

資料 2.4.1.3-1 対象地域の地形・地質

1. 地 形

対象地域は、ルソン島中央盆地の西側を南北に走る Zambales 山脈の西縁に位置している。(図1参照) Nayan 川は Zambales 山脈の分水界から西流し、Infanta 南西方で南支那海に注いでいる。Nayan 川の右岸支流の San-Felipe 川が本計画の対象河川である。すなわち、San-Felipe 川が Zambales 山脈の山地から丘陵地に移る位置にダムサイトを計画し、その上流をダム流域とし、その面積は23.6km²である。ダム流域を画す

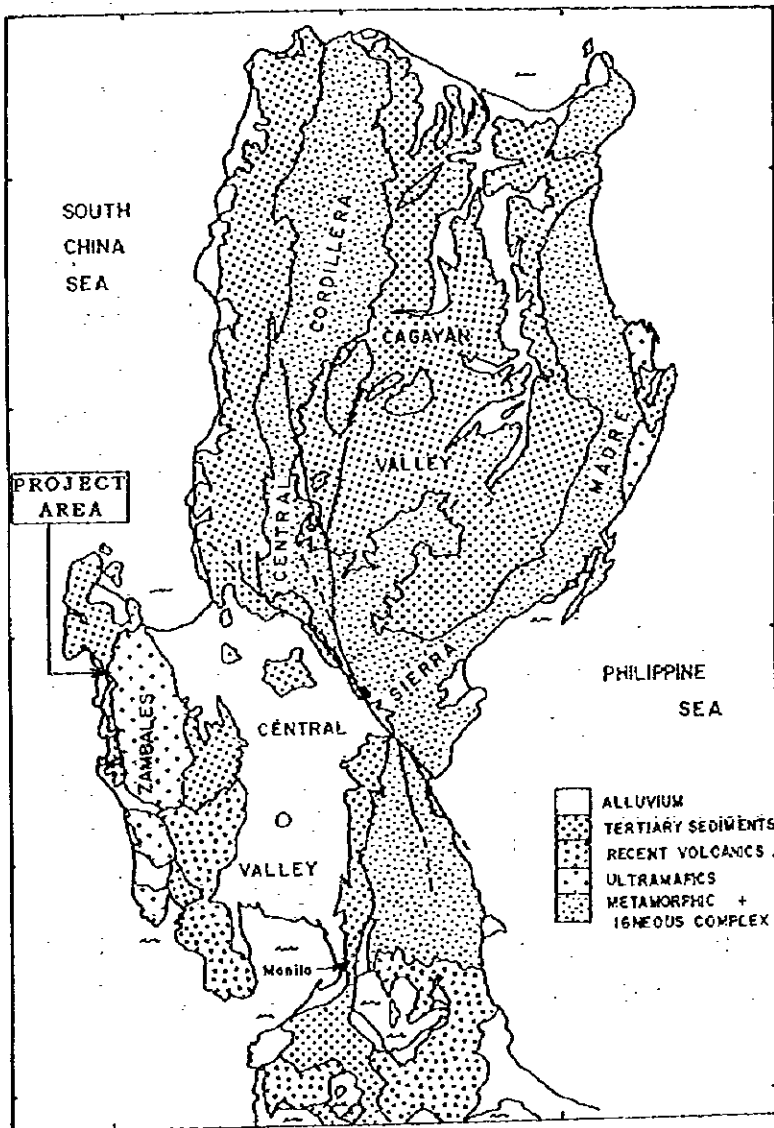


図 1 Geological reference map of Luzon (quoted from E. B. Geary et al., 1983).

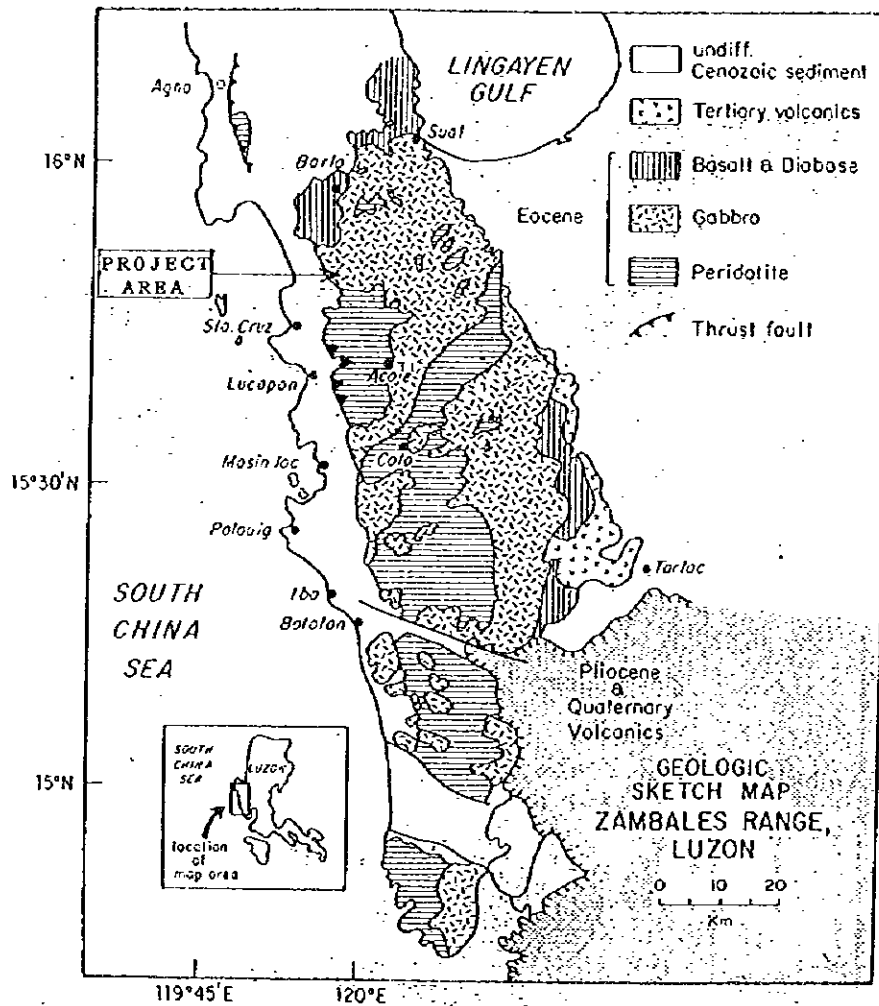
る分水界は、標高 100~300m の山地で構成され、ダムサイト東方の Mt. Nangradin (標高 310m) も含まれている。その山地の傾斜は一般に緩く、そのダム流域の上流部の地形は侵食輪廻の老年期を示し、準平原化している。それ故、San-Felipe 川の上流部の河川勾配は緩く約 1/110 である。ダム流域の地形から判断すると、Zambales 山脈の隆起量は、ルソン中央谷盆地の東側の急峻な Central Cordillera 山脈や Sierra Madre 山脈に比較して、小さいものと推定される。

2. 地 質

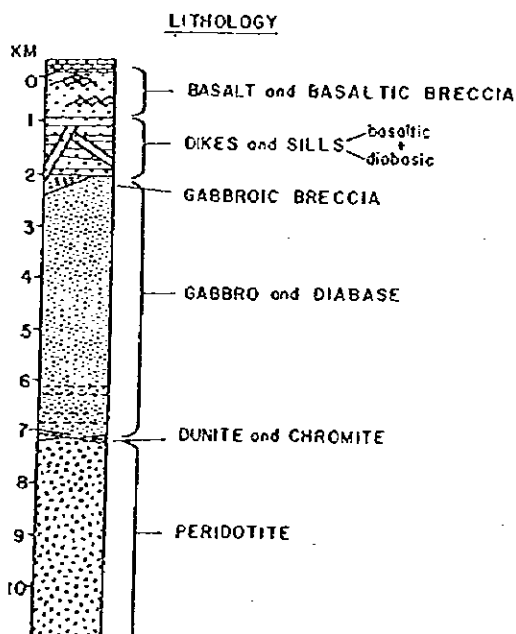
当地域から東方の Zambales 山脈は 図 1 及び 図 2 に示すように、主として Ophiolite (オフェオライト) である塩基性及び超塩基性の火成岩で構成される。Ophiolite は白亜期~古第三紀始新世の海洋底での火成活動により生じたもので、海洋底での海成堆積物及び玄武岩質枕状溶岩(噴出岩)、玄武岩質~輝緑岩質の岩脈及び岩床(半深成岩)、斑れい岩~輝緑岩(塩基性深成岩)及びかんらん岩(超塩基性深成岩)からなる。図 3 で示される Ophiolite の塩基性及び超塩基性岩の断面は、海洋地殻と上部マントルを形成すると推定される岩石の典型的なモデルである。図 4 に示される当地域周辺の地質について、このモデルを当てはめると、その北西側の玄武岩質枕状溶岩は海洋底表面の岩相を示し、その南東側の斑れい岩~輝緑岩は海洋地殻の、また、かんらん岩は上部マントルの深い岩相を示している。斑れい岩~輝緑岩の分布するダム流域は、このモデル(図 3)にもとづいて、海洋底下深度 2~3km の海洋地殻に相当するものと考えられる。

その後、第三紀漸新世~中新世に、石英閃緑岩がこれらの Ophiolite 中に貫入し、San-Felipe 川流域の北西に隣接する Bayambang 川流域において、1.5×2.5km 規模の岩株として露出している。San-Felipe 川流域における斑れい岩中の石英脈は、第三紀漸新世~中新世の石英閃緑岩の火成活動によって生成されたものである。石英脈を伴う斑れい岩は、上述の火成活動と関係のある熱水変質作用によって、しばしば、珪化、緑泥石化及び粘土化している。すなわち、網状石英脈をもつ斑れい岩は、ダム予定地において珪化作用及び緑泥石化作用によって硬質な岩石に変わり、そして、白色粘土採掘場では粘土化作用によって白色粘土(恐らくカオリン鉱物を含む)に変わっている。

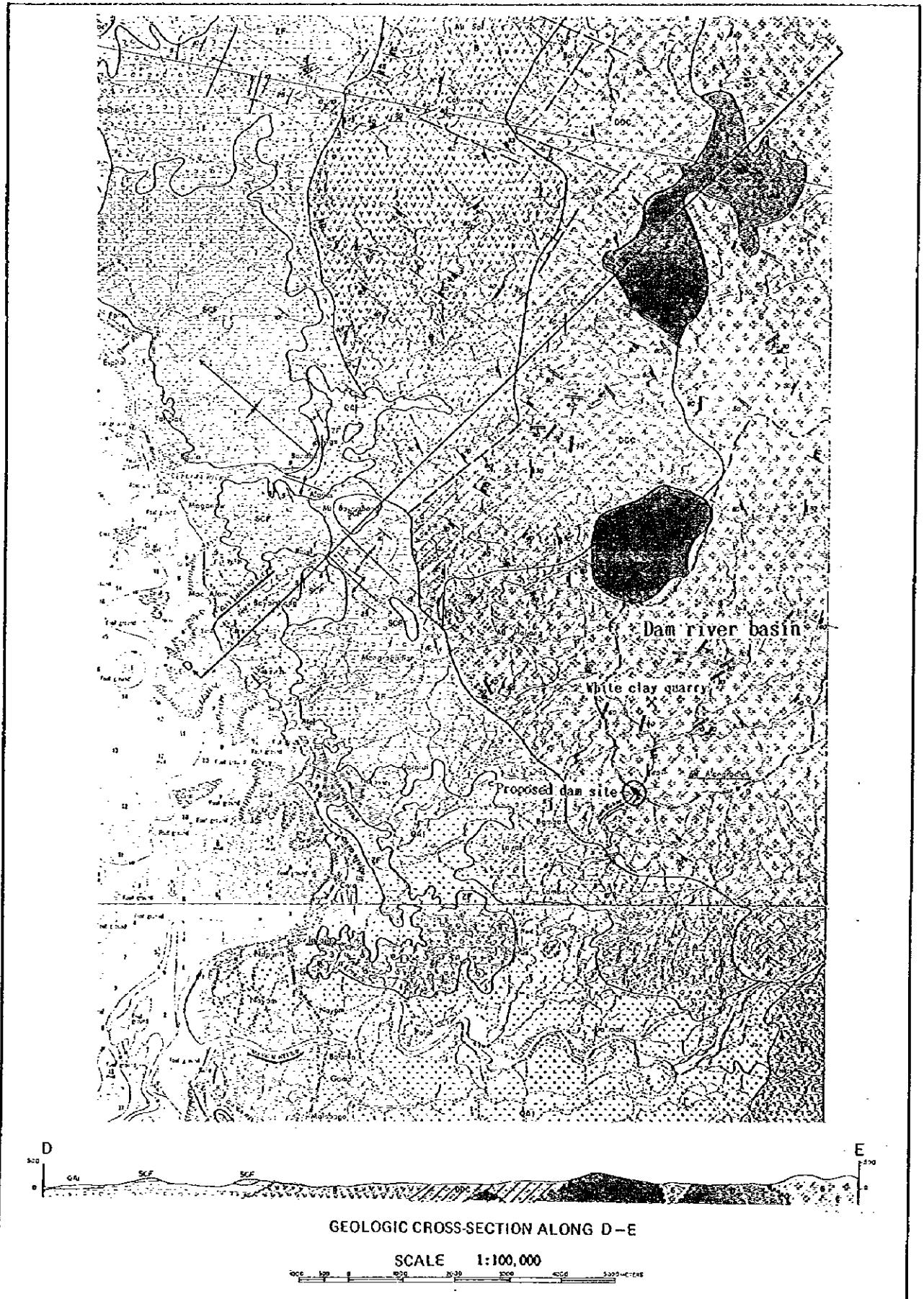
斑れい岩からなる山地の南西に位置する丘陵地は、浅海成堆積層である粘土岩、シルト岩、砂岩、礫岩及び石灰岩層から構成される新第三紀中新世の Zambales 層群からなる。同層群の石灰質シルト岩層が当地区 Bambam 部落から入植予定地にいたる区域に広く露出している。(厚さ 10m 以上の石灰質シルト岩層をボーリング MBH-1 及び



2 Generalized geological map of Zambales Range based on the Geological map of the Philippines, mapping by the Philippines Bureau of Mines (quoted from James W. Hawkins et al., 1983).



3 Stratigraphic column of the Zambales ophiolite (igneous units). Thickness of the different unit are only approximate. (Quoted from E. E. Geary et al., 1983)

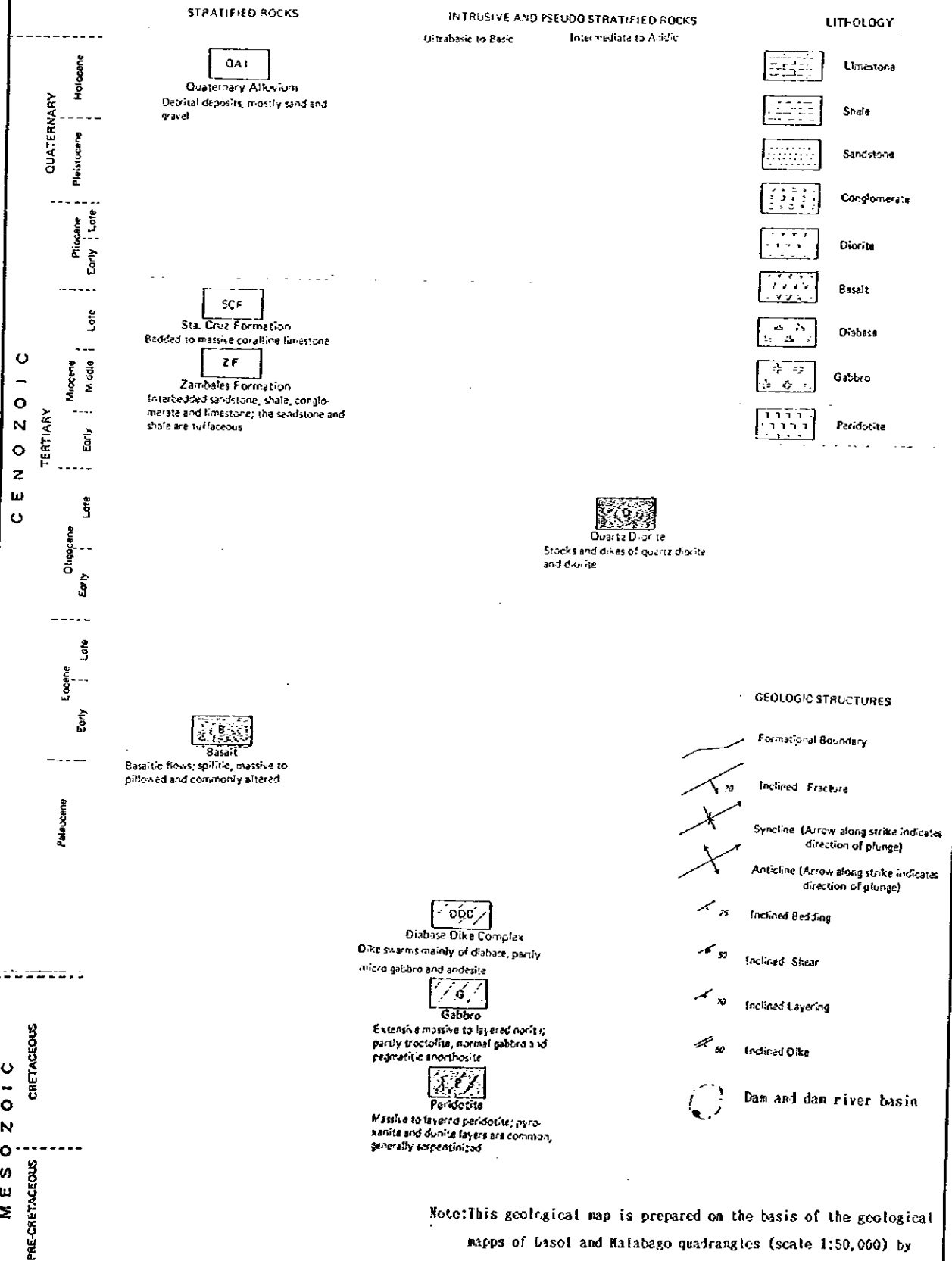


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図4 対象地域地質図

EXPLANATION

STRATIGRAPHY:



Note: This geological map is prepared on the basis of the geological maps of Lasol and Malabago quadrangles (scale 1:50,000) by Philippine Bureau of Mines and Geo-Sciences.

