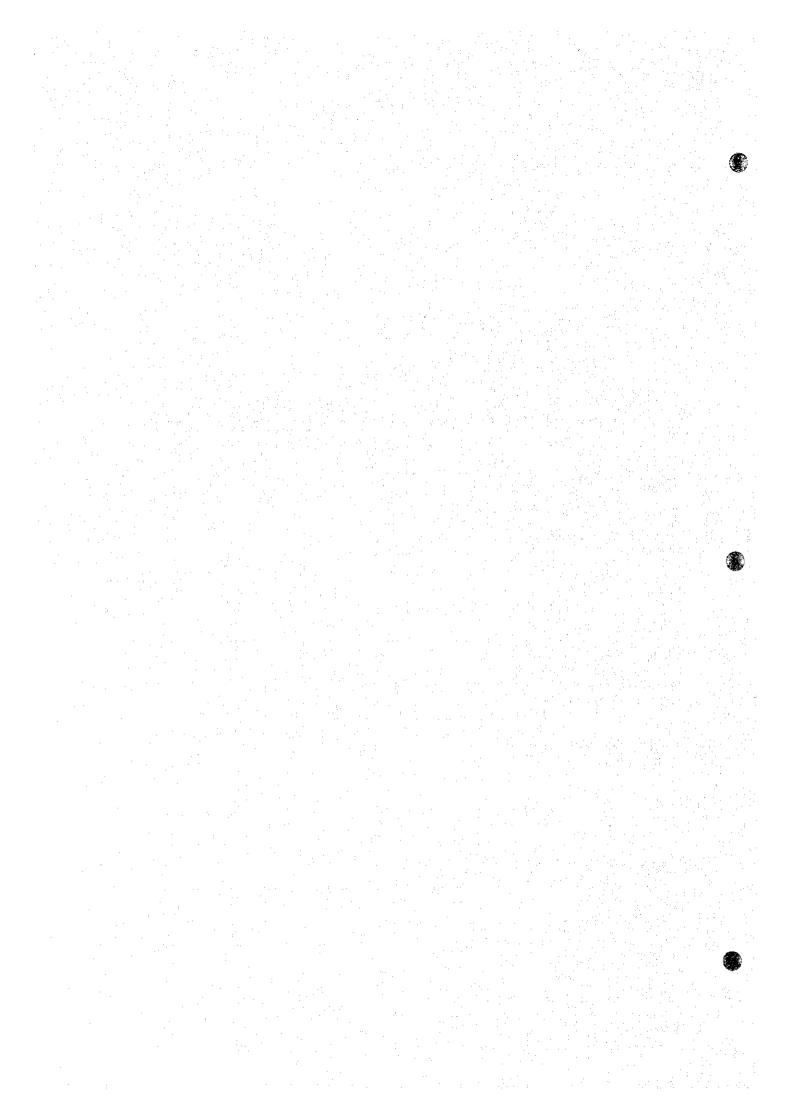
APPENDIX A DRILLING LOGS AND
BOREHOLE PERMEABILITY TEST DATA



AVERAGE CORE AVERAGE CORE DATE EPOM 16/DEG 70 20 DEG 1 DEG 1 DEG 2 D	23.58 M
ROCK TYPE OR SECTION DESCRIPTION TOP SOIL Communicity Itead Convenience of the process well-defer or process	1
Dek Brown Clysey Soil Company S	CA
Dak Brown Clayey Soil Comparatively Issal Comparative Is	
Dak Brown Clayey Soil Comparatively Issal Comparative Is	<u> </u>
Dak Brown Clayey Soil Comparisory Hund Comparisory Than C	a a
O.60-2.10 m Non-weathered grey hard porous welded tuff. Non-welded tuff like clayey soil. Non-welded tuff. Non-welded tuff like clayey soil. Non-welded tuff. Non-welded	
porous welded tuff. Brown along discontinuities spaced less than 30 cm. 2.10-7.90 m Highly weathered brown soft welded tuff like clayey soil. 7.90 2215.68 TUFF Brown along discontinuities spaced less than 30 cm. 2.10-7.90 m Highly weathered brown soft welded tuff. 8.90 2214.68 NON-WELDED TUFF Sightly friable non-welded tuff. Sightly friable to friable joints spaced less than 10 m. 10.10-12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 12.90-18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced more than 50 cm. 12.90-18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	
Brown along discontinuities spaced less than 30 cm. 2.10-7.90 m Highly weathered brown soft welded tuff like clayey soil. Recorded to the clayer soil. Brown along discontinuities spaced less than 30 cm. 2.10-7.90 m Highly weathered brown moderately weathered slightly friable non-welded tuff. Sopo-10.10 m Moderately weathered brown massive tuff. Slightly friable to friable joints spaced less than 10 m. 10.10-12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 2.10-7.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 2.10-7.90 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced more than 50 cm. 2.10-7.90 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	
Shown along discontinuities spaced less than 30 cm. 2.10-7.90 m Highly weathered brown soft welded tuff like clayey soil. Light brown to brown moderately weathered slightly frieble non-welded from moderately weathered slightly frieble non-welded from moderately weathered brown massive tuff. Slightly friable to friable joints spaced less than 10 m. 10.10-12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 2.10-7.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 2.10-7.90 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced more than 50 cm. 3.12-90-18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	2
spaced less than 30 cm. 2.10-7.90 m Highly weathered brown soft welded tuff like clayey soil. WELDED TUFF B.90 2214.68 NON-WELDED TUFF B.90-10.10 m Moderately weathered brown massive tuff. Slightly friable to friable joints spaced less than 10 m. 10.10-12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. "" 12.90-18.50 m Moderately weathered light brown massive tuff. Slightly friable with joints spaced more than 50 cm. "" 12.90-18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm. Slightly friable to friable with joints spaced less than 10 cm.	3
Highly weathered brown soft welded tuff like clayey soil. 190	
welded tuff like clayey soil. WELDED TUFF Light brown to brown moderately weathered slightly friable non-welded suff. 8.90 2214.68 NON-WELDED Moderately weathered brown massive tuff. Slightly friable to friable joints spaced less than 10 m. 10.10~12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. "" 12.90~18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced more than 50 cm. "" Slightly friable to friable with joints spaced more than 50 cm. "" Slightly friable to friable with joints spaced less than 10 cm.	4
