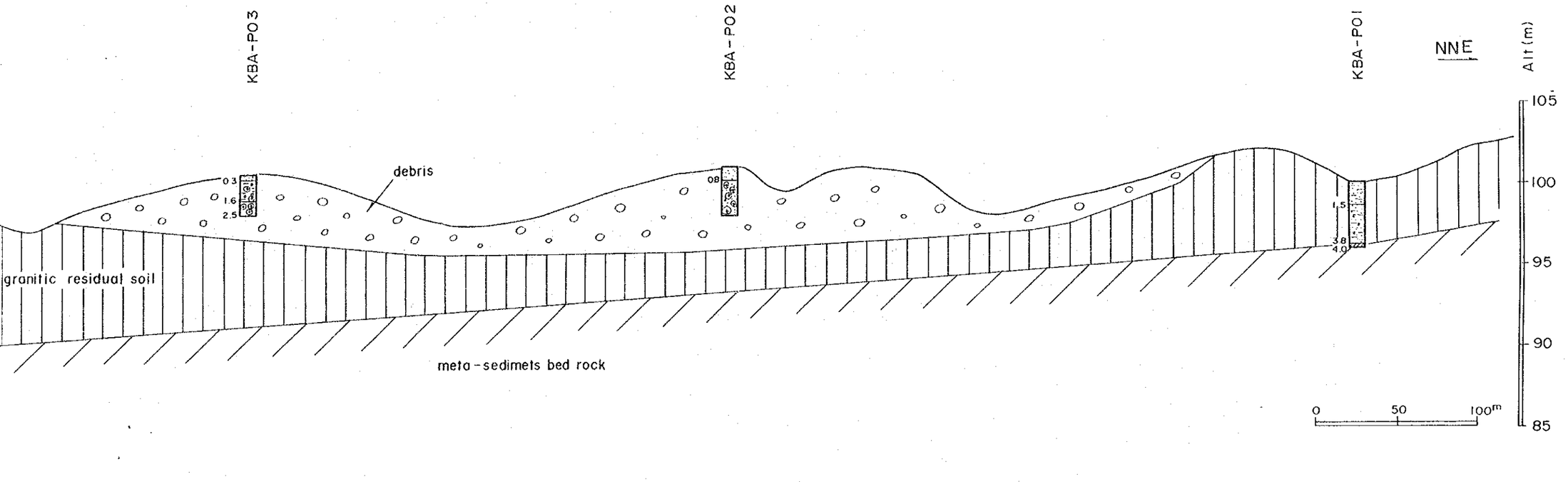
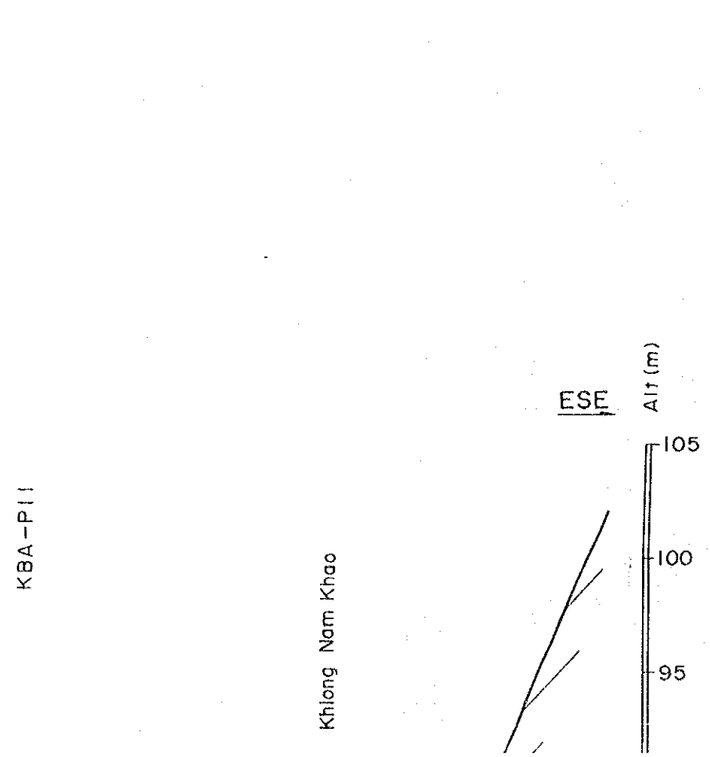
100
95
2.5
4.6
ROAD


KBA-P11


ESE
Alt (m)
105
100
95
Khlong Nam Khao


WNW
120
115
110
105
100
95
?
granite


KBA-P03
KBA-P02
KBA-P01
NNE
Alt(m)
105
100
95
90
85
0.3
1.6
2.5
0.8
1.5
3.8
4.0
debris
granitic residual soil
meta-sedimets bed rock
0
50
100m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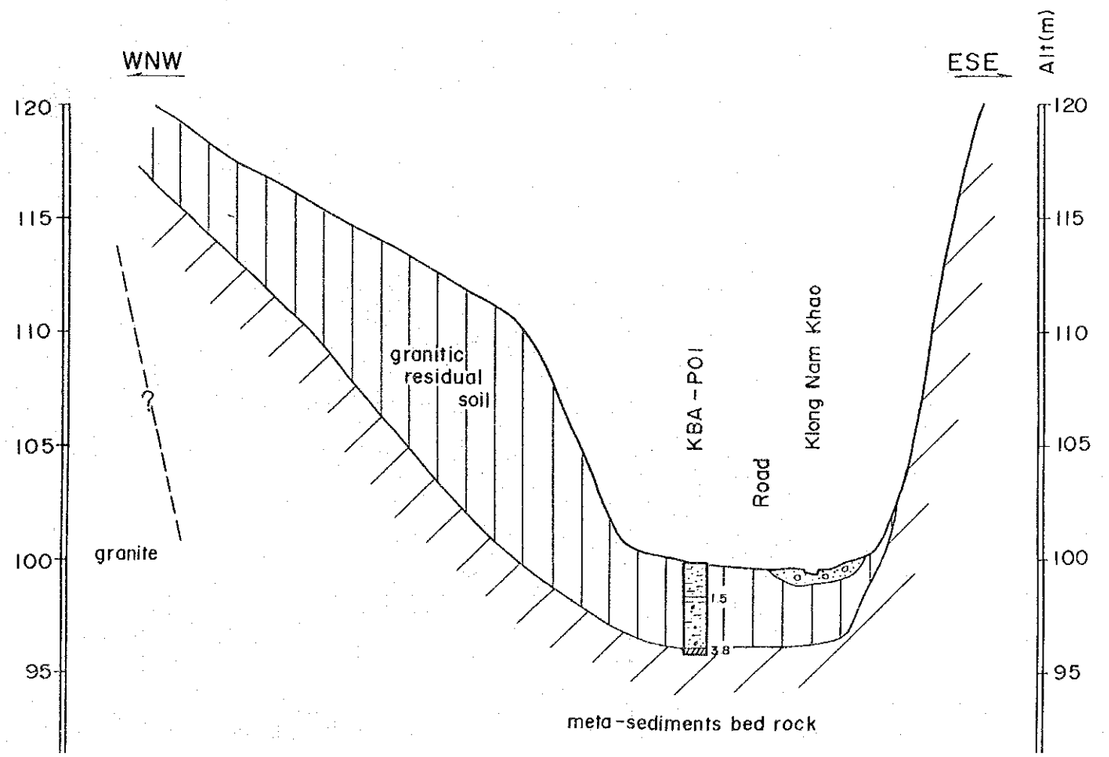
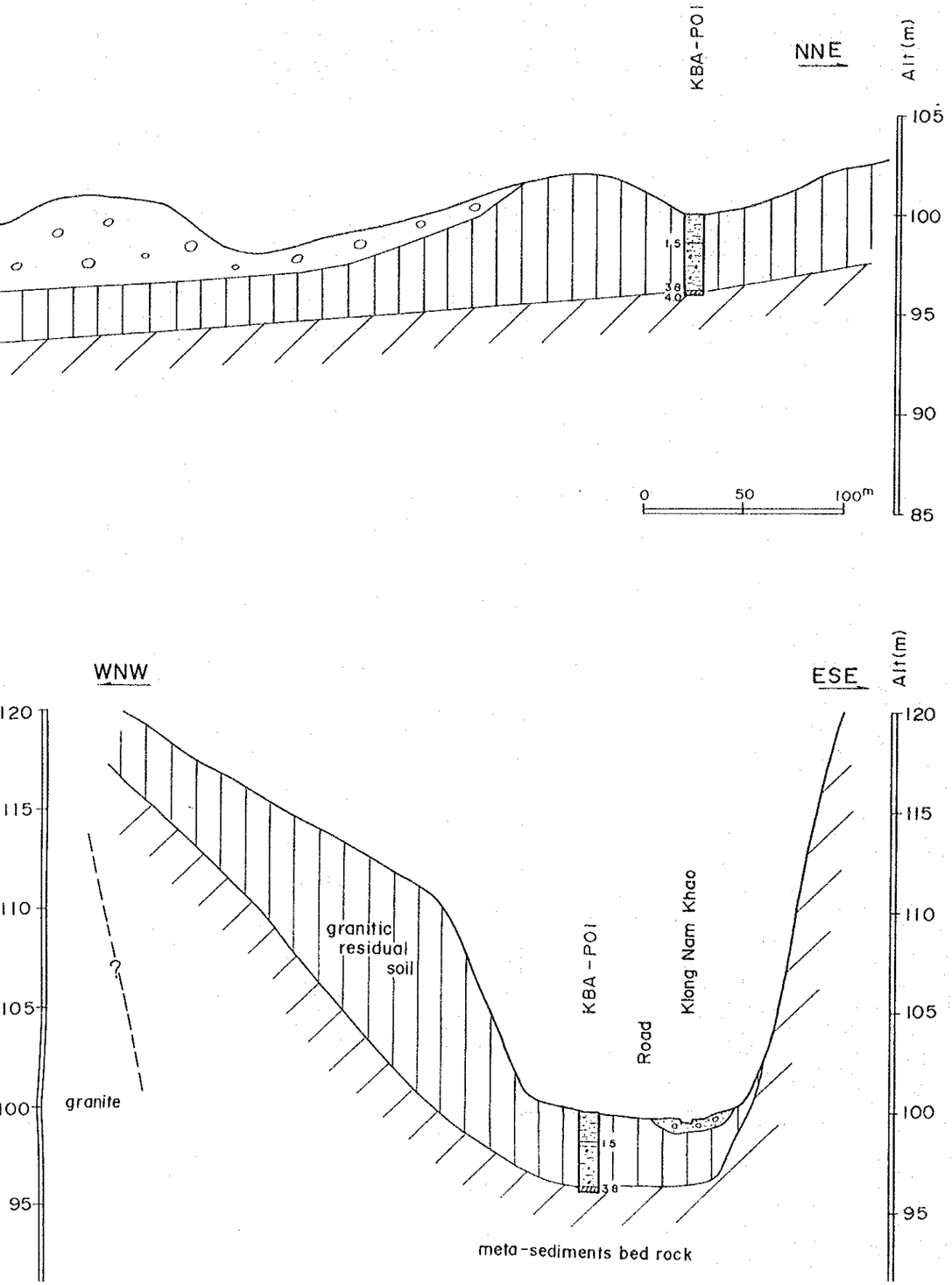
Khlong Nam Khao
ESE
Alt(m)
105
100
95