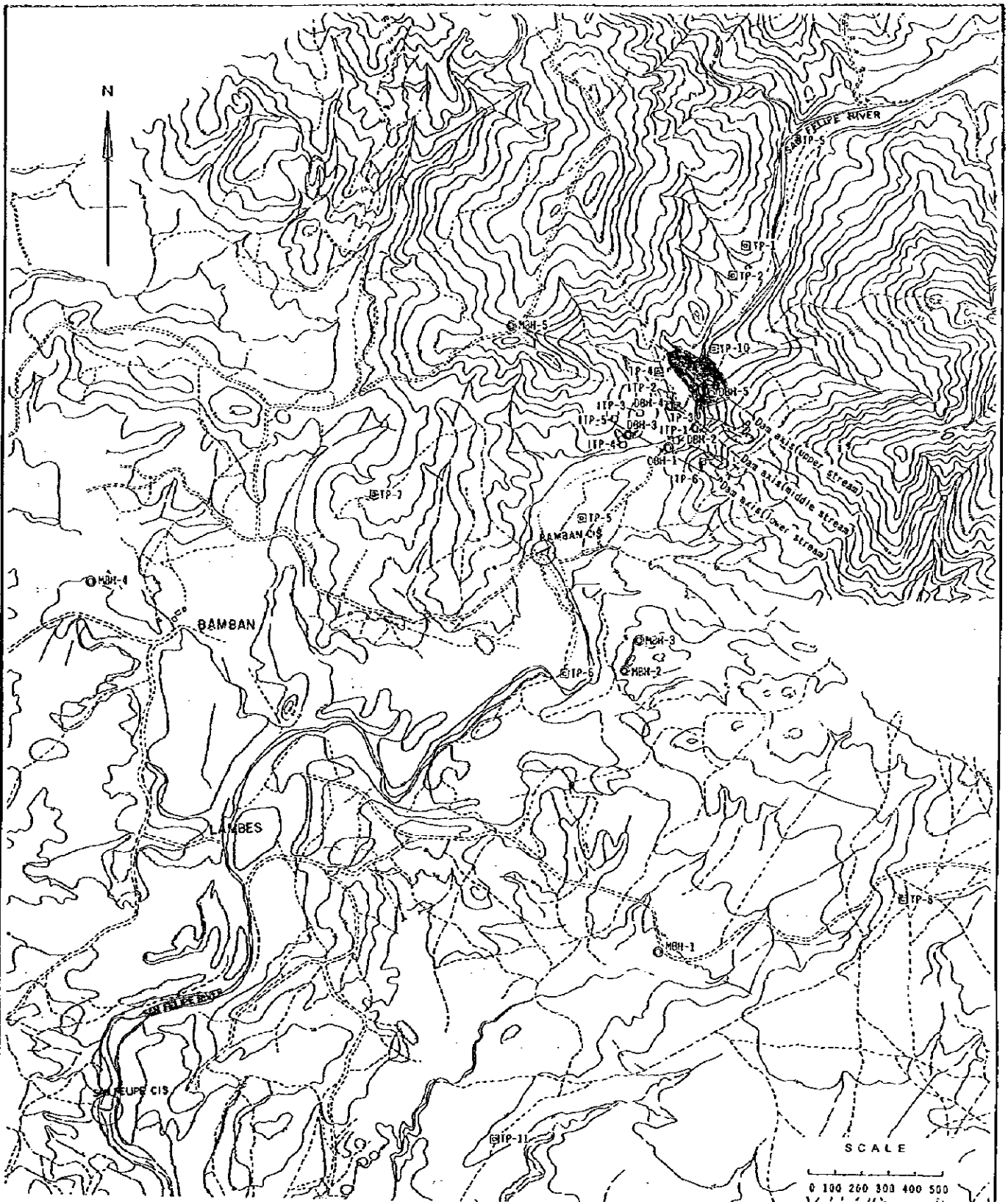
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図 4 対象地域地質図

MBH-4で確認)

第四紀更新世～完新世の河岸段丘堆積物と崩積土がSan-Felipe川沿いにみられ、また、崩積土は山地の南西山麓にもみられる。いずれも小規模で、河岸段丘は段差が小さい。また、第四紀完新世の現河床堆積物及び沖積扇状地堆積物もSan-Felipe川に沿って分布している。第四紀完新世の沖積層が、丘陵地と南支那海との間でNayom川、San-Felipe川、その他の河川に沿って広く発達している。

資料 2.4.1.3-2 ボーリング及びテストピット位置図




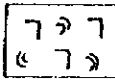
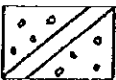
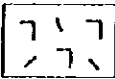

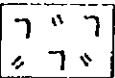
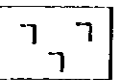
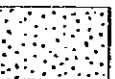
Explanation

- | | | | |
|-------|--|-------|---|
| DBH-1 | Bore hole at dam site by this investigation (1996) | IP-1 | Test pit by this investigation (1996) |
| MBH-1 | Bore hole for rock material by this investigation (1996) | IIP-1 | Test pit by previous investigation (1980) |
| | | | Proposed dam |
| | | | Proposed dam axis |

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資料 2.4.1.3-3 ボーリング柱状図、現地透水試験結果及びコア写真

Geological Explanation for Drilling Log

<u>Overburden</u>	<u>Basement rock</u>
 Oxidized residual zone (mainly red clay)	 Argillized gabbro (partly change to clay along fractures by weathering)
 Oxidized zone (brown clay, including rock fragments)	 Altered gabbro (mafic min- erals change to chlorite)
 Recent river deposits (gravel and sand)	 Silicified gabbro (sometime including quartz veinlets and networks)
	 Gabbro (its rock facies part- ly change to fine-gabbro, basalt and anorthosite)
	 Calcareous siltstone

Explanation for Drilling Log

Classification criteria for rock foundation of dam

See next Table

R Q D (Rock quality designation)

$$\frac{\text{Total length of cylindrical cores which are} \\ \text{[more longer than 10cm length at 1m stage (cm)]}}{100\text{cm}} \times 100(\%)$$

Maximum core length

Maximum core length at 1 m stages (cm).

Coefficient of permeability

Coefficient of permeability (k) by constant head test

Classification criteria for rock foundation of dam (by Tanaka)

Category	Characteristics
A	Very fresh rock, no weathering nor alteration observed in rock-formation minerals and particles. Fissures and joints are well closed and no weathering is observed on the planes thereof. Sound of hammering is metallic.
B	Very hard rock, well closed with no opened (even 1 mm) fissures or joints, and well closed. However, partial and slight weathering and alteration are observed. Sound of hammering is metallic.
C _H	Relatively hard rock, though rock-forming minerals and particles except quartz are weathered. Generally chemically compounded with limonite, etc. Cohesive strength at joints and fissures is slightly reduced. Rock fragments are flaked at joints by strong hit with hammer, and clayey material may be observed on the stripped face. Sound of hammering is slightly dull.
C _M	Rock, rock-forming minerals and particles except quartz are slightly softened by weathering. Cohesive strength at joints and fissures is slightly reduced. Rock fragments are flaked at joints by normal hit with hammer, and clayey material may be observed at the stripped face. Sound of hammering is slightly dull.
C _L	Rock, rock-forming minerals and particles are softened. Cohesive strength at joints and fissures are reduced. Rock fragment are flaked at joints by light hit with hammer, and clayey material is observed at stripped face. Sound of hammering is dull.
D	Rock, rock-forming minerals and particles are remarkably softened by weathering. Cohesive strength at joints and fissures is almost completely lost. Rock is easily destroyed by slight hit with hammer, and clayey material is observed at stripped face. Sound of hammering is very dull.

DRILLING LOG (DRILL HOLE NO. DBH-1)

THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. <u>DBH-1</u>	Location <u>Proposed dam site, San-Felipe River Bed</u>	Total Drilling Length <u>17.00 m</u>
Longitude _____	Drilling Term from <u>Oct. 10</u> up to <u>Oct. 18</u>	Total Core Length <u>9.60 m</u>
Latitude _____	Last Ground Water Level in Hole <u>0.65 m</u>	Total Core Recovery <u>56 %</u>
Collar Elevation <u>30.8 m</u>	Last Hole Diameter <u>10.0 cm</u>	Drilling Machine <u>THS-5</u>
Direction - Dip <u>90°</u>		Pump <u>BEAN ROYAL 525</u>

Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unite	Geologic Column	Core Description and Geological Observation	Classified Penetration Test (CPT) for Rock	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Depth (m)	Standard Penetration Test (SPT)			Diagram	Field Permeability Test	Depth (m)	Logeon Value	Coefficient of Permeability (cm ² /sec)	Ground Water Level in Hole (m)	Drilling Date				
														Blow Per Each Foot	Blow Per Meter	N - Value											
				Recent river deposit		Gravel bed in the San-Felipe river. Gravels, ranging from 1 to 5 cm in size, are composed mainly of gabbro, and partly of basalt. Most of those are fresh, hard and commonly rare of the alteration except the presence of iron stain.		0	6	30				0	1	0	20										
1				Dark gray (Gravel)				0	5	50				0	2	0	30										
2										0	4	55				0	3	0	40								
3										0	7	75				0	4	0	50								
4										0	5	80				0	5	0	60								
5										0	8	90				0	6	0	80								
6										0	7	90				0	7	0	90								
7		1.67								11	11	65					8	0	100								
8			No Core			Sandy sediment only. Core could not be collected. Small amount of the harder rock, detected by the S.P.T. seem to be indication of some pebbles in the sand.	D	0	0	0				9	0	0	0										
9								0	0	0				10	0	0	0										
10								0	0	0				11	0	0	0										
11								0	0	0				12	0	0	0										
12		2.00						0	7	65				13	0	7	65										
13			Dark Gray	Altered Gabbro		Black chloritized gabbro jointed and disseminated. Pyrite, slightly soft and craky.	C _a	23	12	90				14	0	12	90										
14		4.00						45	21	100				15	45	21	100										
15			Gray	Silicified Gabbro		Silicified gabbro, intersected by quartz veinlets and network. Those dip are 20°, 45° and 70°. Width are 0.2~1cm. Dip of joints are 20°, 40° and 70°. Some opening spaces are found along the joints, quartz veinlets and network. Pyrite dissemination are also found.	C _w	40	15	85				16	40	15	85										
16								35	12	85				17	35	12	85										
17		7.00												18													
18														19													
19														20													
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27														28													
28														29													
29														30													

DRILLING LOG (DRILL HOLE NO. DBH-2)

THE INFANTA INPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. DBH-2	Location Proposed dam site, San-Felipe River Bed	Total Drilling Length 20.00 m.
Longitude _____	Drilling from Oct. 20 up to Oct. 31	Total Core Length 15.25 m.
Latitude _____	Last Ground Water Level in Hole 1.00 m	Total Core Recovery 76 %
Collar Elevation 32.0 m	Last Hole Diameter 10.0 cm	Drilling Machine THS-5
Direction - Dip 90°		Pump BEAN ROYAL 525

Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unit	Geologic Column	Core Description and Geological Observation	Classification criteria for Rock Identification	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Standard Penetration Test				Diagram			Field Permeability Test		Ground Water Level in Hole (m)	Drilling Date										
													Depth (m)	Blows Per 30 cm	Blows / Total Penetration Length (cm)	R Value	R	Q	D	Max. Core Length (cm)	Core Recovery (CR) (%)			Depth (m)	Lugeon Value	Coefficient of Permeability							
1				Recent river deposit	D	Gravel bed in the San-Felipe river is made up of gravels and sands. Gravels are composed mainly of gabbro, and partly of basalt. Most of those are fresh, hard and commonly rare of the alteration except the presence of iron stains.		0	4	75																							
2									0	7	70																						
3									12	12	70																						
4			Dark gray (Gravel)						0	2	70																						
5									10	10	90																						
6									10	10	70																						
7									0	6	67																						
8									0	8	80																						
9									0	9	65																						
10	10.00								0	5	60																						
11				Altered Gabbro	C ₁	Green chloritized gabbro, including quartz veinlets and networks, are jointed and cracky. Some occurrences of the iron-stains are also present.		0	5	55																							
12			Dark Green						0	8	65																						
13									0	8	65																						
14	13.80						14	14	65																								
15	14.50			Silicified Gabbro	C ₂	Cracky silicified and chloritized gabbro, which also includes several quartz veinlets. Silicified and chloritized gabbro including the several millimeters to centimeters wide quartz veinlets, networks and patches of quartz. Their dips are 10°, 45°, 60° and 80°.		45	31	75																							
16			Gray						100	64	100																						
17	17.70						90	36	90																								
18	18.20		White	Qtz		Quartz vein, of which dip is about 60°.		100	50	100																							
19	19.00		Gray			Quartz vein dipping about 10°.		100	50	100																							
20	19.15		White					100	43	100																							
21	20.00		Gray																														
22	20.60																																
23																																	
24																																	
25																																	
26																																	
27																																	
28																																	
29																																	

DRILLING LOG (DRILL HOLE NO. DBH-3)

THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. DBH-3
 Longitude _____
 Latitude _____
 Collar Elevation 50.8 m
 Direction - Dip 90°

Location Right Bank at Dam site (Lower stream axis)
 Drilling Term from Oct. 28. upto Nov. 14.
 Last Ground Water Level in Hole 11.2 m
 Last Hole Diameter 10.0 cm

Total Drilling Length 20.00 m
 Total Core Length 1.82 m
 Total Core Recovery 9 %
 Drilling Machine ACKER
 Pump BEAN ROYAL 525

Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unit	Geologic Column	Core Description and Geological Observation	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Recovery (%)	Standard Penetration Test						Diagram			Field Permeability Test			Ground Water Level in Hole (m)	Drilling Date				
												Depth (m)	Blows Per 30 cm	10	20	30	40	50	60	70	80	90	100			Depth (m)	Lugeon Value	Coefficient of Per- meability (cm ² /sec)	
1			Reddish brown (clay)	Weathered gabbro		Reddish brown clay which is altered from gabbro due to the weathering processes.	0	0	0	0	0	0.50	6	6	7	19													
2		3.00	Yellowish to Reddish brown (clay)			Yellowish brown clay to Reddish brown clay.	0	0	0	0	0	1.50	7	6	7	20													
3							0	0	0	0	0	2.50	5	6	7	18													
4		4.50					0	0	0	0	0	3.50	5	7	8	20													
5						Yellowish brown clay including minor amount of the gabbro fragments	0	0	0	0	0	4.50	5	7	9	21													
6							0	0	0	0	0	5.50	10	14	14	38													
7							0	0	0	0	0	6.50	14	14	15	41													
8			Yellowish brown (clay)				0	0	0	0	0	7.50	14	17	17	48													
9							0	0	0	0	0	8.50	14	17	17	48													
10							0	0	0	0	0	9.50	28	22		50													
11		11.00		Gabbro		Cracky gabbro totally exclusion of the quartz veinlets. Some part of gabbro grading to the basaltic facies.	0	0	0	0	0	10.50																	1120M
12							0	3	15																				
13							0	2	15																				
14							0	4	20																				
15		15.00	Dark Gray			Slightly cracky gabbro without quartz veinlets	14	14	14																				
16							0	3	27																				
17							0	3	20																				
18							0	3	26																				
19							0	3	27																				
20		20.00					0	3	18																				