WELDED TUFF 2.90 2215.68 WELDED TUFF Recorded Lightly friable with joints spaced more than 50 cm. WELDED TUFF 1.13 WELDED TUFF Recorded Lightly friable with joints spaced less than 10 cm. WELDED TUFF Recorded Lightly friable with joints spaced less than 10 cm. Recorded Lowest V 1.2.90-18.50 cm. WELDED TUFF 1.30 Recorded Lowest V (15.00) Recorded Lowest V (15.00) Recorded Lowest V (15.00) Slightly friable to friable with joints spaced less than 10 cm.	5
RON-WELDED RON-WE	
Light brown to brown moderately weathered slightly friable non-welded unf. 8.90 2214.68 NON-WELDED TUFF NON-WELDED TUFF 8.90 2214.68 NON-WELDED Weathered slightly friable non-welded unf. Slightly friable to friable joints spaced less than 10 m. 10.10-12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. "" 12.90-18.50 m Moderately weathered light brown to brown moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced more than 50 cm. Slightly friable to friable with joints spaced less than 10 cm.	6
Light brown to brown moderately weathered slightly friable non-welded wift. 8.90~10.10 m Moderately weathered brown massive tuff. Slightly friable to friable joints spaced less than 10 m. 10.10~12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 2.12 3.13 3.14 4.15 5.15 5.17 5.17 6.18 7.20 8.90~10.10 m Moderately weathered brown massive tuff. 8.90~10.10 m Moderately weathered light brown massive tuff.	14
Light brown to brown moderately weathered slightly friable non-welded turff. 8.90—10.10 m Moderately weathered brown massive tuff. Slightly friable to friable joints spaced less than 10 m. 10.10—12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 2.15 2.15 2.17 2.18 2.19 2.10 3.10 3.10 4.	
8.90~10.10 m Moderately weathered brown massive tuff. Slightly friable to friable joints spaced less than 10 m. 10.10~12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 2.10 12.90~18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	8
Moderately weathered brown massive tuff. Slightly friable to friable joints spaced less than 10 m. 10.10~12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 2. 2. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.	
massive tuff. Slightly friable to friable joints spaced less than 10 m. 10.10~12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. "" 12.90~18.50 m Moderately weathered light brown massive tuff. "" Slightly friable to friable with joints spaced less than 10 cm.	194
Slightly friable to friable joints spaced less than 10 m. 10.10~12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. Slightly friable with joints spaced more than 50 cm. 12.90~18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	ιo
spaced less than 10 m. 10.10~12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 12.90~18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	1
10.10~12.90 m Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 12.90~18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	113
Fresh grey massive sandy tuff with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 12.90~18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	12
with scattered big scoria or pumice. Slightly friable with joints spaced more than 50 cm. 12.90~18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	14
Slightly friable with joints spaced more than 50 cm. " " 12.90~18.50 m Moderately weathered light brown massive tuff. " " Slightly friable to friable with joints spaced less than 10 cm.	13
Sightly friable with joints spaced more than 50 cm. V	14
12.90~18.50 m Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm. (15.00)	
Moderately weathered light brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	[5]
brown massive tuff. Slightly friable to friable with joints spaced less than 10 cm.	163
Slightly friable to friable with joints spaced less than 10 cm.	