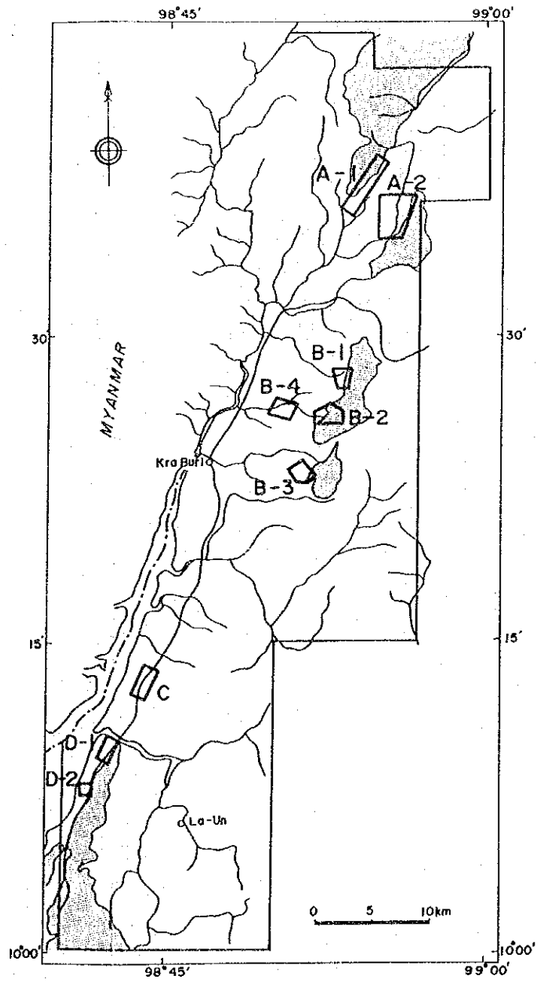

WNW
ESE
Alt(m)
120
115
110
105
100
95
granite
granitic residual soil
KBA-P01
Road
Klong Nam Khao
1.5
3.8
meta-sediments bed rock

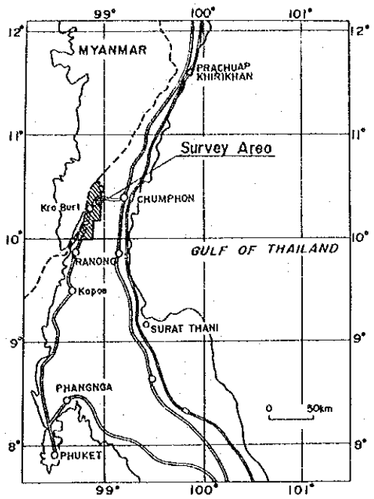


PL-3

MINERAL EXPLORATION
OF
THE KRA BURI AREA, THAILAND
PHASE III

GEOLOGIC PROFILE IN AREA A-1(1)





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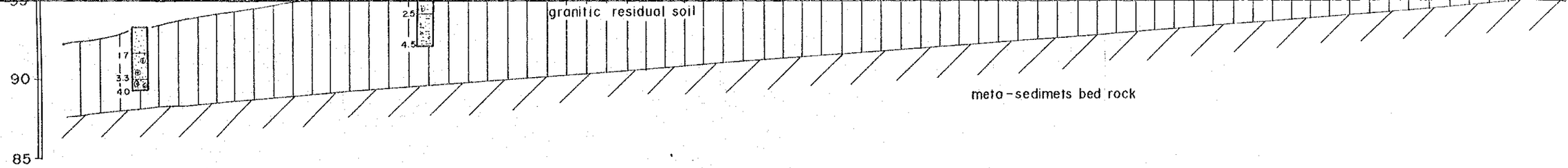
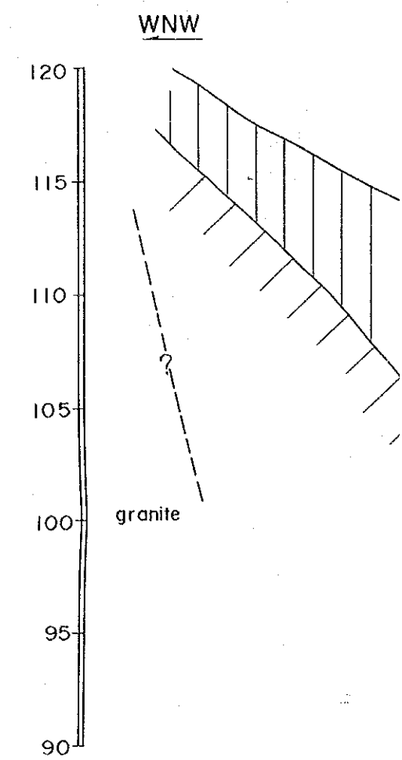
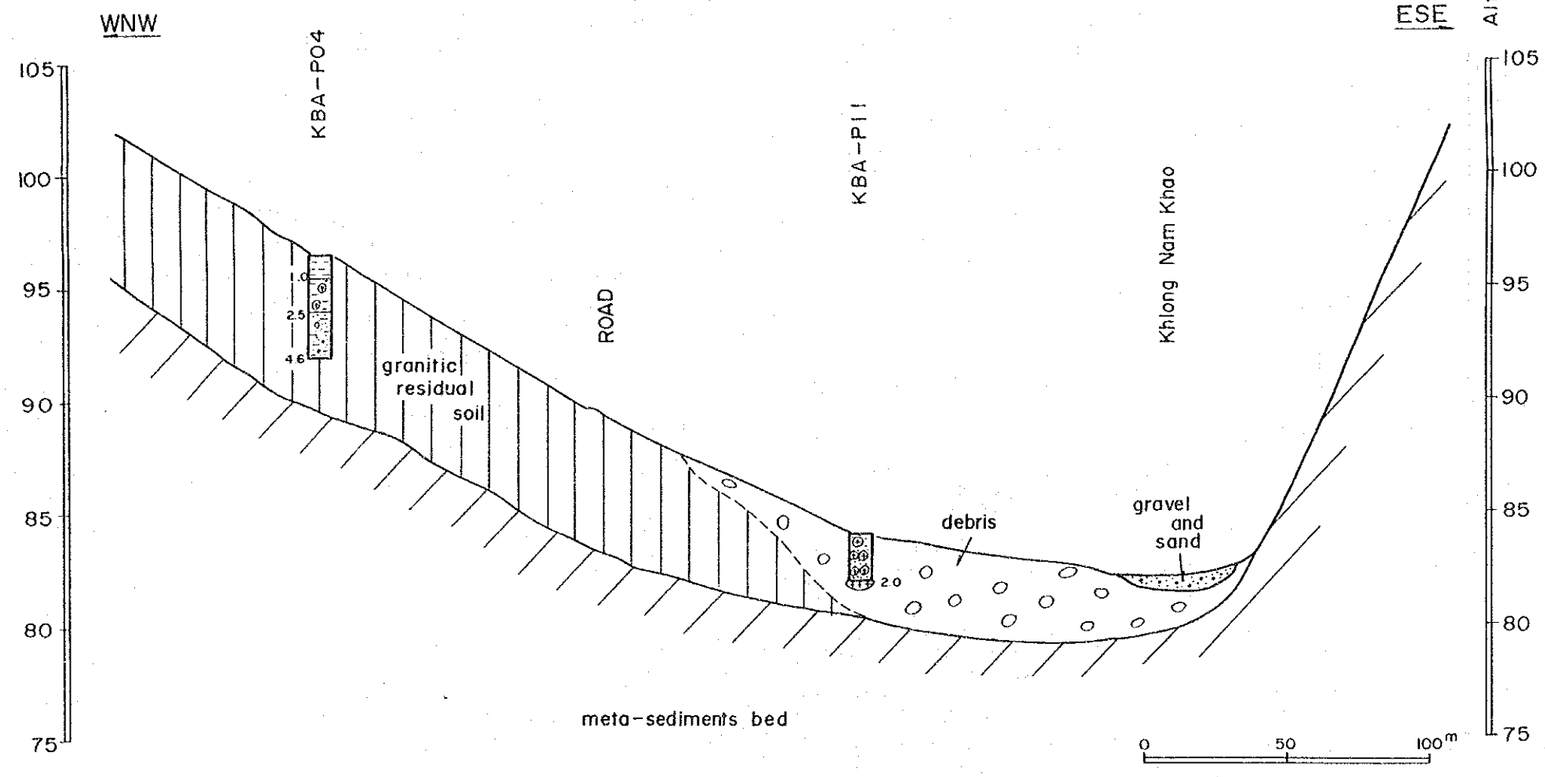
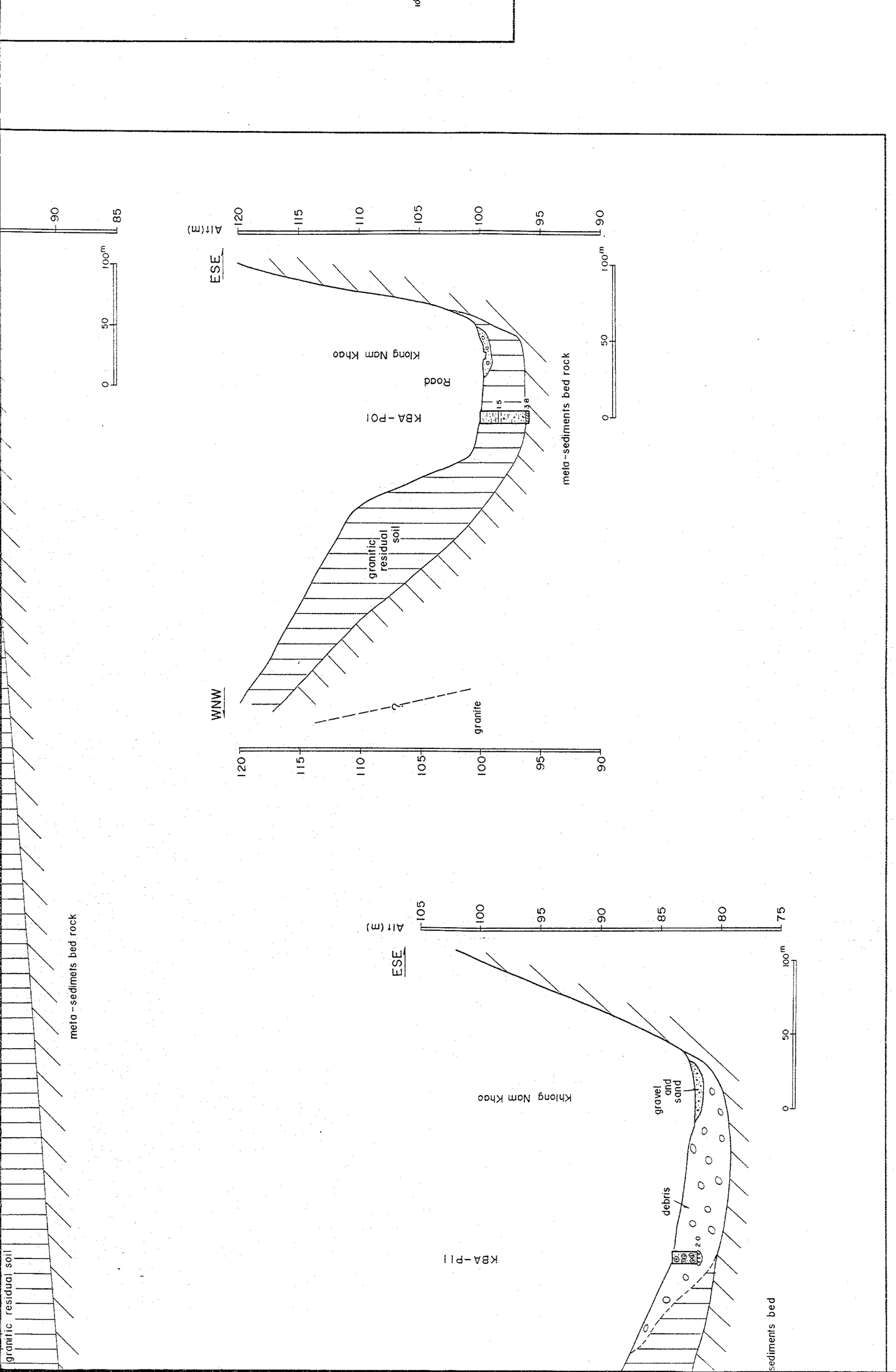
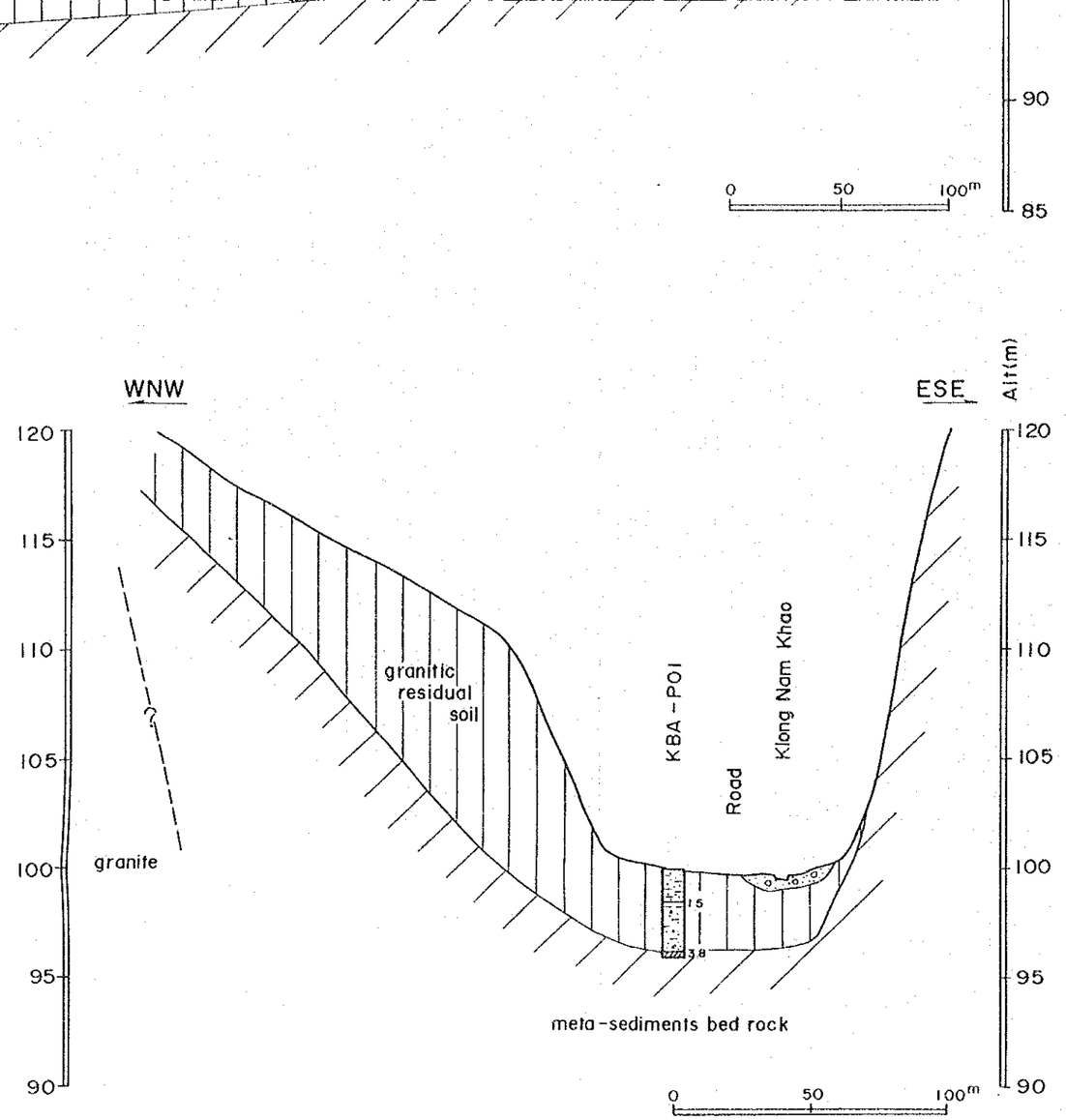