DRILLING LOG (DRILL HOLE NO. DBH-4)

THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. DBH-4
 Longitude _____
 Latitude _____
 Collar Elevation 44.9 m
 Direction · Dip 90°

Location Right Bank at Dam Site (Middle stream axis)
 Drilling Term from Nov. 1. upto Nov. 5
 Last Ground Water Level in Hole 10.45 m
 Last Hole Diameter 10.0 cm

Total Drilling Length 20.00 m
 Total Core Length 7.0 m.
 Total Core Recovery 35 %
 Drilling Machine THS-5
 Pump BEAN ROYAL 525

Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unit	Geologic Column	Core Description and Geological Observation	Classification Criteria for Rock Permeability	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Standard Penetration Test				Diagram				Field Permeability Test			Drilling Date			
													Depth (m)	Blow Per 30 cm	Blow Per Foot	Blow Per 100 Feet	R	Q	D	Max. Core Length (cm)	Core Recovery (CR)	Depth (m)	Lugeon Value		Coefficient of Per- meability (cm/s)	Ground Water Level in Hole (m)	
1			Red- dish brown (clay)	Weathered gabbro		Reddish brown clay, which encloses some of the gabbro blocks and fragments, is the final product of the original gabbro, after extensive weathering processes.		0	8	15	100	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
2		3.00						0	6	30	200	8	8	8	8	8	8	8	8	8	8	8	8	8	8		
3								0	3	35	250	5	6	6	6	6	6	6	6	6	6	6	6	6	6		
4			Yellow- ish brown			Yellowish brown clay including the argillized gabbro fragments.		0	0	0	350	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
5								0	0	0	450	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
6								0	0	0	500	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
7								0	0	0	550	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
8		8.00						0	0	0	600	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
9			Brown- ish gray	Argillized gabbro partly weathered		Argillized gabbro is dominated. Some of the fresh gabbro are partly included.		18	18	40	800	30	30	30	30	30	30	30	30	30	30	30	30	30	30		
10								0	7	20																	
11		11.00						0	0	0																	
12				Silicified gabbro		Cracky and silicified gabbro, including the numerous thin veinlets of quartz and the disseminating pyrite grains. The width of the quartz veinlets are 1 to 2 millimeters.		0	6	60																	
13								0	6	42																	
14								0	3	42																	
15			Dark gray					0	9	42																	
16		16.00				Silicified gabbro		0	6	50																	
17								10	10	70																	
18		17.65				Silicified gabbro including thin quartz veinlets, of which width are about 1 millimeter, and several quartz patches (1 centimeter x 1 centimeter).		50	20	85																	
19								62	20	87																	
20		20.00						56	18	85																	
21																											
22																											
23																											
24																											
25																											
26																											
27																											
28																											
29																											

DRILLING LOG (DRILL HOLE NO. DBH-5)

THE INFANTA IMPENDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. DBH-5
 Longitude _____
 Latitude _____
 Collar Elevation 49.8 m
 Direction - Dip 90°

Location Left Bank at Dam Site (Upper stream axis)
 Drilling Time from Nov. 8 up to Nov. 15
 Last Ground Water Level in Hole 10.00 m
 Last Hole Diameter 10.0 cm

Total Drilling Length 20.00 m
 Total Core Length 3.38 m
 Total Core Recovery 17.2%
 Drilling Machine THS-5
 Pump BEAN ROYAL 525

Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unit	Geologic Column	Core Description and Geological Observation	Classification Criteria for Rock Parameters	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Standard Penetration Test						Diagram				Field Permeability Test			Drilling Date									
													Blow Per 30cm	Blow Per 10cm	Blow Per 30cm	Blow Per 10cm	Blow Per 30cm	Blow Per 10cm	R	Q	D	Max. Core Length (cm)	Core Recovery (CR) (%)	Depth (m)	Lugeon Value		Coefficient of Per- meability (cm ² /s)	Ground Water Level in Hole (m)							
1				Weathered gabbro		Reddish brown clay, which is the weathered gabbro.		0	0	0	0	0	0.50	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
2			Red- dish brown (clay)				D	0	0	0	0	0	1.50	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2							
3							D	0	0	0	0	0	2.00	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3							
4							D	0	0	0	0	0	2.50	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3							
5							D	0	0	0	0	0	3.00	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4							
6		6.00					D	0	0	0	0	0	3.50	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4							
7				Gabbro		Fresh gabbro, probably a big remaining block, which may have been rather resistant from the weathering processes.	Cu	0	8	55			4.00	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4							
8		8.00	Dark gray				Cu	0	3	60			4.50	4	4	4	4	4	4	4	4	4	4	4	4	4	4								
9			Red- dish brown	Weathered gabbro		Reddish brown clay which also, is the weathered gabbro.	D	0	0	0			5.00	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8							
10							D	0	0	0			5.50	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8							
11		11.00					D	0	0	0			6.00	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8							
12				Argillized gabbro, partly weathered		Deeply argillized gabbro, soft, easily broken by finger pressure, friable when dry	D	0	0	30																									
13							D	0	0	30																									
14							D	0	0	25																									
15			Brow- nish gray				D	0	0	20																									
16							D	0	0	20																									
17							D	0	0	20																									
18							D	0	0	25																									
19							D	0	0	25																									
20		20.00					D	0	0	28																									
21																																			
22																																			
23																																			
24																																			
25																																			
26																																			
27																																			
28																																			
29																																			

DRILLING LOG (DRILL HOLE NO. MBH-1)

THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. MBH-1
 Longitude _____
 Latitude _____
 Collar Elevation _____
 Direction - Dip 90°

Location 2 km to the South from proposed dam site
 Drilling term from Oct. 15
 Last Ground Water Level in Hole 0.60 m
 Last Hole Diameter 10.0 cm

Total Drilling Length 10.00 m
 Total Core Length 8.46 m
 Total Core Recovery 85 %
 Drilling Machine ACKER
 Pump BEAN ROYAL 525

Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unit	Geologic Column	Core Description and Geological Observation	Standard Penetration Test Blow Per Foot (cm)	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Diagram				Depth (m)	Lapson Value	Field Permeability Test Coefficient of Per- meability (%)	Ground Water Level in Hole (m)	Drilling Date												
													R	Q	D	Core Recovery (CR)																	
	0.36	0.36	Dark brown	Weathered siltstone		Weathered siltstone. Color change to brownish white.																											
1	1.00	1.00	Gray	Siltstone	[Dotted pattern]	Calcareous siltstone including argillized parts (10 to 20%), Moderately indurated to slightly indurated, Slightly hard, massive and Slightly dense		53	24	90																							
2			Dark gray							25	54	70																					
3	3.00	3.00	Gray							55	30	72																					
4	3.50	3.50	Gray							81	67	81																					
5			Dark gray							85	85	88																					
6	6.00	6.00	Gray							95	39	95																					
7										90	60	90																					
8			Dark gray							95	72	95																					
9										49	49	98																					
10	10.00	10.00								67	47	67																					
11																																	
12																																	
13																																	
14																																	
15																																	
16																																	
17																																	
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DRILLING LOG (DRILL HOLE NO. MBH-2)

THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. MBH-2 Location 800m to the South from proposed dam site Total Drilling Length 15.00 m
 Longitude _____ Drilling Term from Oct. 21 Total Core Length 0.20 m
 Latitude _____ Last Ground Water Level in Hole 11.00 m Total Core Recovery 1 %
 Collar Elevation _____ Last Hole Diameter 10.0 cm Drilling Machine ACKER
 Direction - Dip 90° Pump BEAN ROYAL

Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unit	Geologic Column	Core Description and Geological Observation	Classification Criteria for Rock Formation	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Standard Penetration Test				Diagram				Field Permeability Test			Drilling Date			
													Blows Per Foot (cm)	Blows Per Foot (m)	Blows Per Foot (ft)	Blows Per Foot (in)	R	Q	D	Max. Core Length (cm)	Core Recovery (CR) (%)	Depth (m)	Lugeon Value		Coefficient of Permeability (cm/sec)	Ground Water Level in Hole (m)	
1				Weathered gabbro (clay)		Reddish brown clay, which is weathered gabbro. Lateritic soil (red clay). Highly plastic, moist in place.																					
2																											
3			Reddish brown (clay)																								
4																											
5																											
6																											
7		7.00																									
8		8.00	Brown gray (clay)																								
9				Weathered gabbro (clay and fragments of argillized gabbro)		Brownish gray clay, which is weathered gabbro. Some fragments of the argillized gabbro are included in the clay. Deeply to totally weathered. Slight to non plastic when moist. Friable, when dry.																					
10																											
11				Brownish gray (sludge)																							
12																											
13																											
14		14.00																									
15		15.00	Gray	Argillized gabbro, by weathering		Argillized gabbro in which white color spots of the argillized feldspar are obvious.		0	5	20														1100m			
16																											
17																											
18																											
19																											
20																											
21																											
22																											
23																											
24																											
25																											
26																											
27																											
28																											
29																											

DRILLING LOG (DRILL HOLE NO. MBH-3)

THE INYATA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. MBH-3 Location 700m to the South from proposed dam site Total Drilling Length 20.00 m
 Longitude _____ Drilling Term from Oct. 22 . up to Oct. 23 . Total Core Length 0.35 m
 Latitude _____ Last Ground Water Level in Hole 10.00 m Total Core Recovery 1.8 %
 Collar Elevation _____ Last Hole Diameter 10.0 cm Drilling Machine ACKER
 Direction - Dip 90° Geologist _____ Pump BEAN ROYAL

Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unit	Geologic Column	Core Description and Geological Observation	Grain Size Analysis For Rock Fracture Line	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Standard Penetration Test				Diagram				Field Permeability Test			Ground Water Level in Hole (m)	Drilling Date										
													Blows Per Foot (cm)	Blows Per 30 cm	Total Penetration (cm)	N-Value (cm)	R	Q	D	---X---	---o---	---□---	Depth (m)			Lugeon Value	Coefficient of Per- meability (cm)								
1				Weathered gabbro (clay)		Reddish brown clay which is weathered gabbro. Lateritic (Red clay) soil. High to moderate plastic.							0	1	0																				
2																																			
3																																			
4																																			
5			Red- dish brown gray																																
6																																			
7																																			
8																																			
9																																			
10																																			
11																																			
12		2.00																																	
13			Brown- ish gray (clay)																																
14		4.00																																	
15			Brown gray (sludge)	Weathered gabbro (clay and fragments of argillized gabbro)		Brownish gray clay, which is weathered gabbro. The fragments of the argillized gabbro are included in the clay. Deeply to totally weathered bedrock. Slightly plastic when moist. Friable when dry.																													
16																																			
17																																			
18		8.00																																	
19			Gray	Argillized gabbro by weathering	7 7	Argillized gabbro, consisted by the white spots where feldspars had been argillized.		0	5	15																									
20		20.00		Argillized gabbro (solid) by weathering	7 7	Argillized gabbro become partly solid core, including white spots of feldspar.	Cl	0	6	20																									
21																																			
22																																			
23																																			
24																																			
25																																			
26																																			
27																																			
28																																			
29																																			

DRILLING LOG (DRILL HOLE NO. MBH-4)

THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. <u>MBH-4</u>	Location <u>Bambam Barangay, 2.3 km WSW from proposed dam site</u>	Total Drilling Length <u>10.00 m</u>
Longitude _____	Drilling Term from <u>Nov. 17</u> up to <u>Nov. 18</u>	Total Core Length <u>9.75 m</u>
Latitude _____	Last Ground Water Level in Hole _____ m	Total Core Recovery <u>97.5 %</u>
Collar Elevation _____	Last Hole Diameter <u>10.0 cm</u>	Drilling Machine <u>ACKER</u>
Direction - Dip <u>90°</u>		Pump <u>BEAN ROYAL</u>

Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unite	Geologic Column	Core Description and Geological Observation	Classification Category for North American Use	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Standard Penetration Test				Diagram				Field Permeability Test			Drilling Date			
													Blows per Foot	Blows per Meter	Blows per 30 cm	Blows per 10 cm	R	Q	D	%	Depth (m)	Lugeon Value	Coefficient of Permeability (cm/sec)		Ground Water Level in Hole (m)		
1				Siltstone		Calcareous siltstone, Slightly weathered, Moderate indurated, Slightly hard, Massive and Slightly dense.		56	30	100																	
2								0	4	100																	
3								30	16	100																	
4			Dark gray				Cl	100	45	100																	
5								63	25	100																	
6								45	30	100																	
7								70	15	100																	
8								73	22	100																	
9								67	32	85																	
10	10.00							40	20	90																	
11																											
12																											
13																											
14																											
15																											
16																											
17																											
18																											
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26																											
27																											
28																											
29																											

DRILLING LOG (DRILL HOLE NO. MBH-5)

THE INTANTA IMPROVING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. MBH-5 Location On the ridge, 800m WNW from proposed dam site Total Drilling Length 15.00 m
 Longitude _____ Drilling Term from Nov. 17. up to Nov. 18. Total Core Length 7.73 m
 Latitude _____ Last Ground Water Level in Hole _____ m Total Core Recovery 52 %
 Collar Elevation _____ Last Hole Diameter 10.0 cm Drilling Machine ACKER
 Direction - Dip 90° Pump BEAN ROYAL

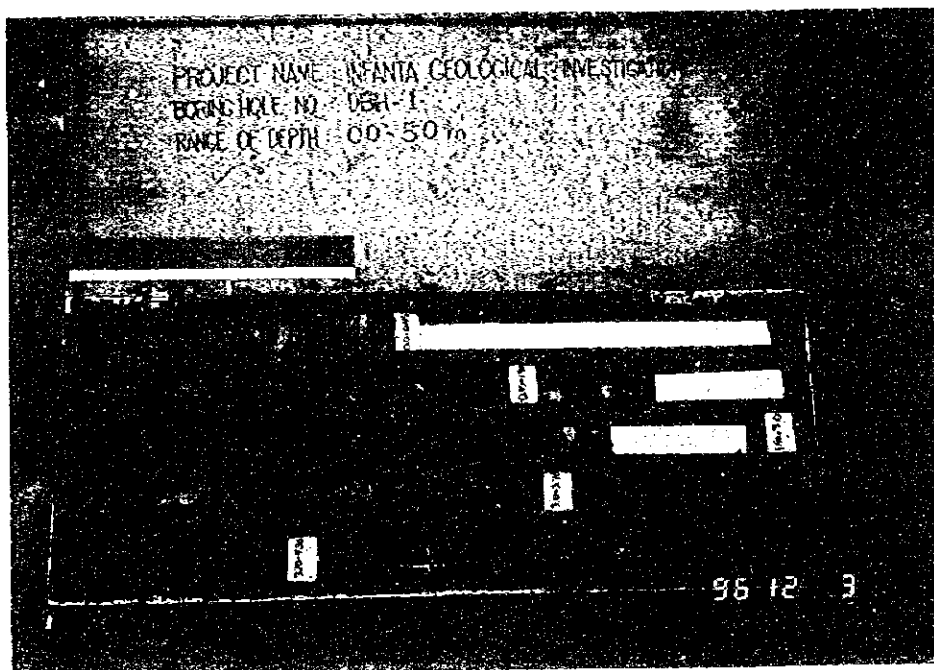
Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unit	Geologic Column	Core Description and Geological Observation	Classification Column (%)	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Standard Penetration Test		Diagram				Field Permeability Test			Drilling Date									
													Depth (m)	Blow Count (No.)	R	Q	D	Depth (m)	Logon Value	Coefficient of Per- meability (cm/s)	Ground Water Level in Hole (m)										
1			Brownish gray (sludge)	Weathered gabbro (clay and fragments of argillized gabbro)	o	Brownish gray clay, which is weathered gabbro. The clay include fragments of argillized gabbro. Slightly plastic when moist, Friable when dry.	D				40			0	1	0	20	40	60	80	100										
2															40			1	1	1											
3															45			1	1	1											
4															40			1	1	1											
5															47			1	1	1											
6	6.00		Gray	Argillized gabbro, by weathering	« 7	Argillized gabbro, Deeply weathered, Soft, easily broken by finger pressure.	D				17			10	2	0															
7															5	60															
8															4	60															
9															3	50															
10															6	55															
11															6	63															
12															8	63															
13															8	58															
14															9	65															
15	15.00									9	70																				

DRILLING LOG (DRILL HOLE NO. IDH-3)

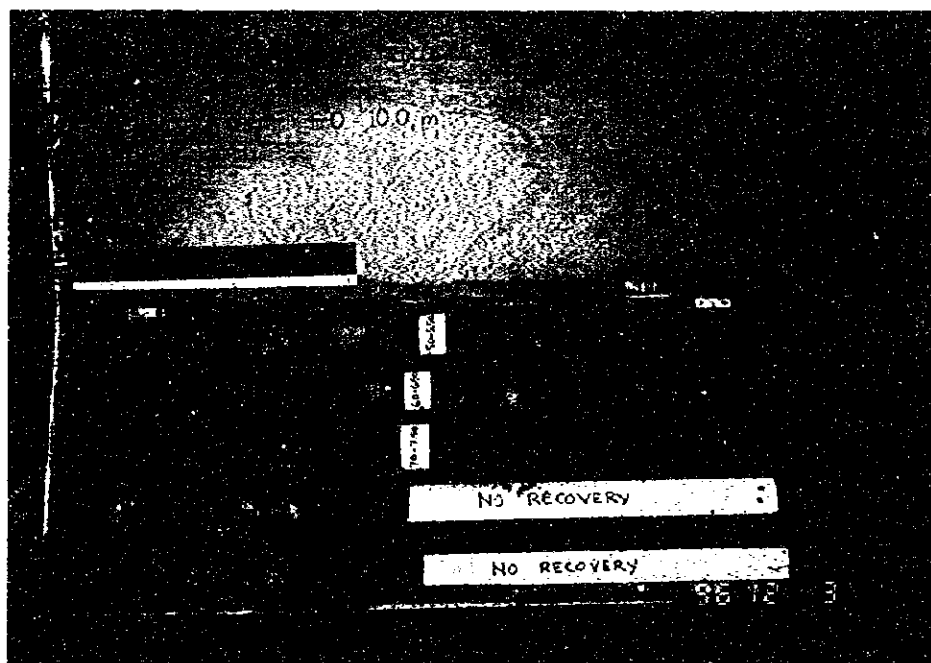
THE INFANTA IMPROVING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Drill Hole NO. IDH-3 Location Left Bank at Dam Site (Middle stream axis) Total Drilling Length 30.00 m
 Longitude _____ Drilling Term from _____ up to _____ Total Core Length 14.70 m
 Latitude _____ Last Ground Water Level in Hole _____ m Total Core Recovery 49 %
 Collar Elevation 55.3 m Last Hole Diameter _____ cm Drilling Machine _____
 Direction - Dip 90° Pump _____

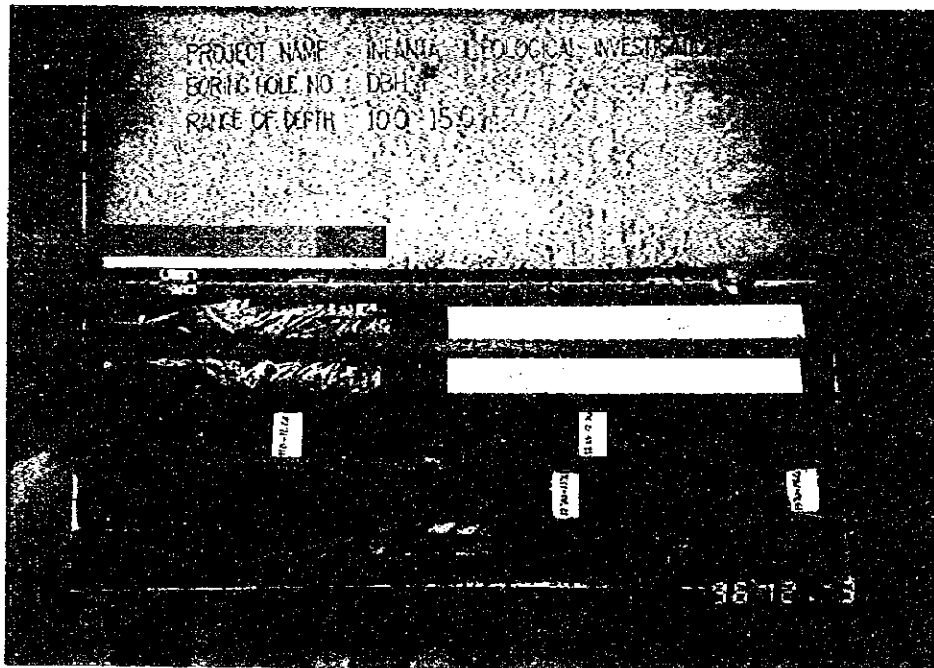
Scale (m)	Elevation (m)	Depth (m)	Core Color	Geologic Unit	Geologic Column	Core Description and Geological Observation	Classification Criteria for High Penetration	R (%)	Q (%)	D (%)	Max. Core Length (cm)	Core Recovery (%)	Standard Penetration Test				Diagram	Field Permeability Test	Depth (m)	Lugeon Value	Coefficient of Per- meability (cm/s)	Ground Water Level in Hole (m)	Drilling Date					
													Depth (m)	Blows Per 10cm	Penetration Length (cm)	N-Value (blows)												
1	1.60	1.45	Reddish brown (clay)	Weathered gabbro		Red clay including plant roots.	D	0	0	0	100	100	100	100														
2	2.60	2.45	Gray (clay)						Gray clay, sometimes including grains of gabbro	D	0	0	0	200												200	200	200
3	3.60	3.45									0	0	0	300												300	300	300
4	4.60	4.45									0	0	0	400												400	400	400
5	5.60	5.45									0	0	0	500												500	500	500
6	6.60	6.50	Greenish gray						Argillized gabbro	D	0	0	0	500												500	500	500
7	7.60	7.50		0	7	22	700				700	700	700															
8	8.60	8.50		0	7	15	800				800	800	800															
9	9.60	9.50	Dark gray		Chloritized gabbro including quartz veinlets and networks. Gabbro become softer by chloritization.	D	0	0	0	800	800	800	800															
10	10.60	10.50					0	2	17	900	900	900	900															
11	11.60	11.50					0	0	13	1000	1000	1000	1000															
12	12.60	12.50					0	0	10	1100	1100	1100	1100															
13	13.60	13.50					0	3	10	1200	1200	1200	1200															
14	14.60	14.50					0	0	10	1300	1300	1300	1300															
15	15.60	15.50	Dark gray		Chloritized gabbro including quartz veinlets and networks. The width of quartz veinlets are several millimeters to 2 centimeters. The dip of quartz veinlets and joints are 20°, 45° and 60°.	D	0	18	100	1400	1400	1400	1400															
16	16.60	16.50					0	7	72	1500	1500	1500	1500															
17	17.60	17.50					0	5	100	1600	1600	1600	1600															
18	18.60	18.50					0	7	91	1700	1700	1700	1700															
19	19.60	19.50					0	10	83	1800	1800	1800	1800															
20	20.60	20.50					0	10	93	1900	1900	1900	1900															
21	21.60	21.50	Dark gray		Chloritized gabbro become harder, including quartz veinlets and networks. These widths are several millimeters to 1 centimeter. The dip of quartz veinlets and joints are 20°, 45° and 80°. Quartz veinlets and networks including space of several millimeters in width.	D	0	6	100	2000	2000	2000	2000															
22	22.60	22.50					0	20	130	2100	2100	2100	2100															
23	23.60	23.50					0	10	100	2200	2200	2200	2200															
24	24.60	24.50					0	10	100	2300	2300	2300	2300															
25	25.60	25.50					0	30	150	2400	2400	2400	2400															
26	26.60	26.50					0	10	100	2500	2500	2500	2500															
27	27.60	27.50	Dark gray			C _u	45	15	100	2600	2600	2600	2600															
28	28.60	28.50					12	12	100	2700	2700	2700	2700															
29	29.60	29.50					15	10	100	2800	2800	2800	2800															



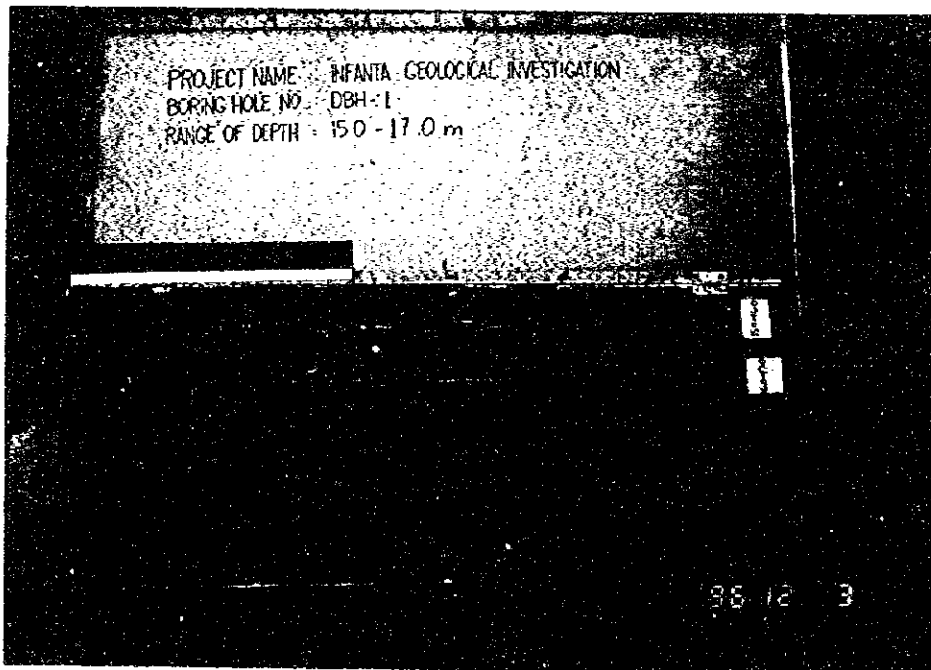
DBH-1 (0~5.0m)



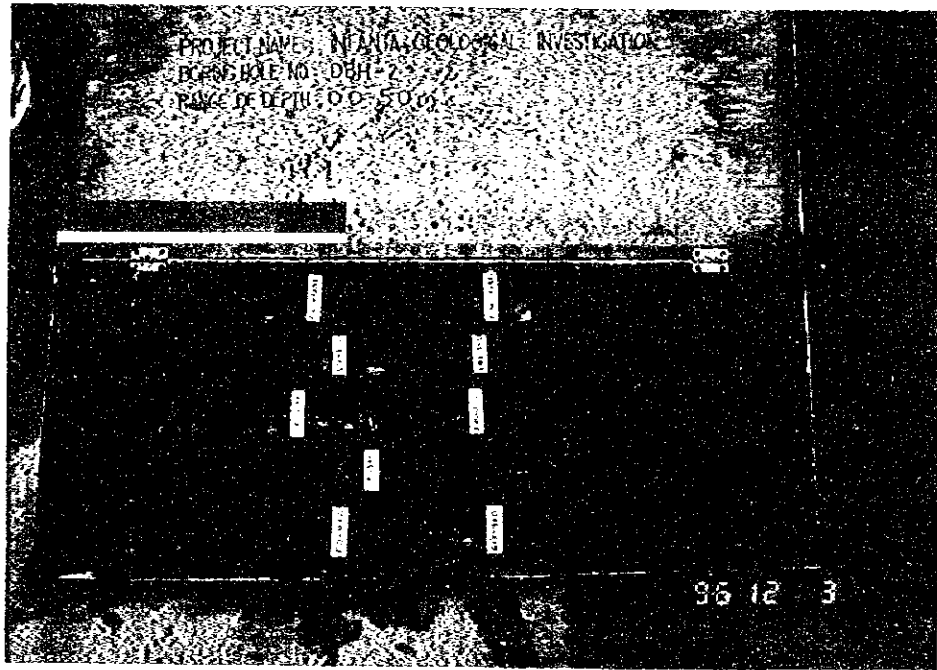
DBH-1 (5.0~10.0m)



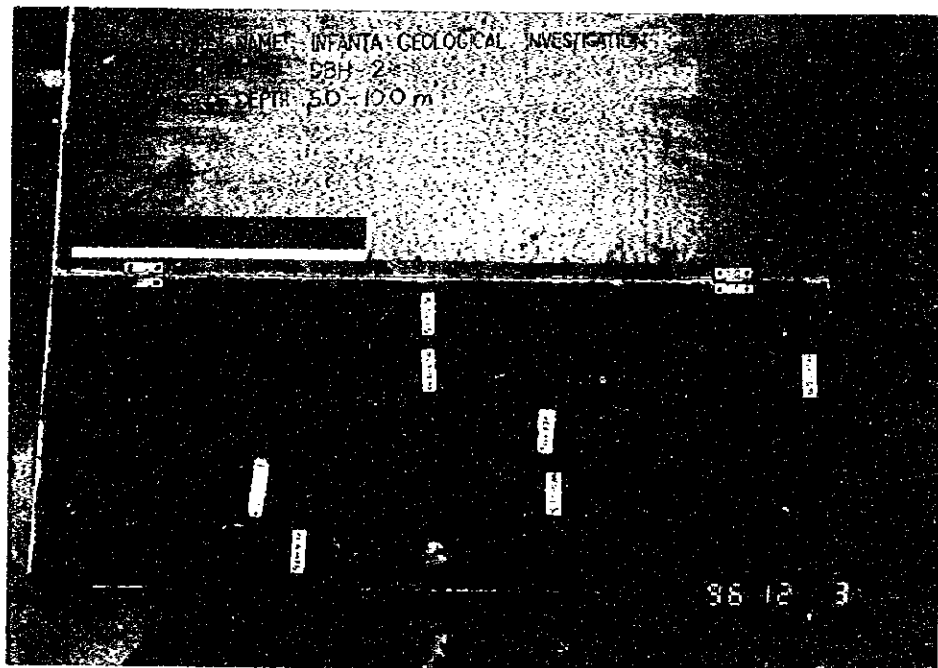
DBH-1 (10.0~15.0m)



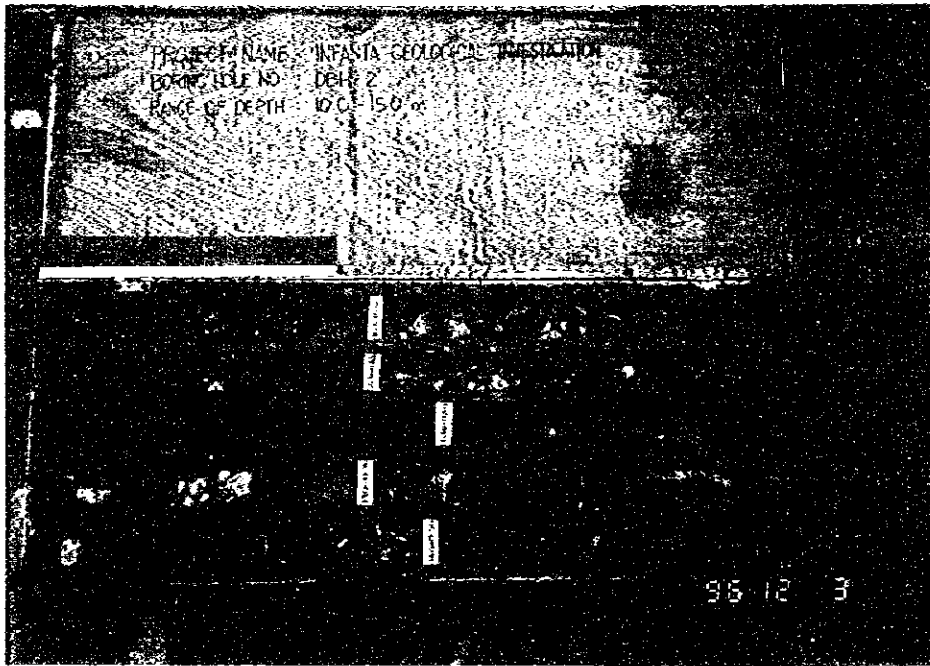
DBH-1 (15.0~17.0m)