90
85
granitic residual soil
meta-sedimets bed rock

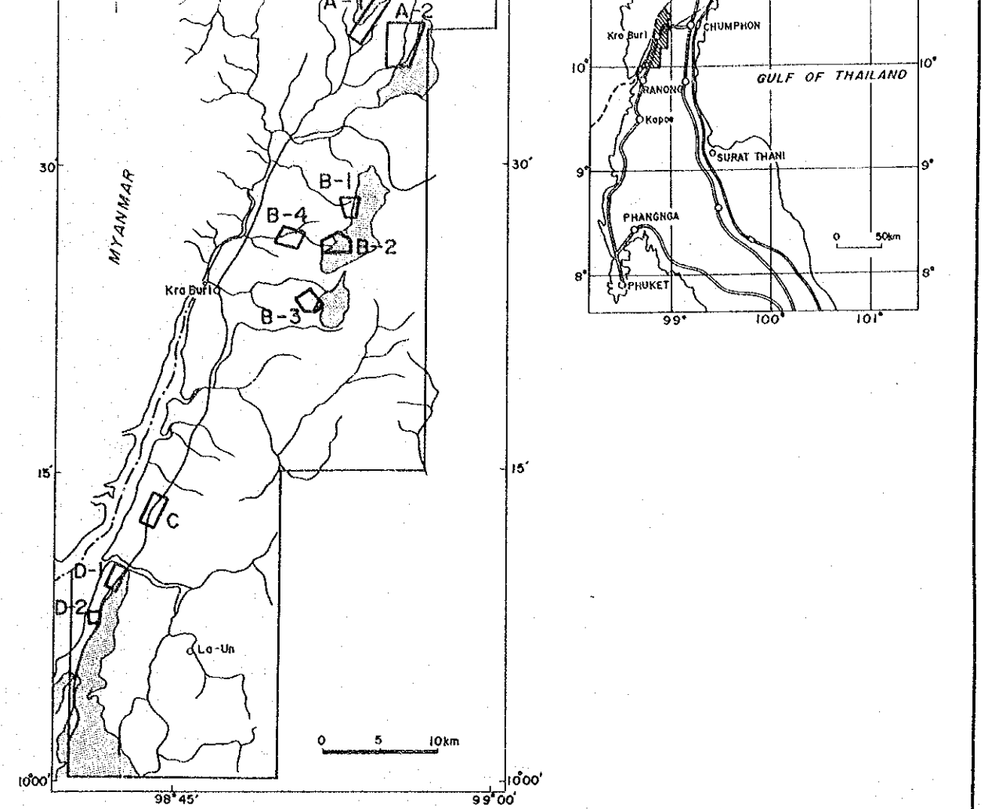

WNW
120
115
110
105
100
granite


WNW
105
100
95
90
85
80
75
KBA-P04
KBA-P11
ROAD
granitic residual soil
debris
gravel and sand
meta-sediments bed

ESE
105
100
95
90
85
80
75
Khlong Nam Khao
0
50
100 m


WNW
ESE
Alt.(m)
120
115
110
105
100
95
90
0
50
100m
granitic residual soil
meta-sediments bed rock
granite
Klong Nam Khao
Road
KBA-P01
debris
gravel and sand
KBA-P11
85
75
80