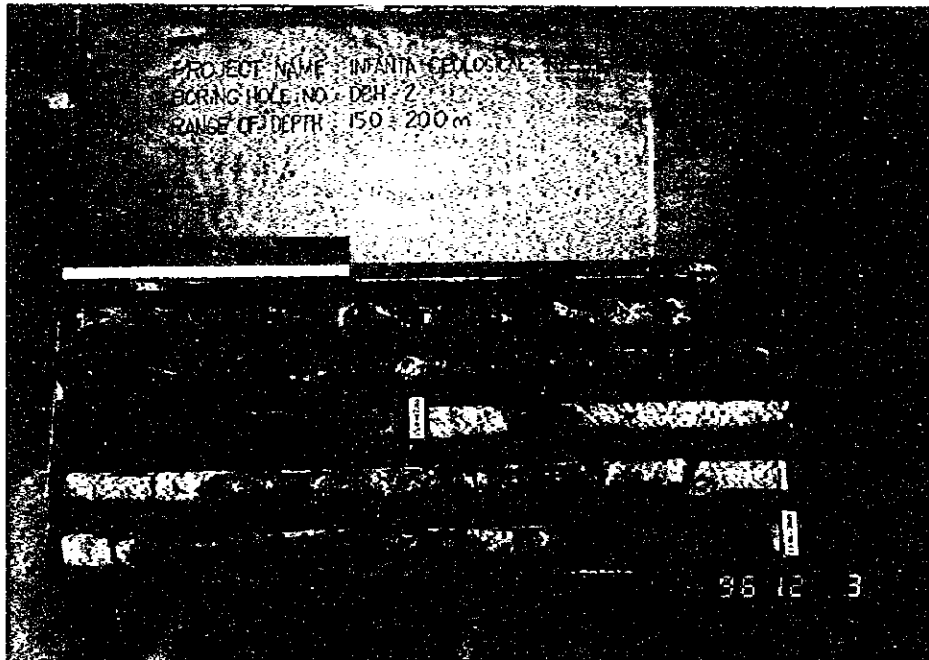
DBH-2 (0~5.0m)



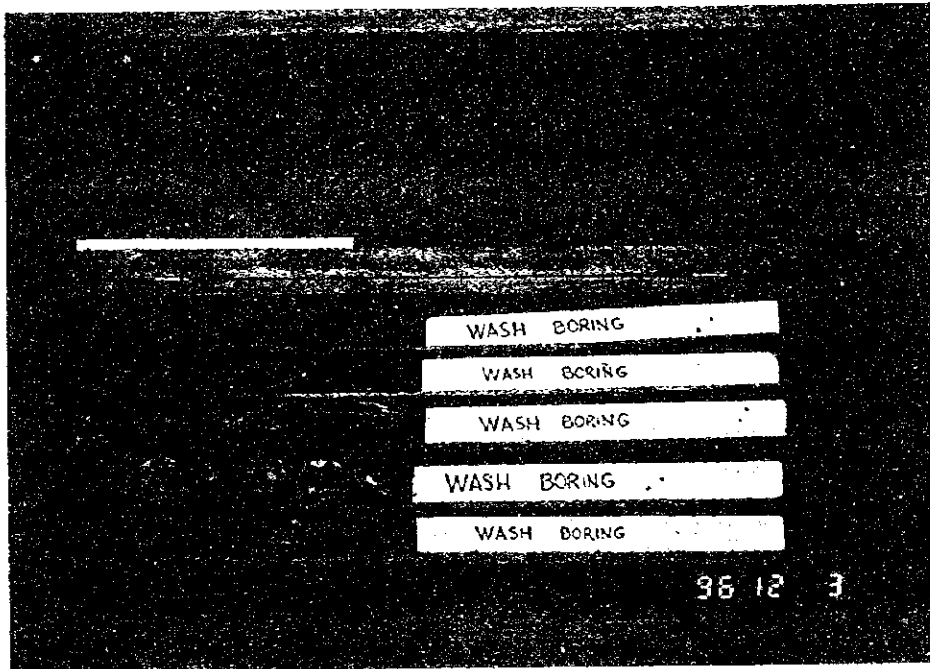
DBH-2 (5.0~10.0m)



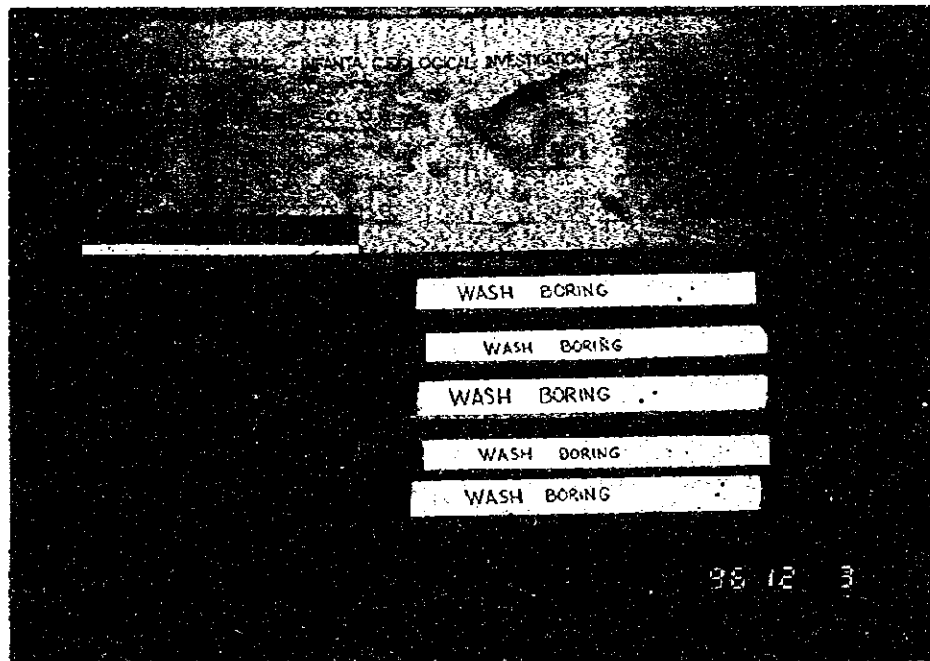
DBH-2 (10.0~15.0m)



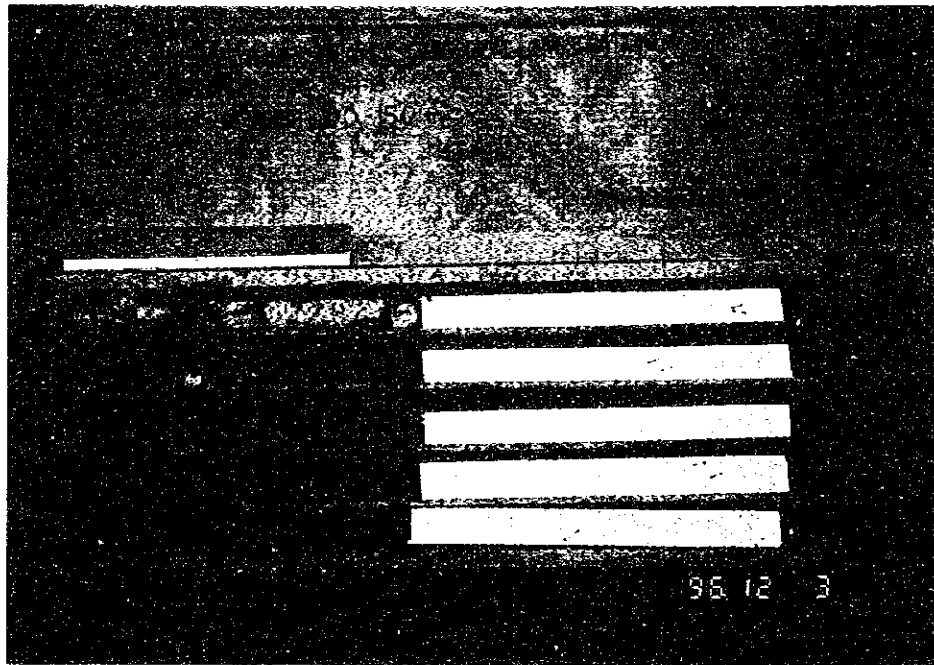
DBH-2 (15.0~20.0m)



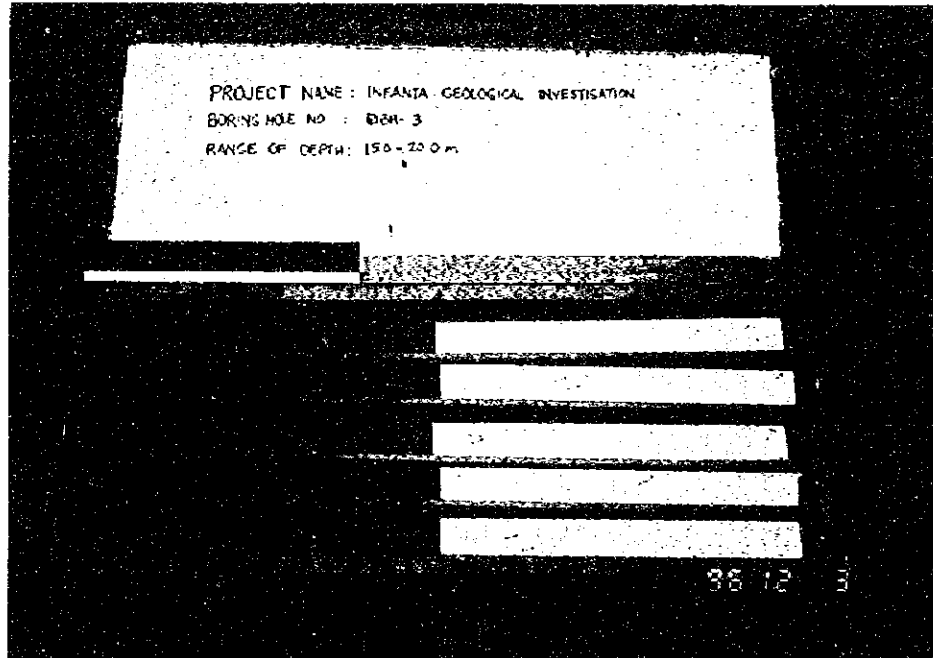
DBH-3 (0~5. 0m)



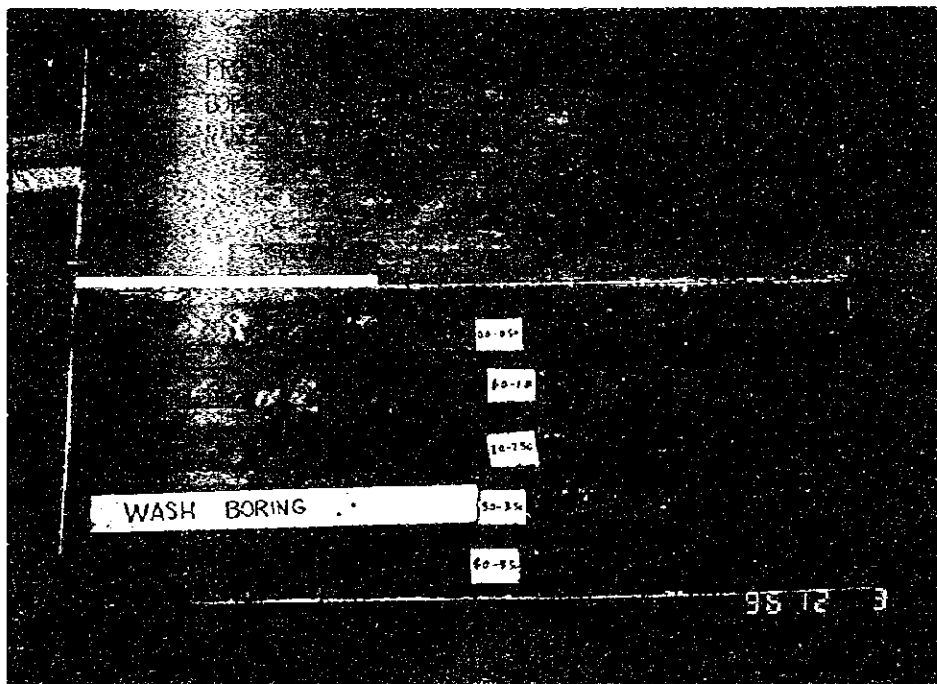
DBH-3 (5. 0~10. 0m)



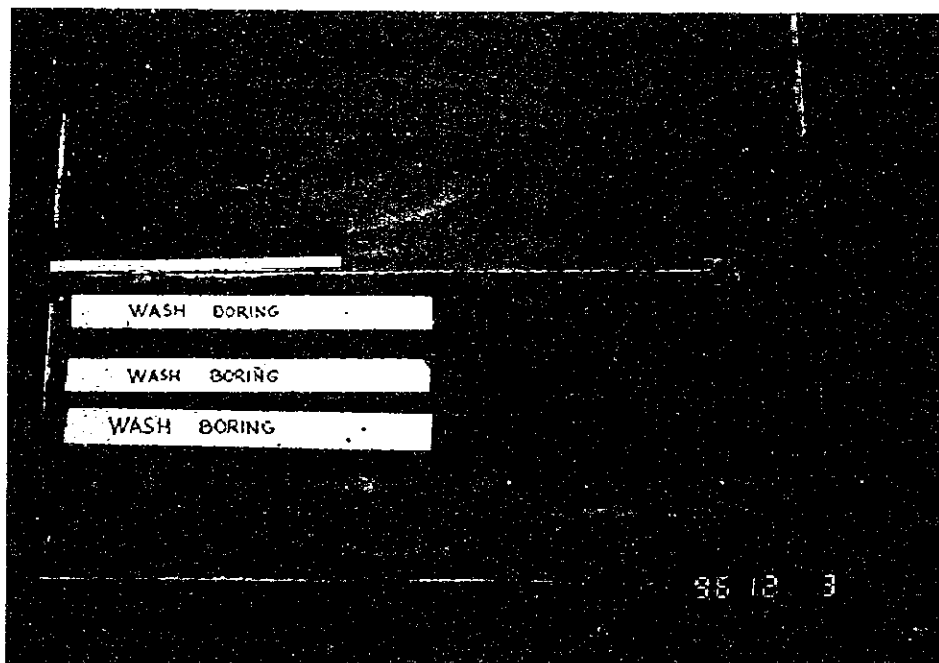
DBH-3 (10.0~15.0m)



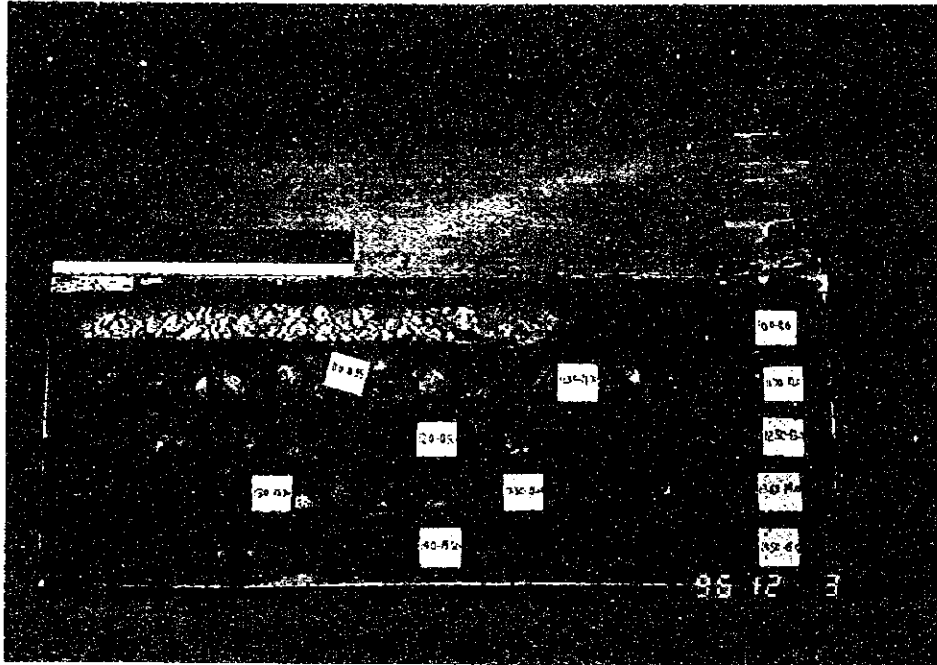
DBH-3 (15.0~20.0m)



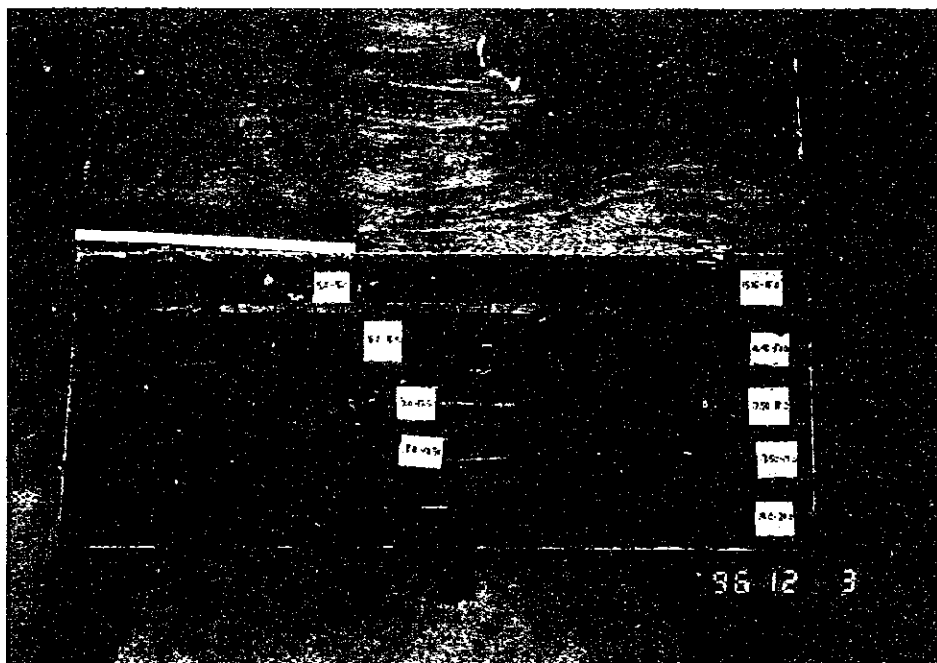
DBH-4 (0~5.0m)



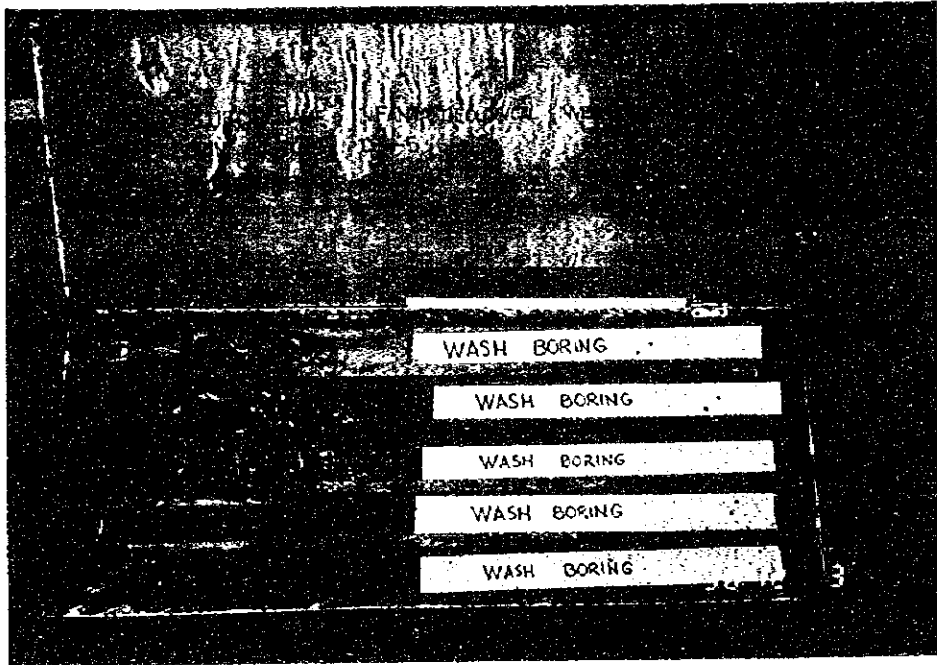
DBH-4 (5.0~10.0m)



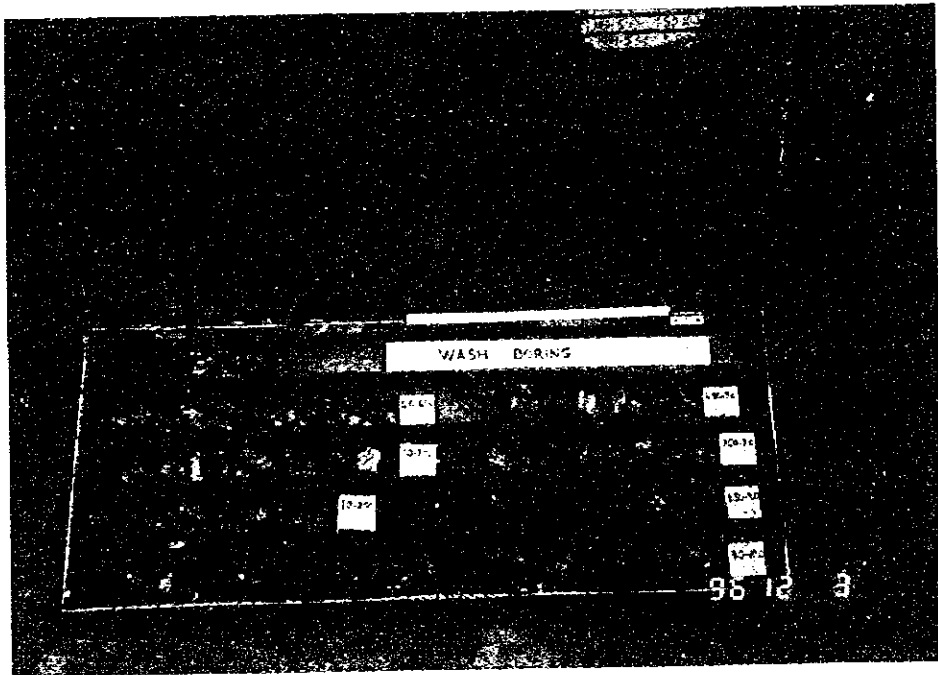
DBH-4 (10.0~15.0m)



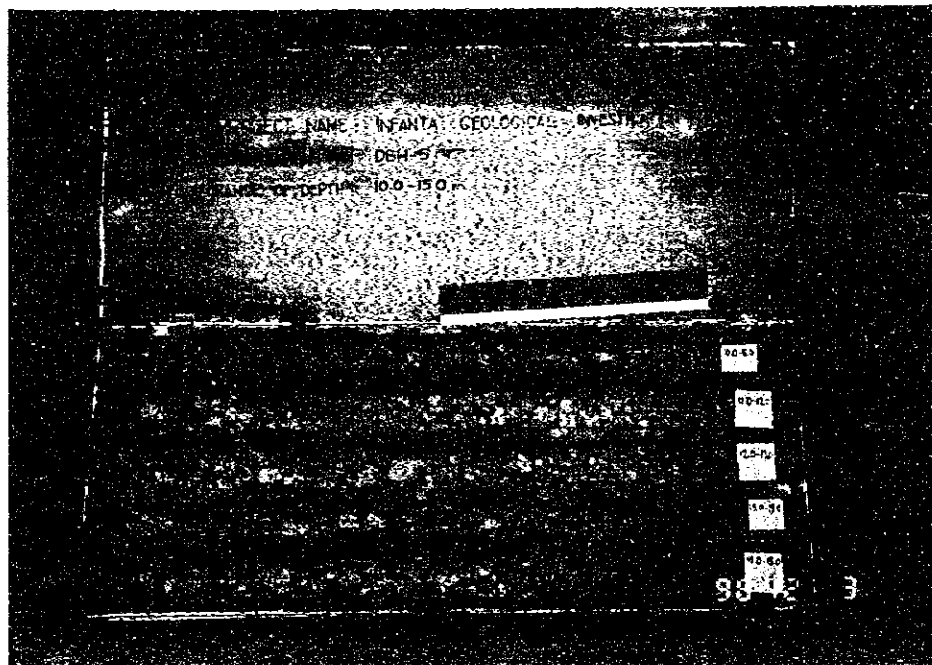
DBH-4 (15.0~20.0m)



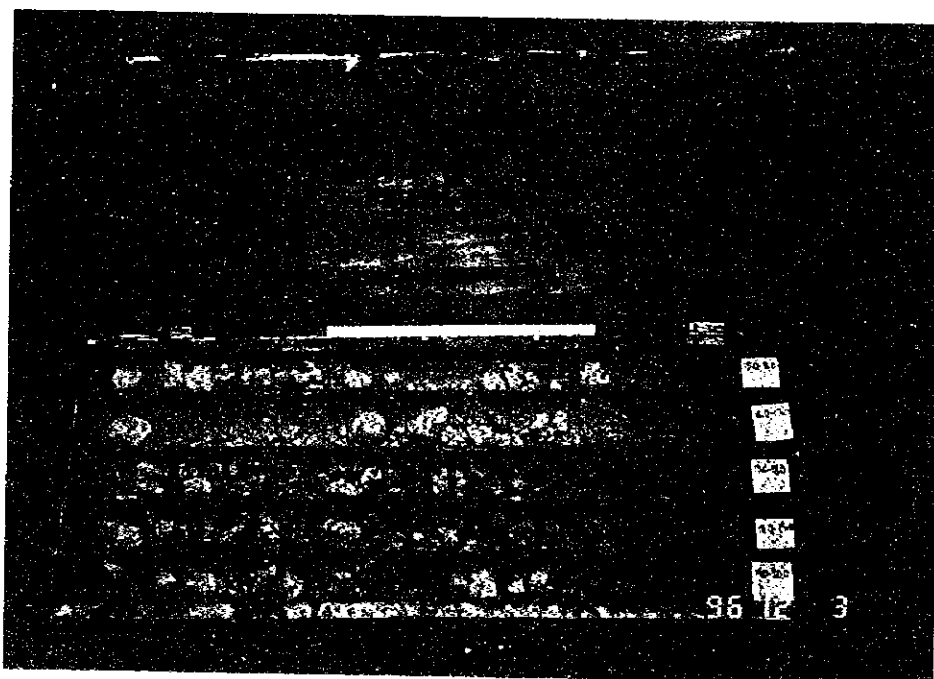
DBH-5 (0~5.0m)



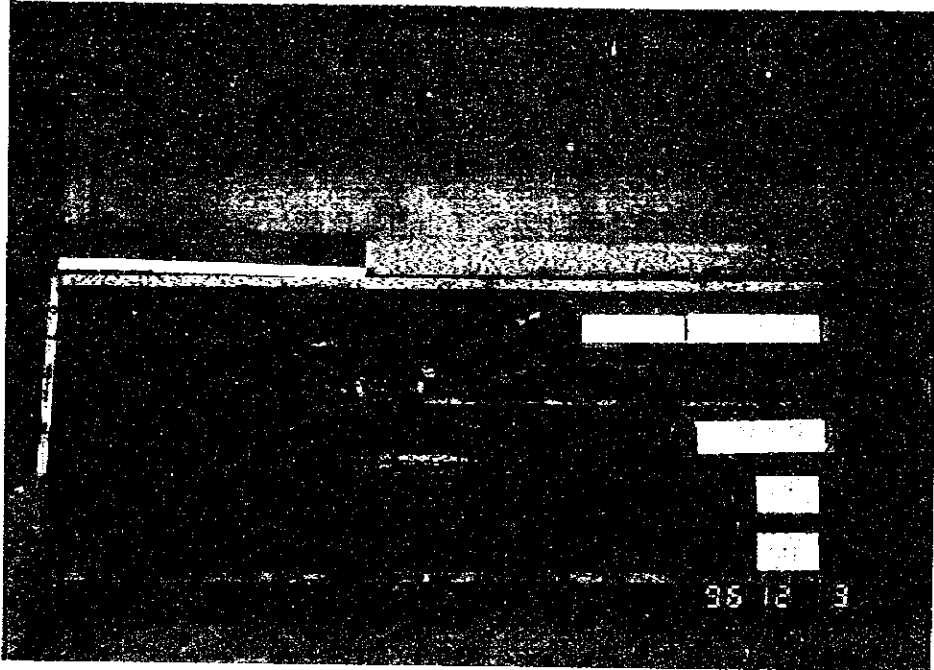
DBH-5 (5.0~10.0m)



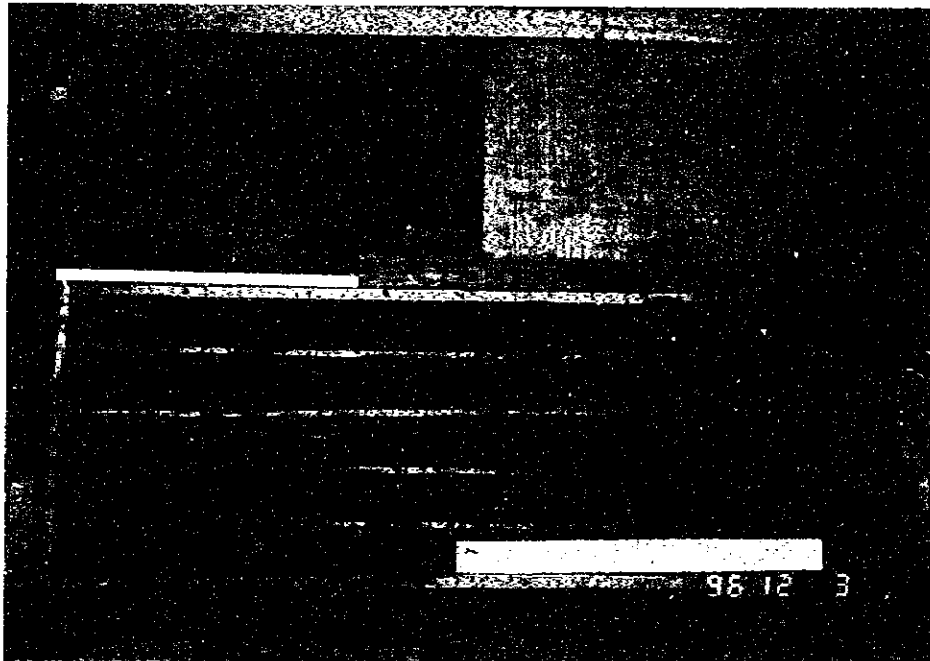
DBH-5 (10.0~15.0m)



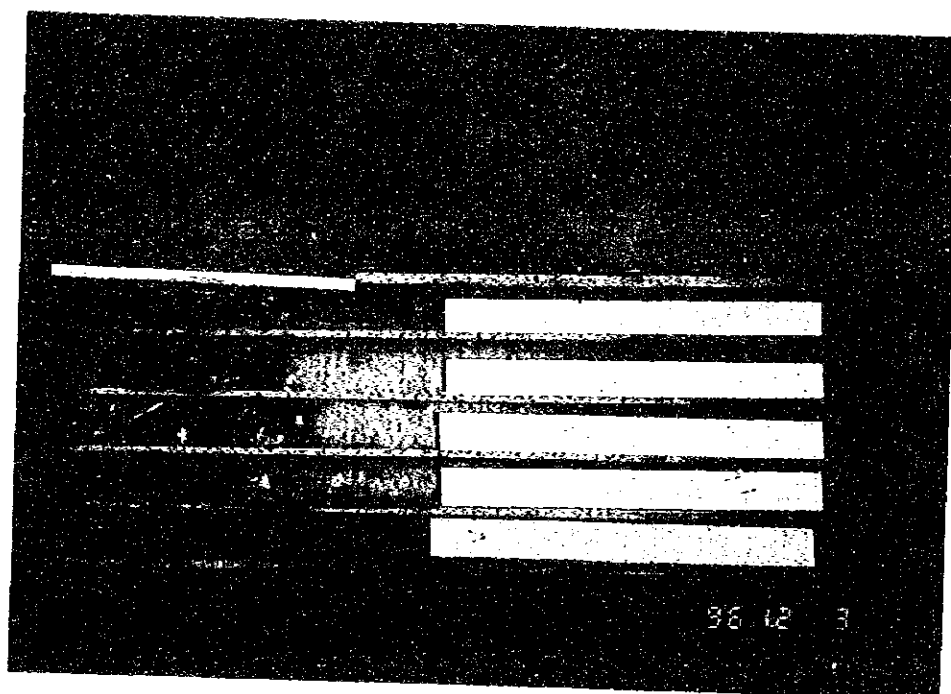
DBH-5 (15.0~20.0m)