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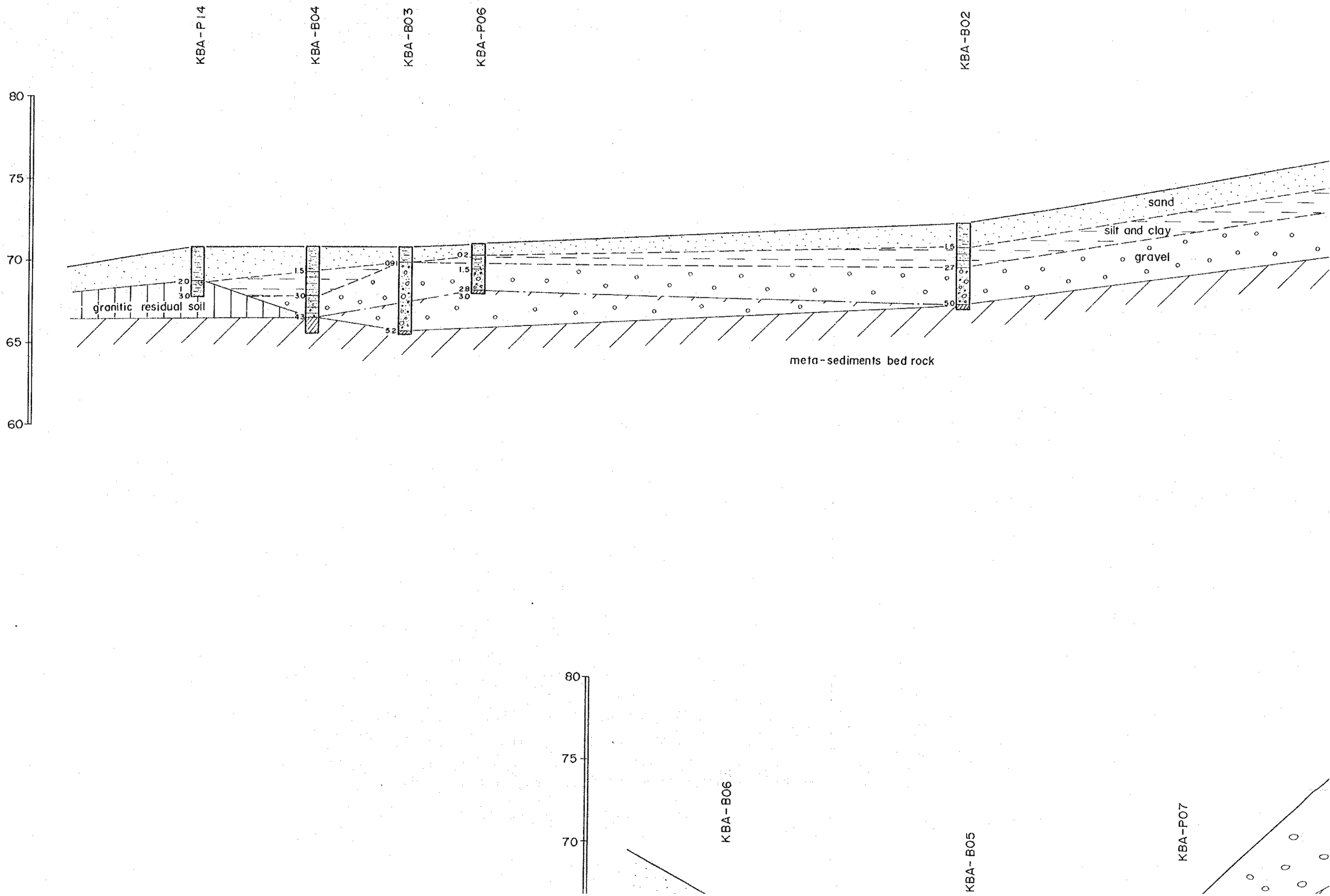
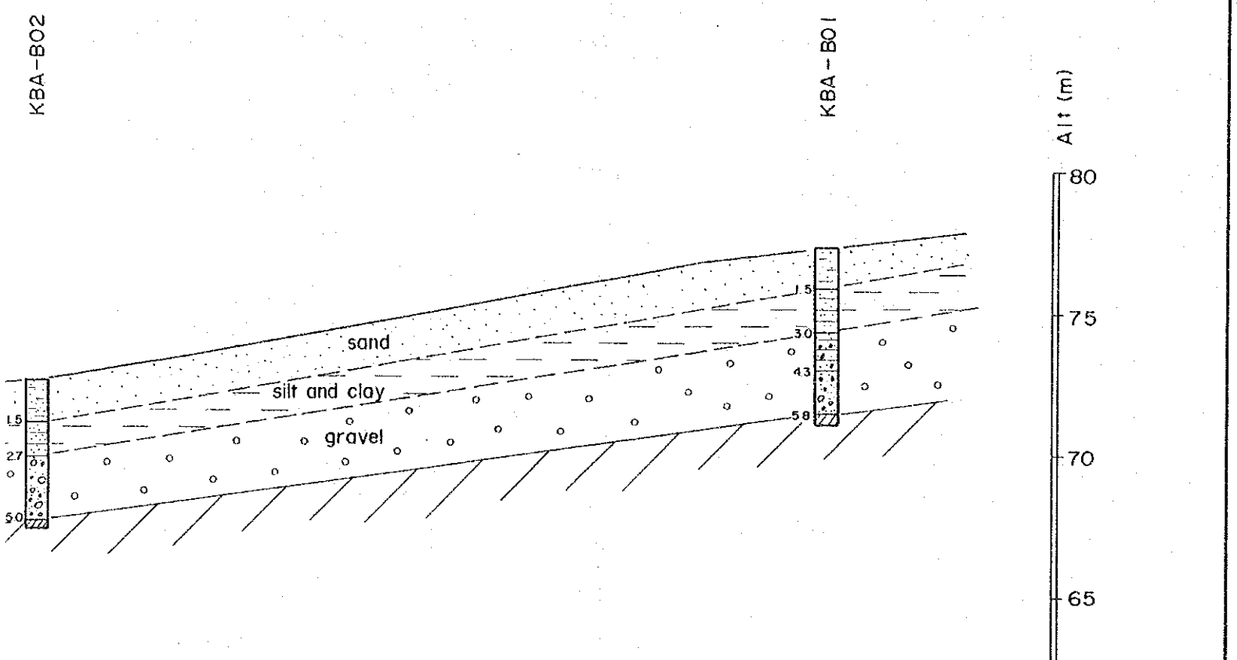
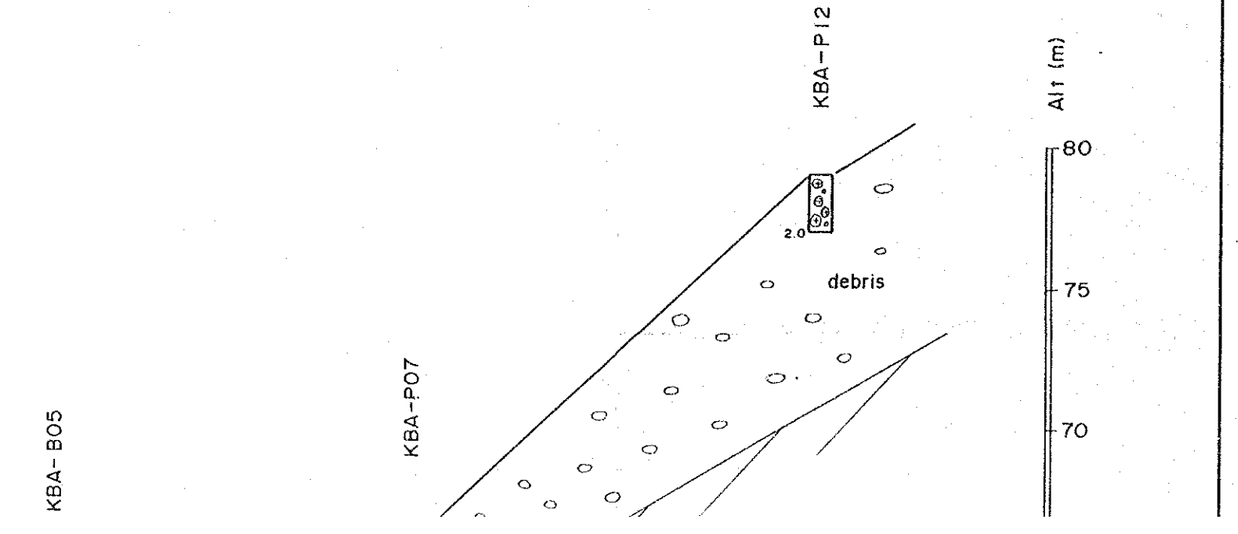

KBA-P14
KBA-B04
KBA-B03
KBA-P06
KBA-B02
80
75
70
65
60
granitic residual soil
sand
silt and clay
gravel
meta-sediments bed rock
KBA-B06
KBA-B05
KBA-P07

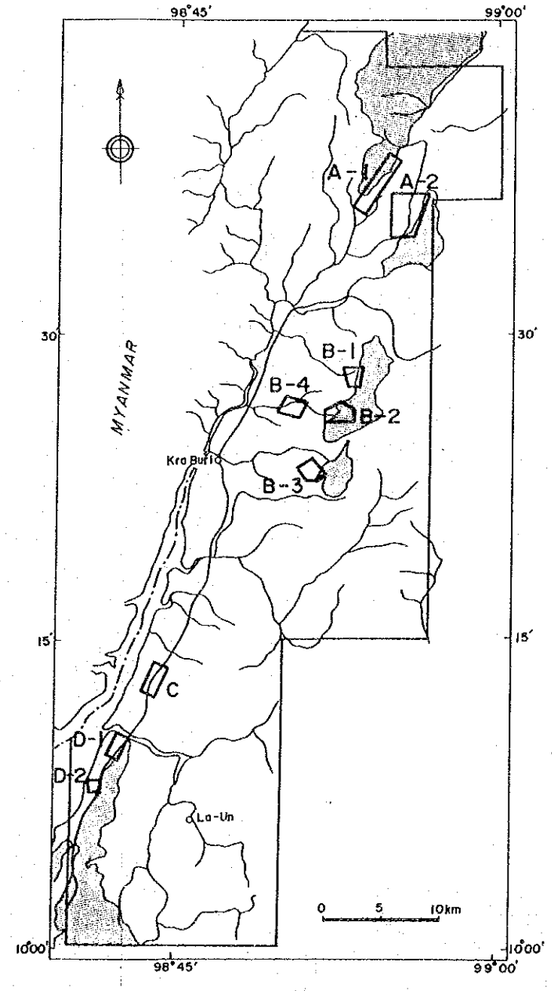


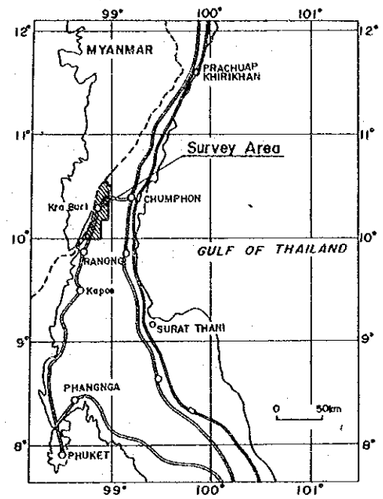


PL-4

MINERAL EXPLORATION
OF
THE KRA BURI AREA, THAILAND
PHASE III

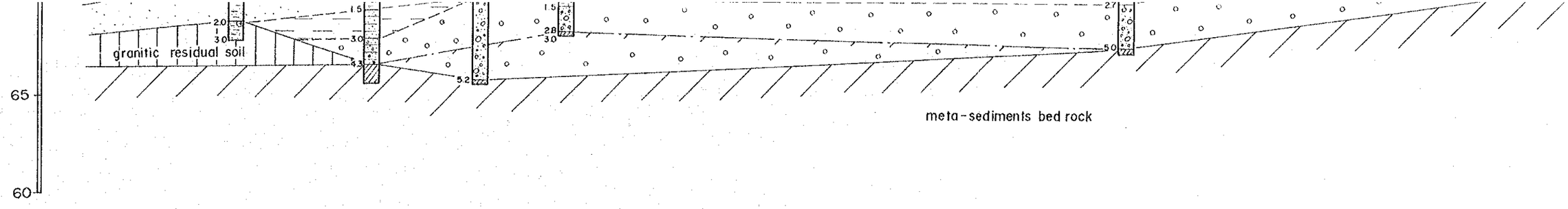
GEOLOGIC PROFILE IN AREA A-1(2)

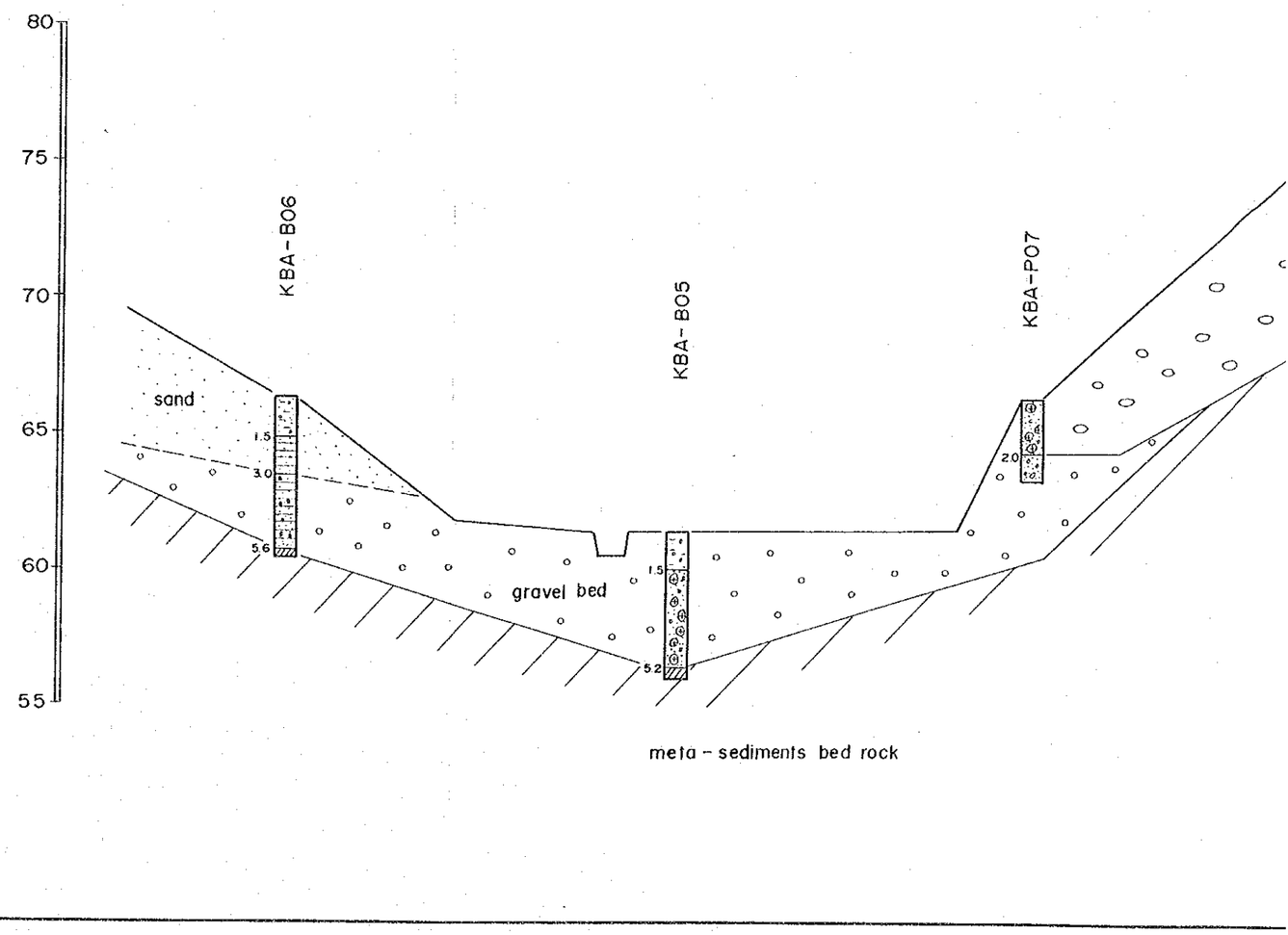


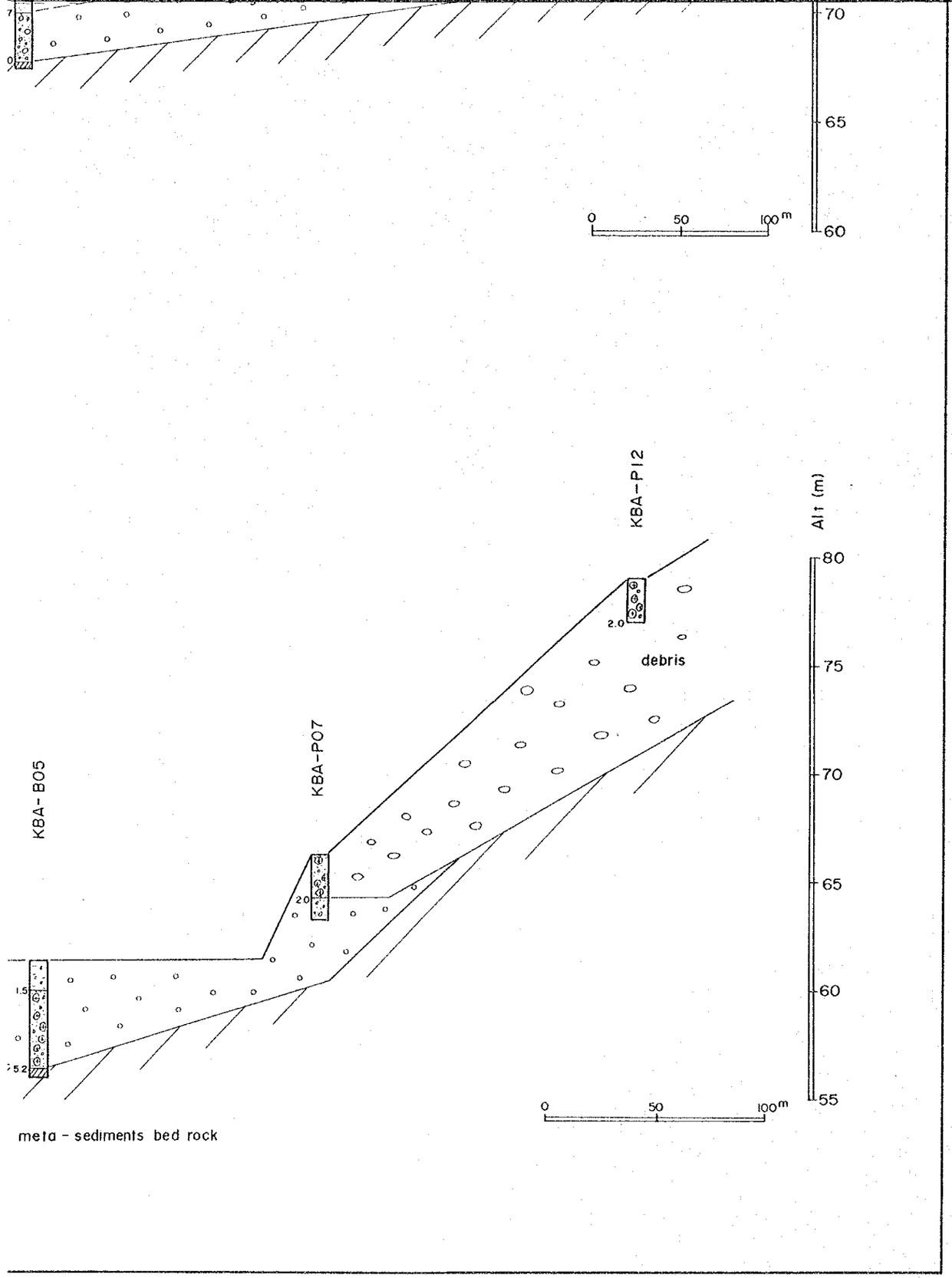


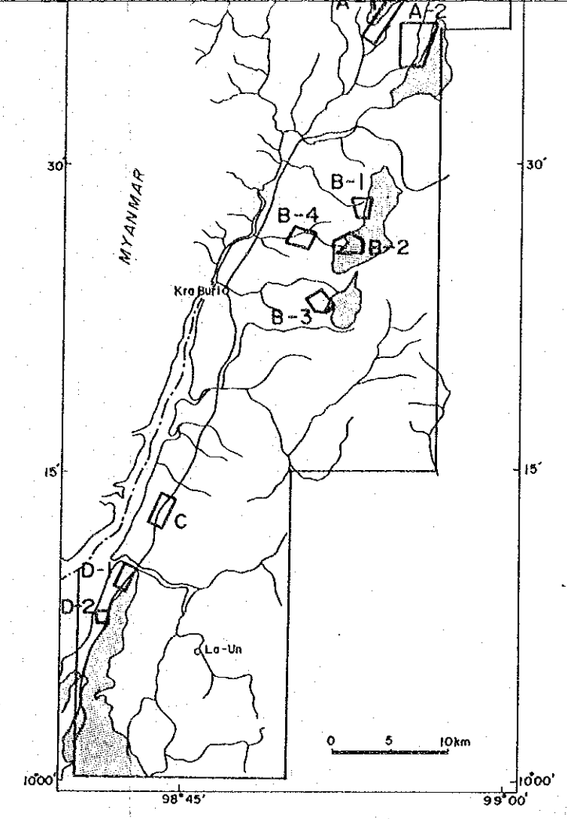
JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN

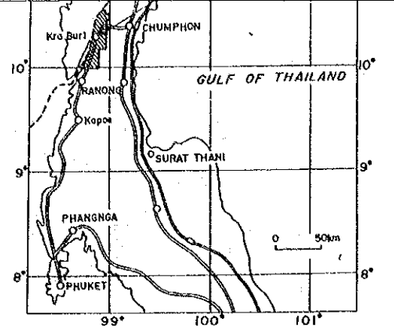
Nov. 1993


65
60
granitic residual soil
meta-sediments bed rock


80
75
70
65
60
55
KBA-B06
KBA-B05
KBA-P07
sand
gravel bed
meta-sediments bed rock