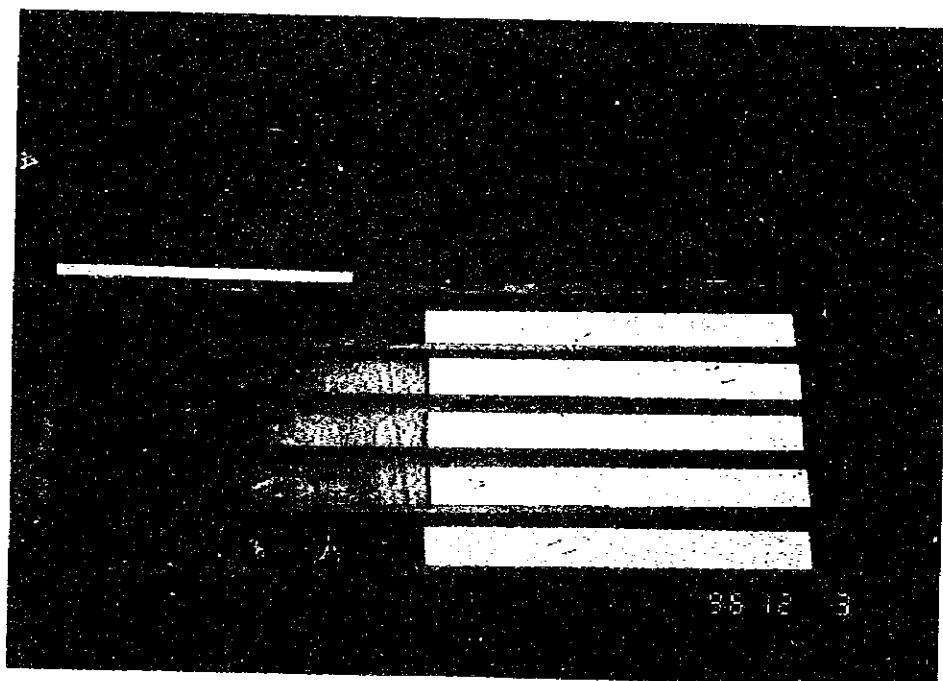
MBH-1 (0~5.0m)



MBH-1 (5.0~10.0m)

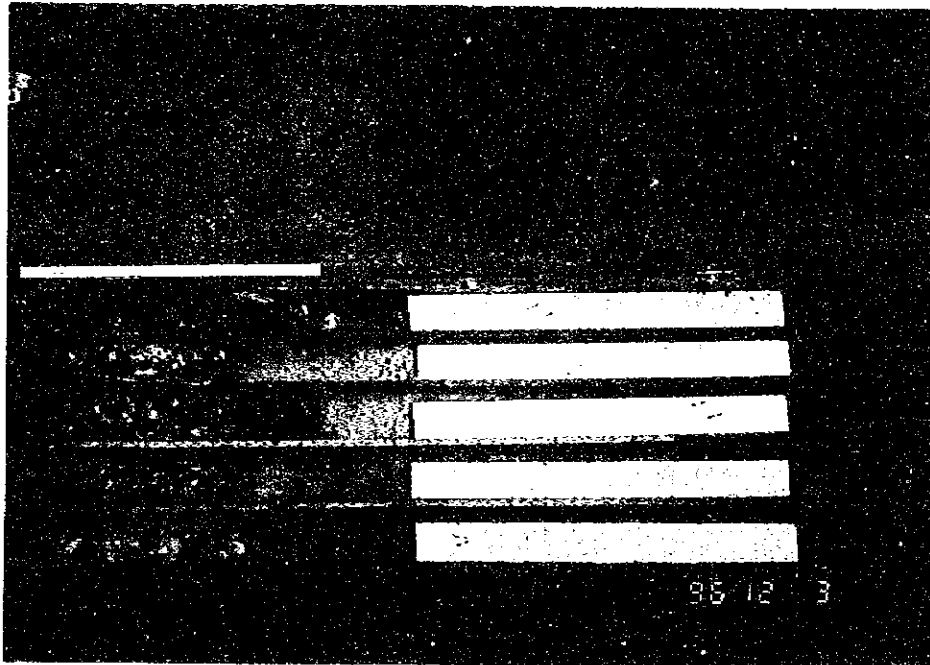


MBH-2 (0~5.0m)

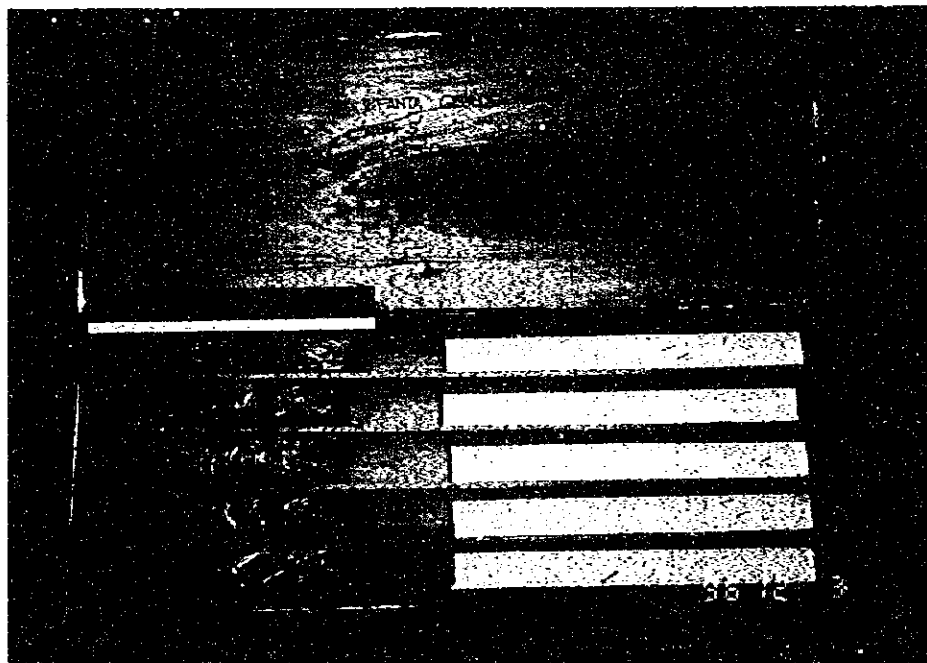


MBH-2 (5.0~10.0m)

2.4.1.3-3 (24)

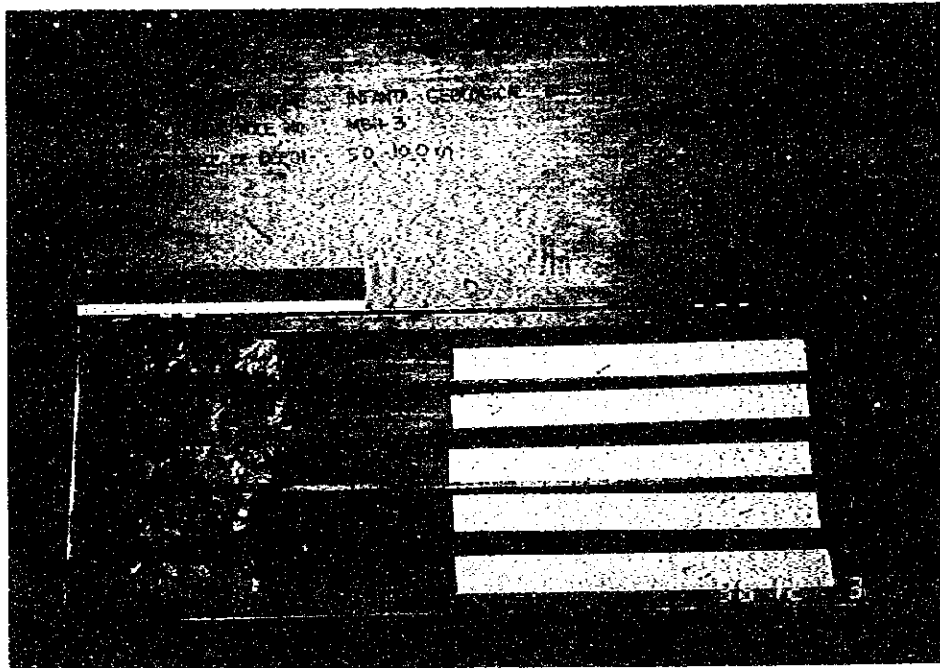


MBH-2 (10.0~15.0m)

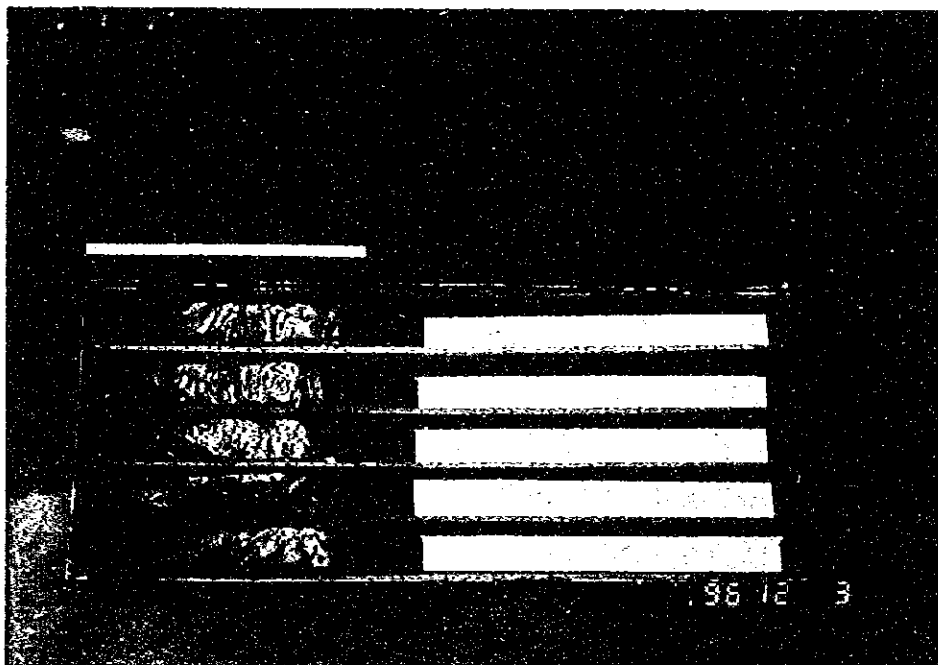


MBH-3 (0~5.0m)

2.4.1.3 - 3 (25)

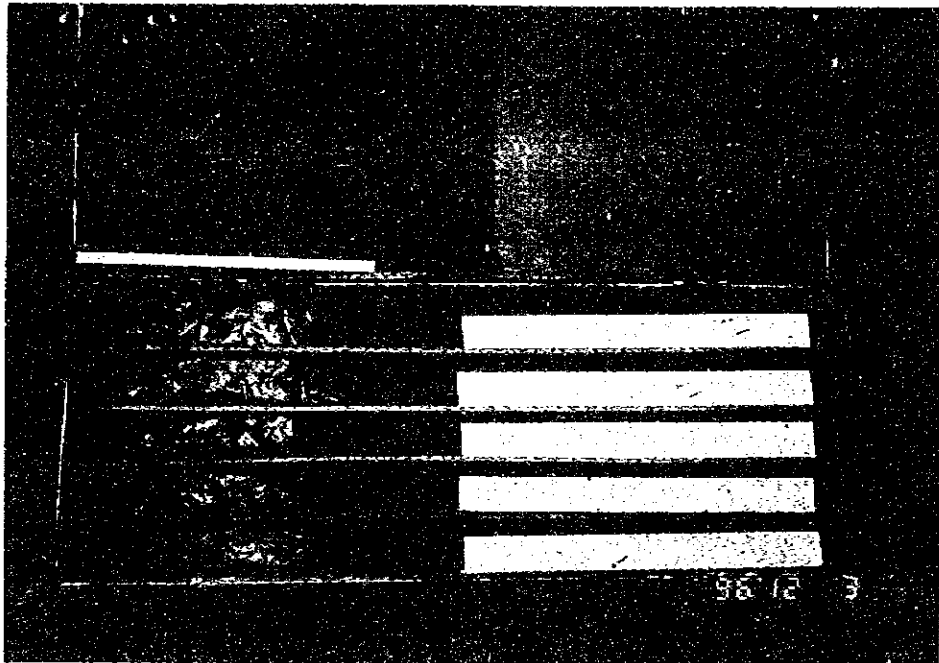


MBH-3 (5.0~10.0m)

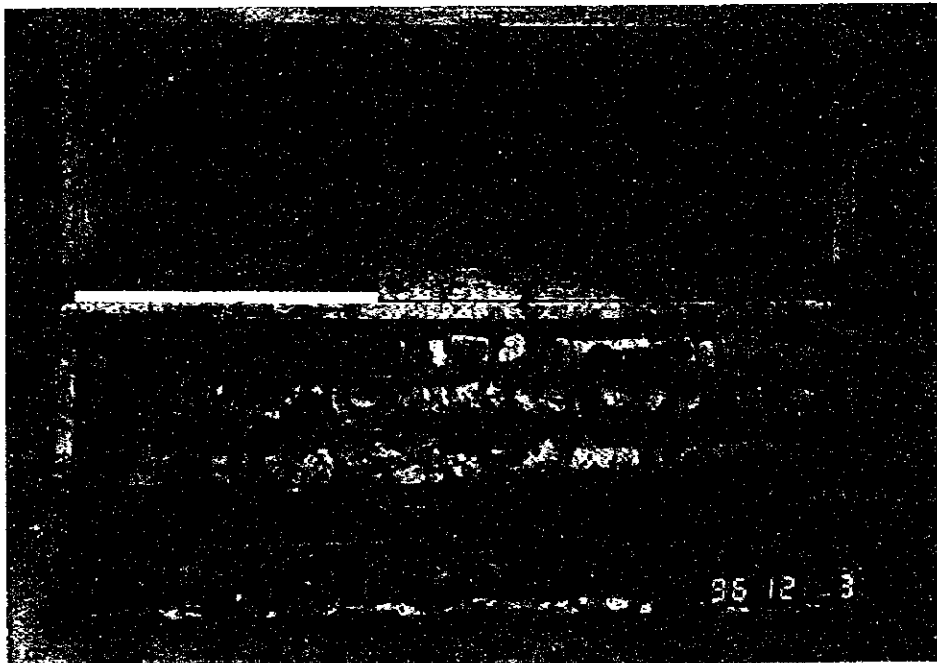


MBH-3 (10.0~15.0m)

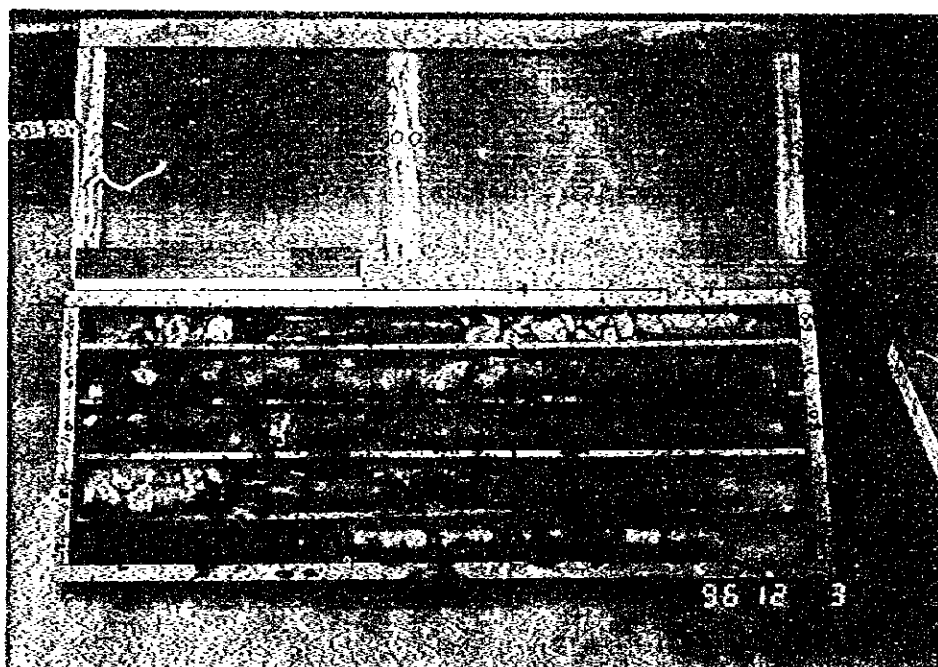
2.4.1.3 ~ 3 (26)