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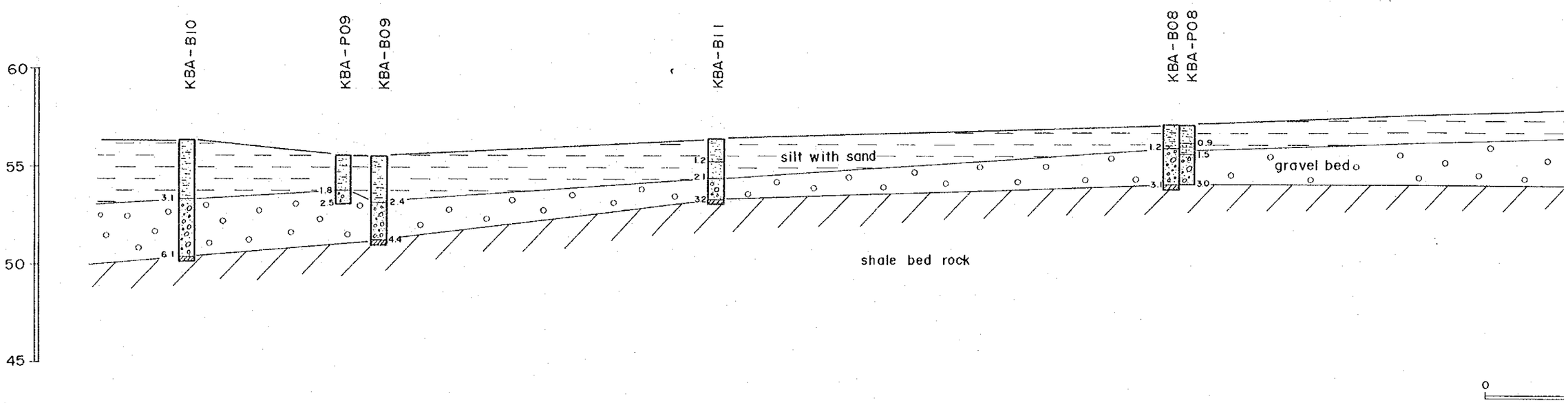
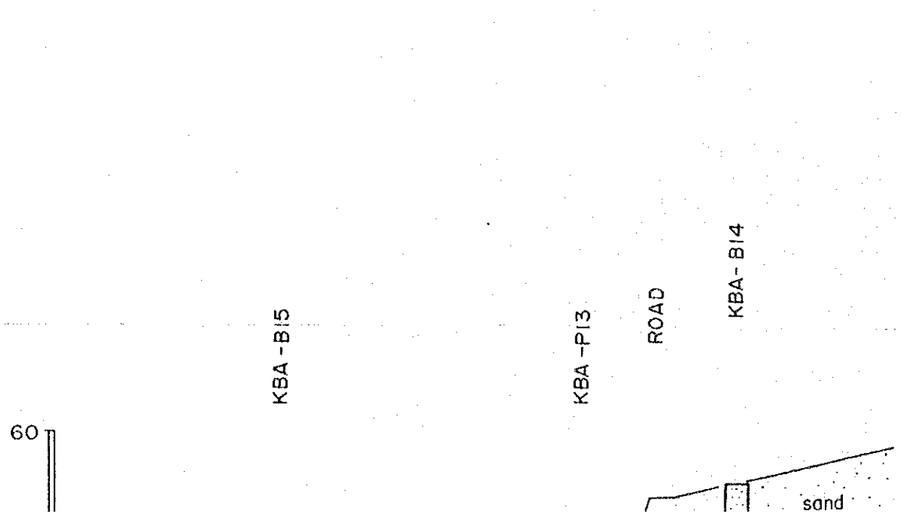
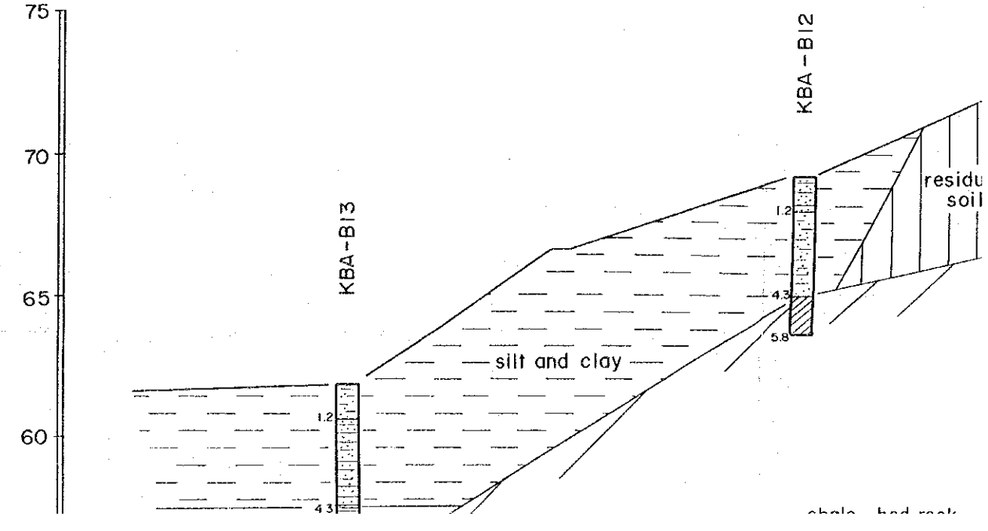
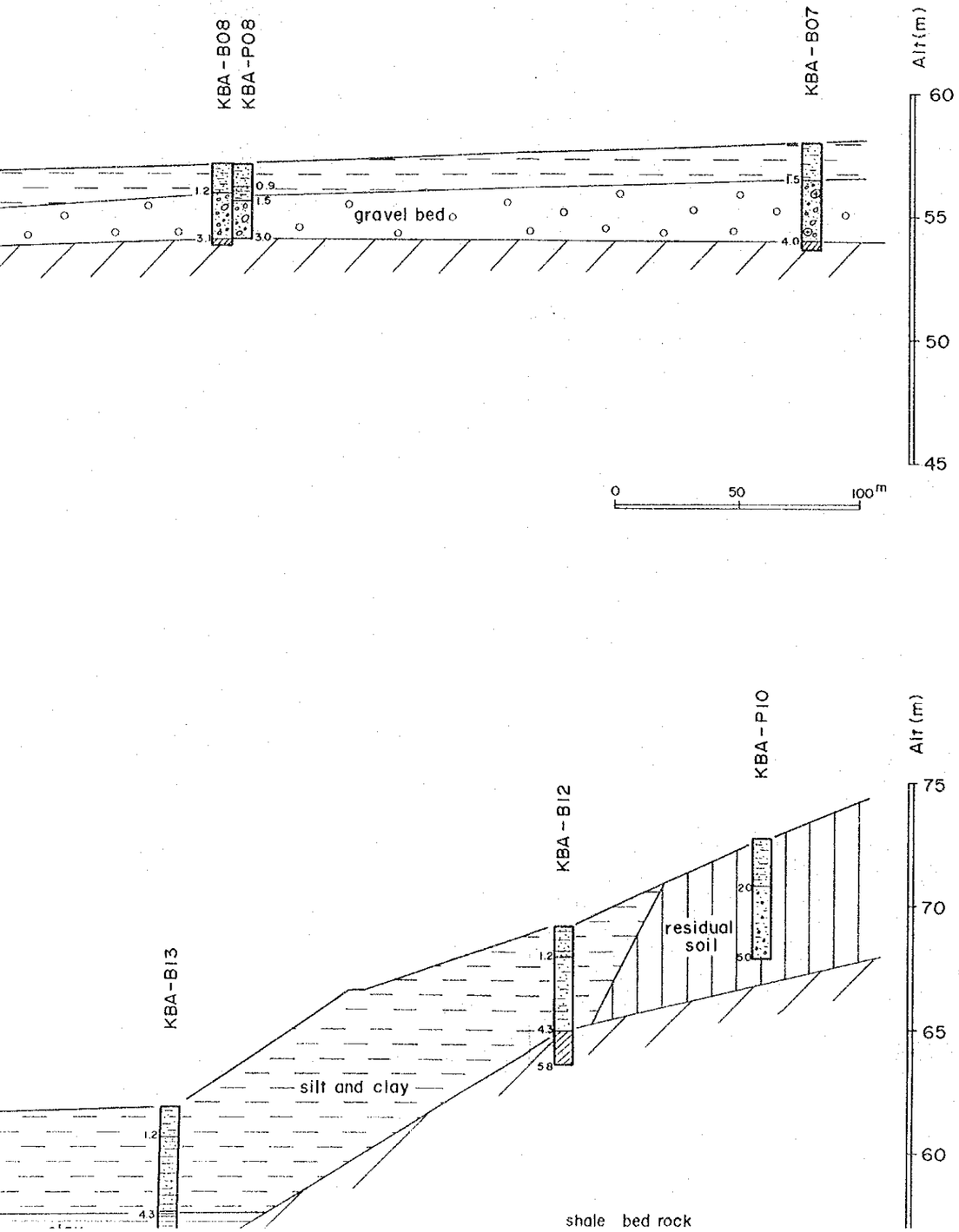
METAL MINING AGENCY OF JAPAN

Nov. 1993


60
55
50
45
KBA-B10
KBA-P09
KBA-B09
KBA-B11
KBA-B08
KBA-P08
3.1
1.8
2.5
2.4
6.1
4.4
1.2
2.1
3.2
silt with sand
1.2
3.1
0.9
1.5
3.0
gravel bed
shale bed rock
0


KBA-B15
60
KBA-P13
ROAD
KBA-B14
Alt (m)
60
sand

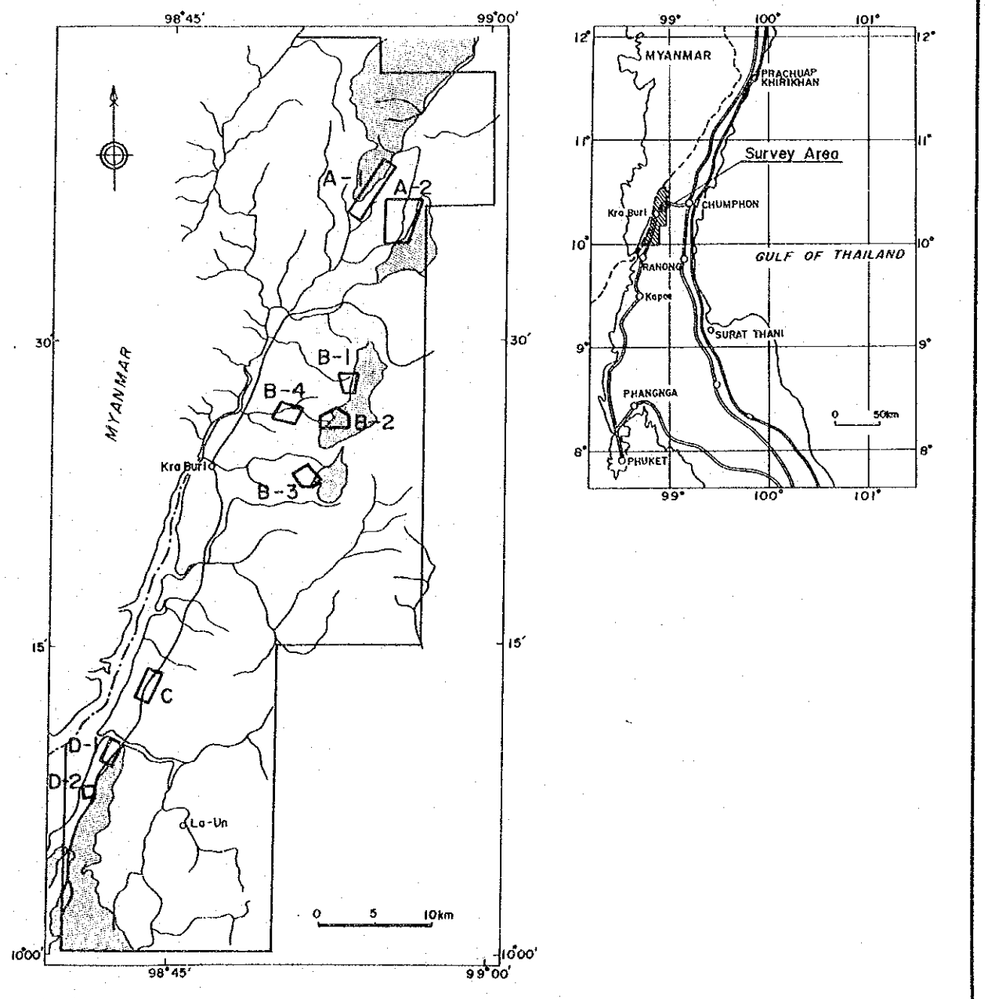

75
70
65
60
KBA-B12
KBA-B13
1.2
4.3
5.8
silt and clay
1.2
4.3
residu
soil



PL-5

MINERAL EXPLORATION
OF
THE KRA BURI AREA, THAILAND
PHASE III

GEOLOGIC PROFILE IN AREA A-1(3)



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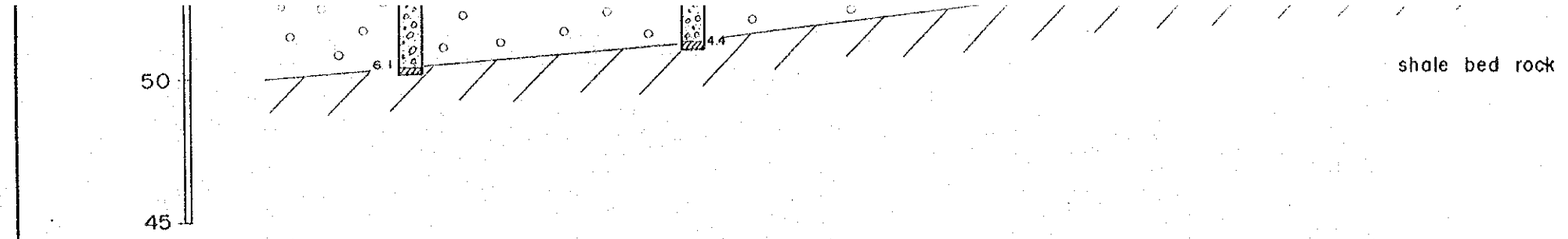
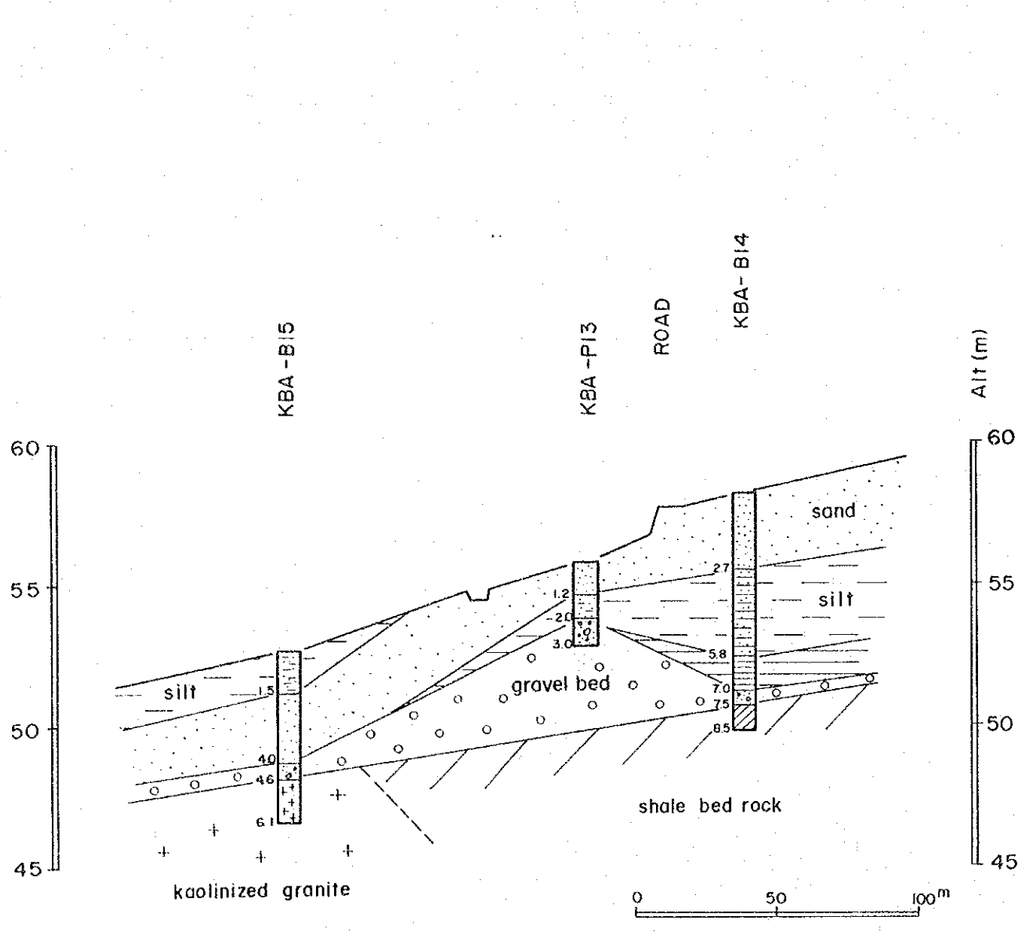
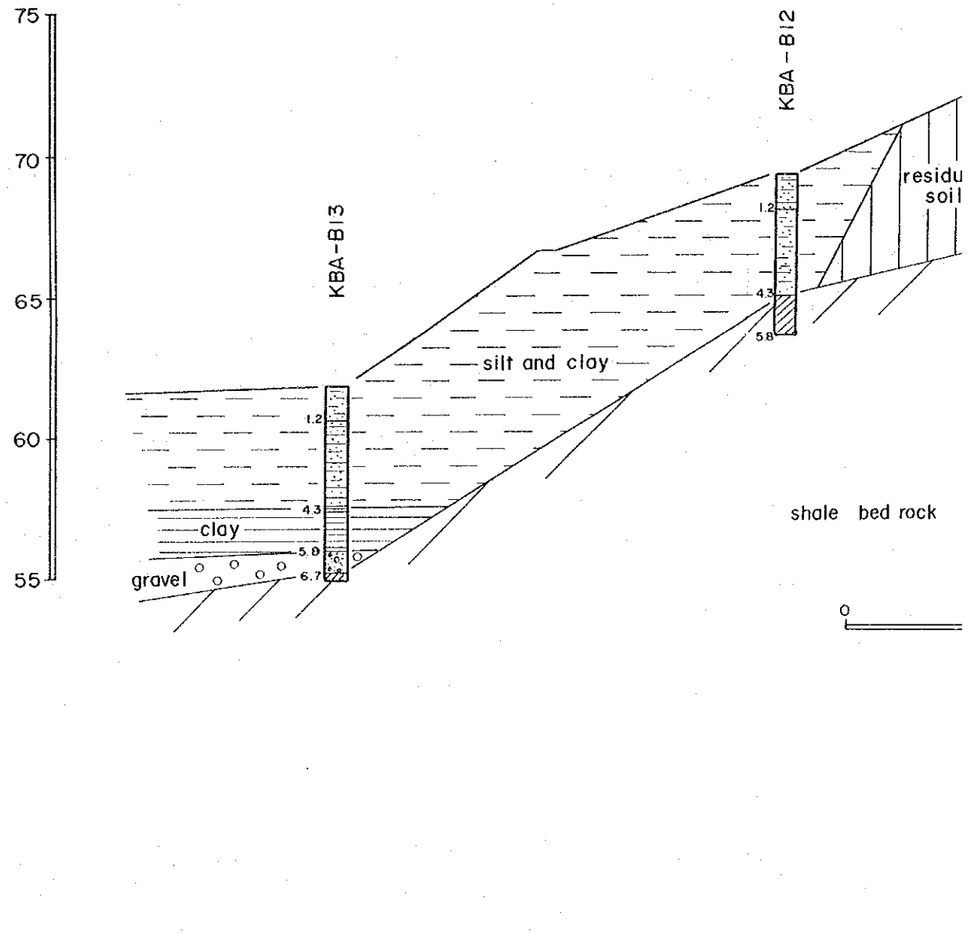
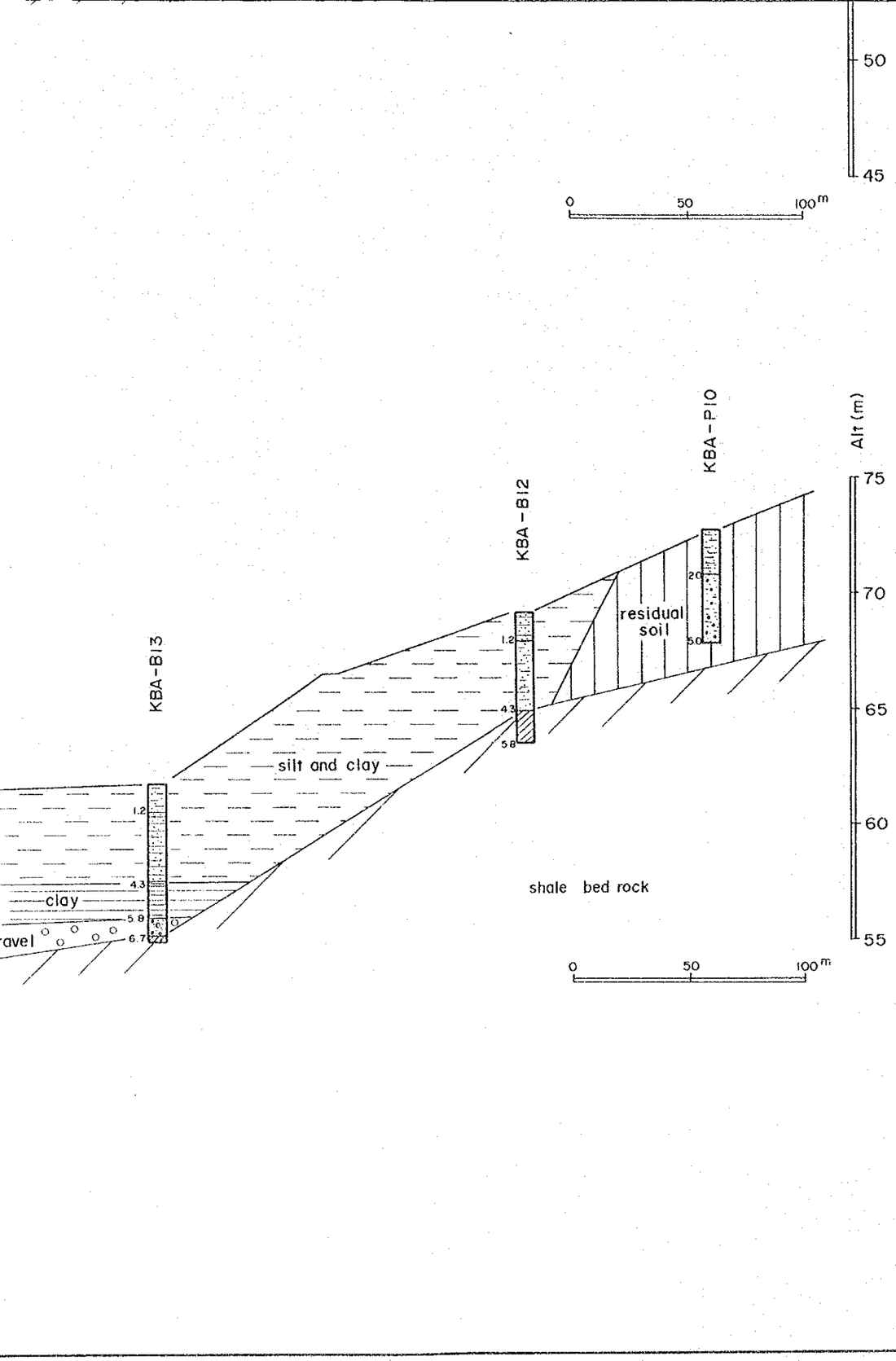
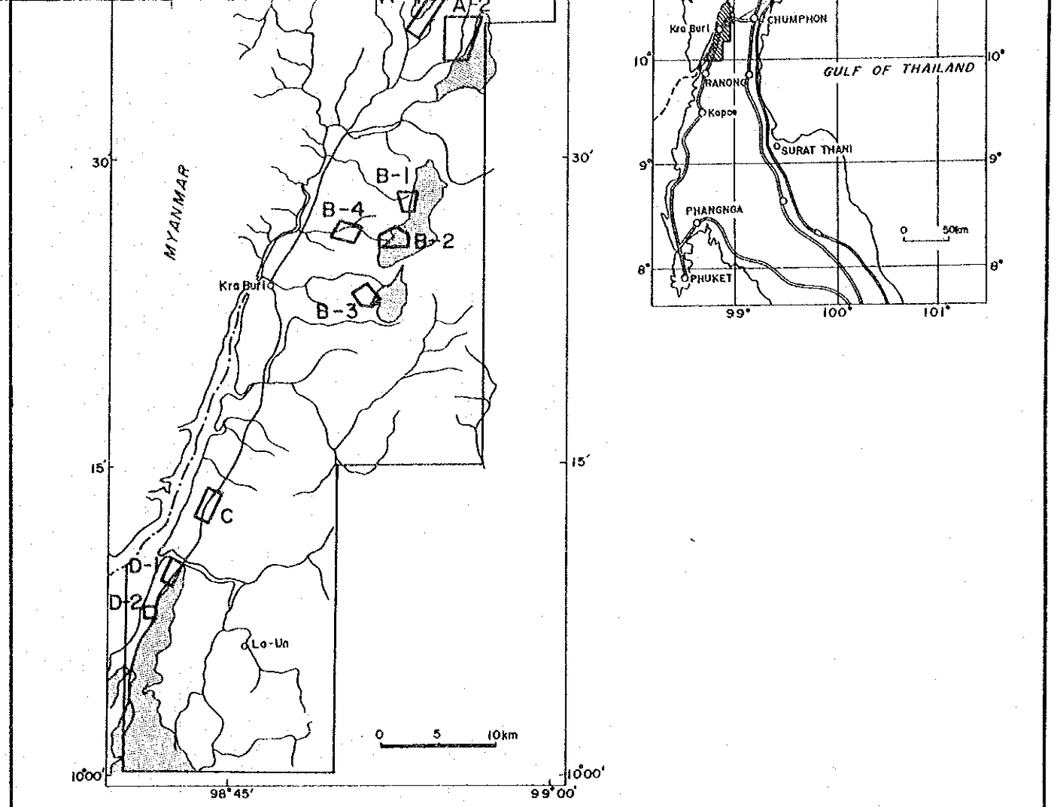