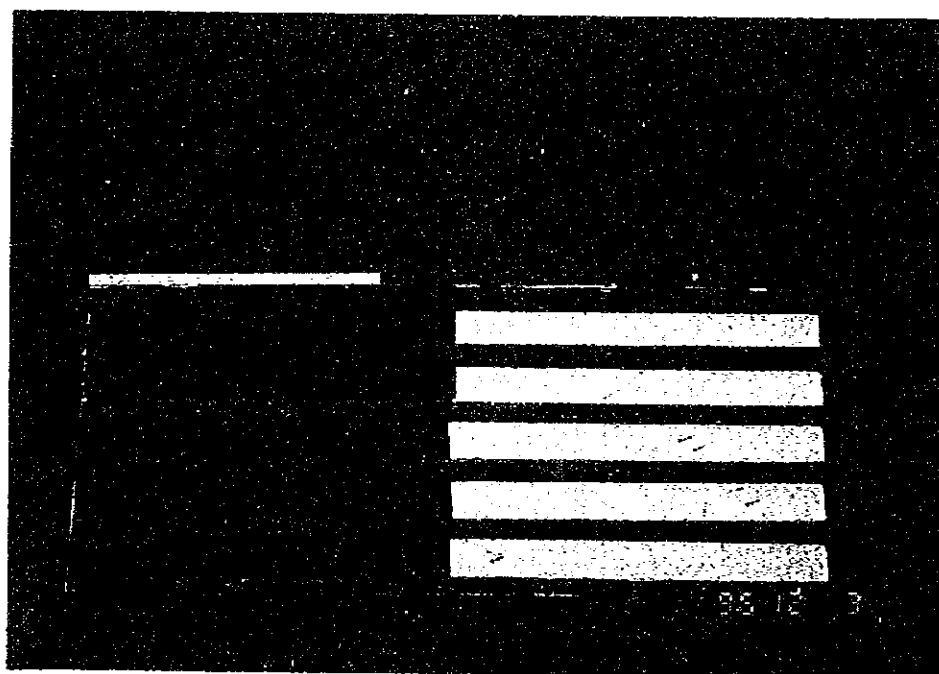
MBH-3 (15.0~20.0m)



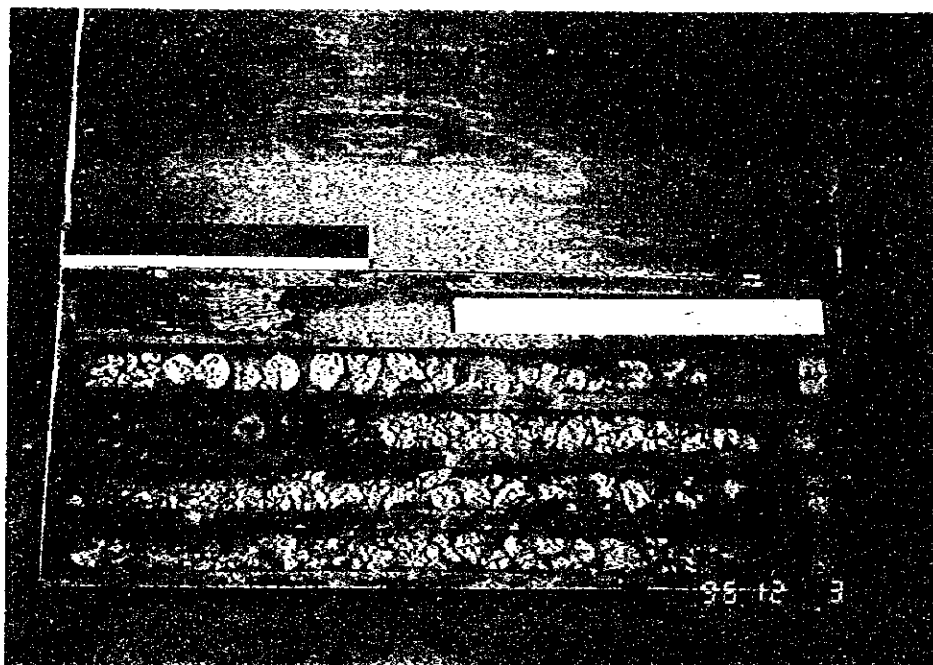
MBH-4 (0~5.0m)



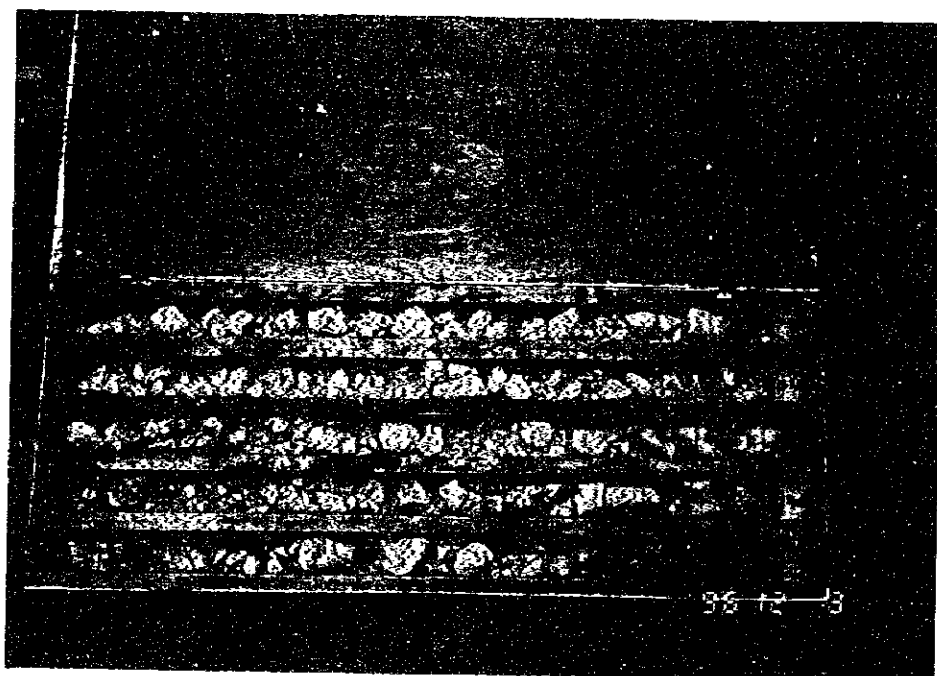
MBH-4 (5.0~10.0m)



MBH-5 (0~5.0m)



MBH-5 (5.0~10.0m)

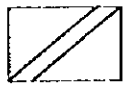


MBH-5 (10.0~15.0m)

資料2.4.1.3-4 テストピット柱状図

Geological Explanation for Test Pit Log

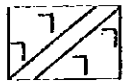
Overburden



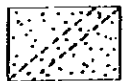
Residual soil
(mainly red clay)



Clay including
rock fragments



Totally weathered gabbro
(clay and argillized
gabbro fragments)

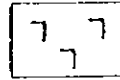


Totally weathered silt-
stone (clay and argillized
siltstone)

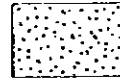


Recent river deposits
(gravel and sand)

Basement rock



Gabbro (its rock facies
partly change to fine
gabbro, basalt and
anorthosite)



Calcareous siltstone

TEST PIT LOG (T.P. NO. 1)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Test Pit No.: 1		Location:		Longitude:	Latitude:	Elevation:	Log scale: 1:50	Geologist:						
Log				Wall north	Wall east	Wall south	Wall west	Depth (m)	Description	Ground Water Level	Sampling Depth	Remark		
								- 1.00	<p>0.00-0.40m Top Soil, Silty Clay with slight amt. of organic materials, medium plastic, reddish brown color</p>	-	-	-	-	<p>N</p>
								- 2.00	<p>0.40-1.60m Gravelly silty clay, medium plastic, w/ about 30% gravel to boulder rock fragments</p>	-	-	-	-	
								- 3.00						
								- 4.00						
								- 5.00						
								- 6.00						

2.4.1.3-4 (2)

TEST PIT LOG (T.P. NO. 2)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Test Pit No.: 2		Location:			Longitude:		Latitude:		Elevation:		Log scale: 1:50		Geologist:		
Log		Wall north	Wall east	Wall south	Wall west	Depth (m)		Description		Ground Water Level	Sampling Depth	Remark			
										- 1.00	0.00-0.60m Top Soil with gravel to cobble rock fragments banded with silty clay soil, brownish color				N
										- 2.00	0.60-1.80m Silty clay soil, firm when dry, medium plastic when moist, yellowish red color				
										- 4.00					
										- 5.00					
										- 6.00					

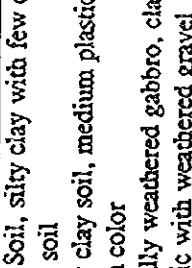
2.4.1.3-4 (2)

TEST PIT LOG (T.P. NO. 3)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Test Pit No.: 3	Location:	Longitude:	Latitude:	Elevation:	Log scale: 1:50	Geologist:
Log						
Wall north	Wall east	Wall south	Wall west	Depth (m)	Description	Remark
				- 1.00	0.00-0.20m Top Soil, with organic materials, medium plastic, reddish color	N
				- 2.00	0.20-1.20m Silty clay, medium plastic with deeply weathered gravel rock fragments, reddish soil	
				- 3.00	1.20-4.00m Argillized gabbro or totally weathered clayey silt, slightly plastic dark red color	
				- 4.00		
				- 5.00		
				- 6.00		
					Ground Water Level	Sampling Depth

24.1.3-4 ⊕

TEST PIT LOG (T.P. NO. 4)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Test Pit No.: 4	Location:	Longitude:	Latitude:	Elevation:	Log scale: 1:50	Geologist:
Log						
Wall north	Wall east	Wall south	Wall west	Depth (m)	Description	Ground Water Level
< . . . <	< . . . <	< . . . <	< . . . <	- 1.00	0.00-0.30m Top Soil, silty clay with few organic materials, reddish soil	< . . . <
7 7 7 7	7 7 7 7	7 7 7 7	7 7 7 7	- 2.00	0.30-1.20m Silty clay soil, medium plastic, firm when dry, reddish color	< . . . <
7 7 7 7 7 7	7 7 7 7 7 7	7 7 7 7 7 7	7 7 7 7 7 7	- 3.00	1.20-3.00m Totally weathered gabbro, clayey silt, slightly plastic with weathered gravel fragments	< . . . <
				- 4.00		< . . . <
				- 5.00		< . . . <
				- 6.00		< . . . <
						
						Remark

TEST PIT LOG (T.P. NO. 5)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

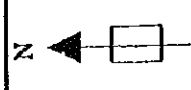
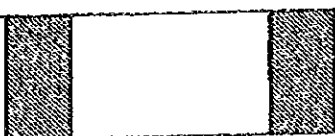
Test Pit No.: 5		Location:		Longitude:		Latitude:		Elevation:		Log scale: 1:50		Geologist:	
Log													
Wall north	Wall east	Wall south	Wall west	Depth (m)				Description	Ground Water Level	Sampling Depth	Remark		
				- 1.00	<p>0.00-1.70m Silty sand deposits, friable with organic materials, with boulder rock fragments at section 1.50-1.70m</p>					N			
				- 2.00									
				- 3.00									
				- 4.00									
				- 5.00									
				- 6.00									
				- 6.00									

TEST PIT LOG (T.P. NO. 6)
THE INFANTA IMPOUNDING AND ENVIRONMENTAL IMPROVEMNT PROJECT

Test Pit No.: 6		Location:		Longitude:		Latitude:		Elevation:		Log scale: 1:50		Geologist:				
Log				Wall north	Wall east	Wall south	Wall west	Depth (m)	Description	Ground Water Level	Sampling Depth	Remark				
				-	-	-	-	-				N 				
				-1.00						0.00-2.00m Alluvial deposit consist of sand to boulder rock fragments.				-	-	
				-2.00												
				-3.00												
				-4.00												
				-5.00												
				-6.00												

2.4.1.3 - 4 (7)

TEST PIT LOG (T.P. NO. 7)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Test Pit No.: 7	Location:	Longitude:	Latitude:	Elevation:	Log scale: 1:50	Geologist:
Log						
Wall north	Wall east	Wall south	Wall west	Depth (m)	Description	Ground Water Level
-1.00	-1.00	-1.00	-1.00	-1.00	0.00-0.30m Top soil, silty clay with few amount organic material	
-2.00	-2.00	-2.00	-2.00	-2.00	0.30-3.00m Silty clay soil, medium to high plastic when moist, with few totally weathered rock fragments, reddish color	
-3.00	-3.00	-3.00	-3.00	-3.00	3.00-5.00m Totally weathered gabbro almost silty clay, medium plastic with several weathered rock fragments	
-4.00	-4.00	-4.00	-4.00	-4.00		
-5.00	-5.00	-5.00	-5.00	-5.00		
-6.00	-6.00	-6.00	-6.00	-6.00		
						 N
						
						Remark

TEST PIT LOG (T.P. NO. 8)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

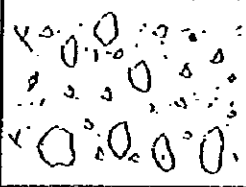

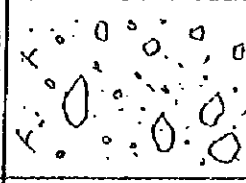


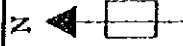

Test Pit No.: 8	Location:	Longitude:	Latitude:	Elevation:	Log scale: 1:50	Geologist:
Log						
Wall north	Wall east	Wall south	Wall west	Depth (m)	Description	Ground Water Level
				-1.00	0.00-2.20m Top soil, clayey silt, slightly plastic with organic materials 0.20-2.00m Silty clay soil, medium plastic, with few deeply weathered siltstone fragments, reddish soil.	
				-2.00	2.00-3.50m Deeply to totally weathered siltstone fragments, clayey silt, bluish red color.	
				-3.00		
				-4.00		
				-5.00		
				-6.00		
						Remark

2.4.1.3-4 (9)

TEST PIT LOG (T.P. NO. 9)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Test Pit No.: 9		Location:		Longitude:		Latitude:		Elevation:		Log scale: 1:50		Geologist:				
Log				Wall north	Wall east	Wall south	Wall west	Depth (m)	Description	Ground Water Level	Sampling Depth	Remark				
				-	-	-	-	-	-	-	-	-	-	N		
				-	-	-	-	- 1.00	-	-	-	-	-		-	
				-	-	-	-	-	-	-	-	-	-		-	-
				-	-	-	-	-	-	-	-	-	-		-	-
				-	-	-	-	-	-	-	-	-	-		-	-
				-	-	-	-	-	-	-	-	-	-		-	-
				-	-	-	-	-	-	-	-	-	-		-	-

TEST PIT LOG (T.P. NO. 10)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Test Pit No.: 10		Location:		Longitude:	Latitude:	Elevation:	Log scale: 1:50	Geologist:
Log				Depth (m)	Description	Ground Water Level	Sampling Depth	Remark
Wall north	Wall east	Wall south	Wall west					
				- 1.00	0.00-2.00m Alluvial deposit, consist of gravel to boulder rock fragments			N 
				- 2.00				
				- 3.00				
				- 4.00				
				- 5.00				
				- 6.00				

24.1.3-4 (11)

TEST PIT LOG (T.P. NO. 11)
THE INFANTA IMPOUNDING IRRIGATION AND ENVIRONMENTAL IMPROVEMENT PROJECT

Test Pit No.: 11	Location:	Longitude:	Latitude:	Elevation:	Log scale: 1:50	Geologist:
Log						
Wall north	Wall east	Wall south	Wall west	Depth (m)	Description	Ground Water Level
				-1.00	0.00-0.30m Top soil, clayey silt with organic materials 0.30-3.00m Silty clay, medium plastic with 20% gravel & boulders	
				-2.00		
				-3.00		
				-4.00		
				-5.00		
				-6.00		
						Remark

2.4.1.3 - 4 (2)