50
45
6.1
4.4
shale bed rock


KBA-B15
KBA-P13
ROAD
KBA-B14
Alt (m)
60
55
50
45
silt
1.5
4.0
4.6
6.1
gravel bed
1.2
2.0
3.0
2.7
5.8
7.0
7.5
8.5
sand
silt
kaolinized granite
shale bed rock
0
50
100m


75
70
65
60
55
KBA-B13
KBA-B12
residu
soil
silt and clay
1.2
4.3
5.8
clay
5.0
6.7
gravel
shale bed rock
0





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SE

NW

Route 4

KBD-01

KBD-02

KBD-03

KBD-04

KBD-05

Alt (m)

10

5

0

-5

-10

-15

residual soil

altered granite

sand

clay

gravel

silt and clay

clay

sandy silt

5.5

10.4

10.7

4.6

5.8

7.3

8.8

10.4

14.3

11.9

13.0

12.5

0 50 100m

SW

NE

KBD-06

KBD-04

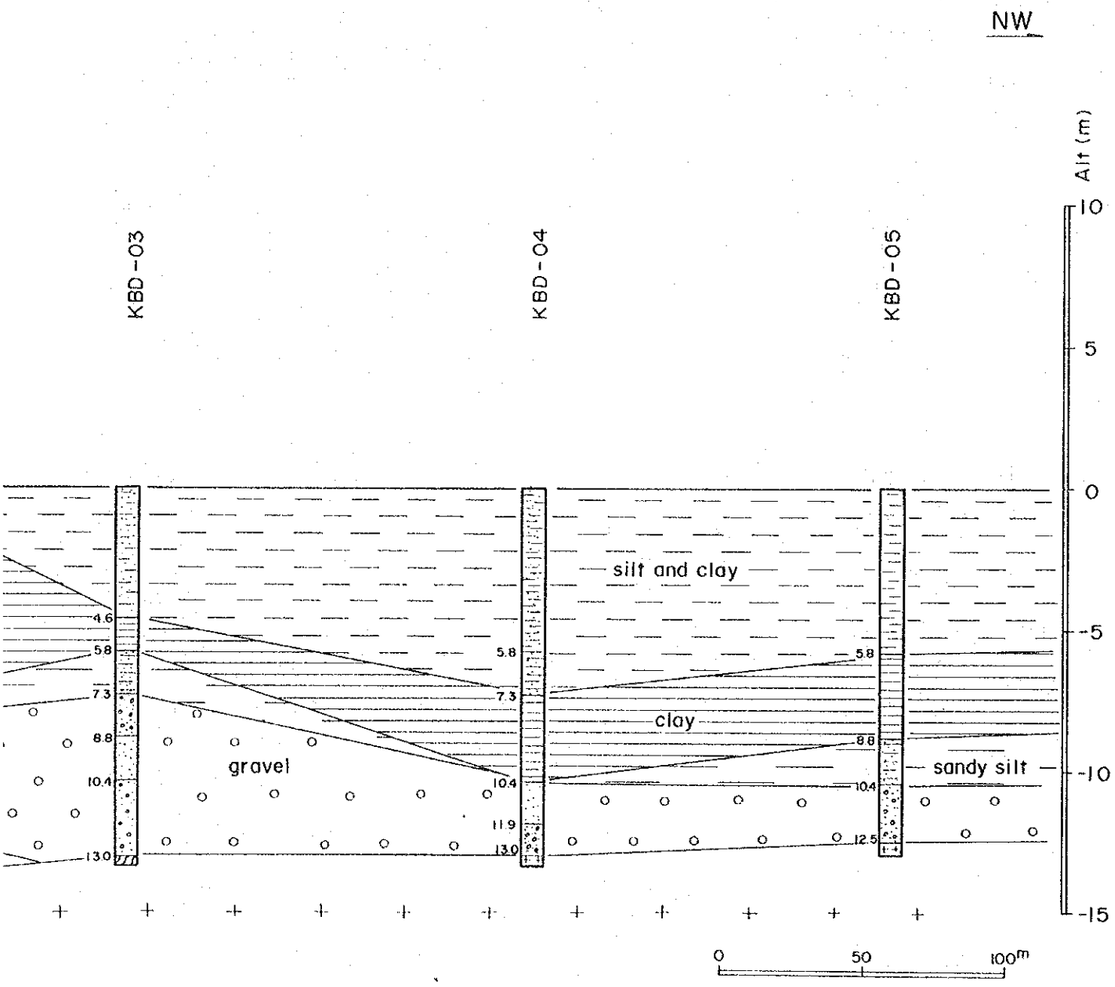
KBD-07

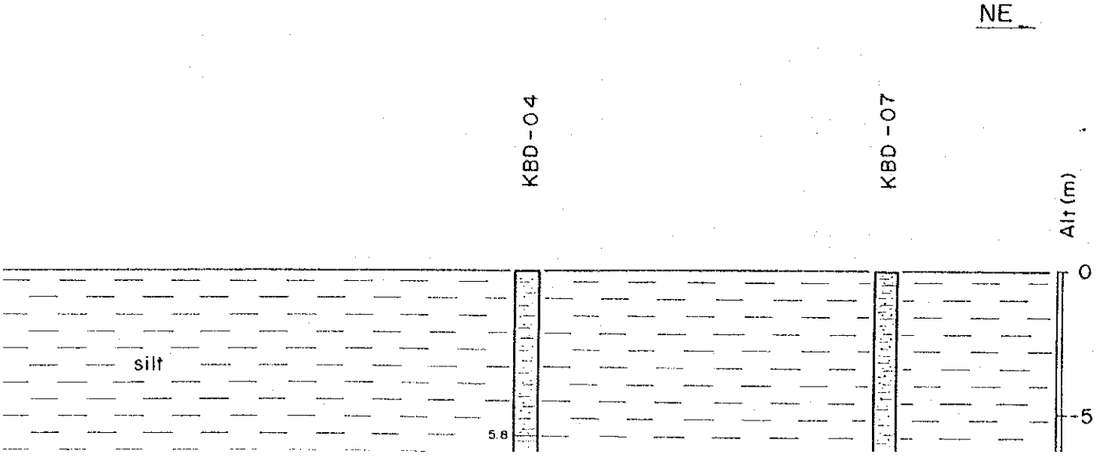
Alt (m)

0

-5

silt

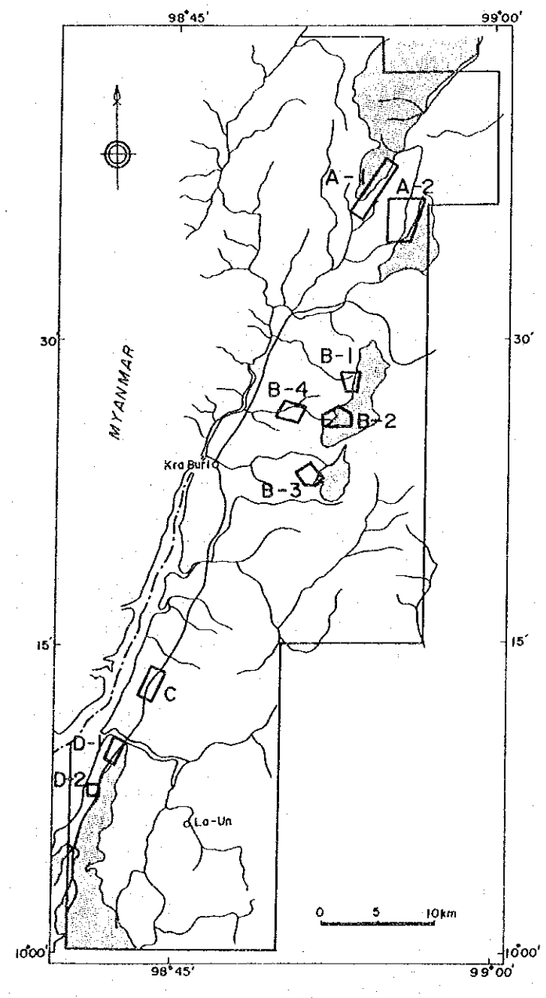


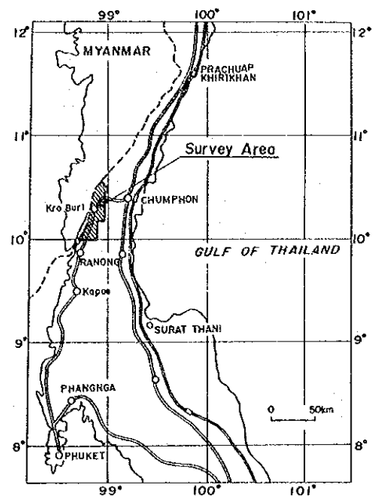


PL-6

MINERAL EXPLORATION
OF
THE KRA BURI AREA, THAILAND
PHASE Ⅲ

GEOLOGIC PROFILE IN AREA D-1(1)





JAPAN INTERNATIONAL COOPERATION AGENCY
METAL MINING AGENCY OF JAPAN

Nov. 1993