joints spaced less than 10 cm.	17
	1 - 1
	19
// / 18.50-21.10 m Fresh grey massive sandy	
Slightly friable to friable with	24
// joints spaced more than 50	215
Cm.	223
	23 6
// // 21.10~23.50 m Moderately weathered light	145
brown massive tuff.	24 0
Slightly friable to friable with	25
joints spaced 30 to 10 cm.	
	26
	1
// // Fresh(?) light grey soft	
OE TUFF (N)	28
& Core recovery is very low.	[-]
SEDIMENTS // // DATE OF THE SEDIMENTS // DATE OF	
#RQD is Nock Quality Designation, RQD=(Total length of cylindric cores longer than 10 cm)/(Total core length) x 100%	30

[#]RQD is Hock Quality Designation. RQD=(Total length of cylindric cores longer than 10 cm)/(Total core length) x 100%
#LUGEON VALUE is I/min/m under injection water pressure of 10kg/cm²
#DEPTH and ELEVATION are in meter
#DEPTH and ELEVATION are in meter

HOLE NO. KB-2 SHEET NO. 1 OF 1

Γ.	PROJ	ECT.	STUDY FOR (ONSTRU	CTION C	OF DAM IN	MELEWA R	VFR	SYSTEM	DEPTH	20.00.14	ELEVATION		
	SIT		Kipipiri Quarry		 ii	COORDINATE	948 632.75			INCLINATION	20,00 M 90°	DRILL RIG	2207.87	M.
Ā	VERAGI RECO	E CORE VERY				DATE	FROM 2/JAN			DRILLED	MOWLEM	LOGGED	JICA	
	i		ROCK TYPE	COLUMN		***************************************				CORE		_ uotana	JICK	
DATE	DEPTH	ELEVATION	OR	1.	1	DESCRIPT	ION	BIT &	GROUNDWATER LEVEL	RECOVERY	R. Q. D.			Ē
		ELE	FORMATION	SECTION				FI N	00 m					E
				**	0.00~0.2			1		96 cm	50 (%)		<u> </u>	ᆛᆜ
	1			~~	Mode	rately weath	nered slightly]					1
					joints	s prown wer spaced less	ded tuff with than 10 cm.		ĺ					
				~	0.25~4.0			İ						2
	3	1		~ ~	Fresh	om ercy verv	hard welded							
			Í	1~	tuff to	iff with bro	hard welded own colored							3.3
	4		-			spaced 30 to	5 10 cm.					•		4
z	5			~ ~	4.00~14.	13 m		: .	: .					
AAN				~	welde	dark grey d tuff w	very hard ith brown							[5]
à	6	1	ĺ	~	colore than 50	d toints si	paced more		Recorded					8 3
	-]	l	~ ~					Lowest					
			1	: 1	9.60~12.	50 m - & Jishio G	ragment are					•		7
	8		ļ	~	less.	ce mane n	agment are		(7.20)					
	9			~ ~										
	1			~				.						9
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1 6	_			~ ~				ĺ						H
	"		1	· ~								÷		画
1	12		l							i i				-
NAC	-		1	~ ~				ı	. 8				-	3
22			WELDED	~				l						135
	4 14.13	2193.74	TUFF					-						1
E.	:		NON WELDED	1111	Fresh gre	y non-welde	d tuff layer ble.	l						43
	15.3 <u>3</u>	2192.54	NON- WELDED TUFF	7////	Slightly fr	iable to fria	ble.							15:
<u> </u>	6]	11 11	Modera	tely weathe	red slightly							-
lE			Ì		friable :	to friable m ints spaced	assive roff	İ						16-
]	"	Cm.		1 30 10 30	-						17
A T	3		1	11 11		3~16.32 m		- 1					-	1
vi	1		MASSIVE TUFF		17.0	0~17.32 m								18
123	2		& LAKE	"	S	andy tuff	·					•		19
	20.00	2187.87	SEDIMENTS	,, ,,			.						ĺ	_
F				-	END OF	BOREHOL	Æ						· J	
	1			- 1									Į	-
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¥ R.C	D is Rock	Coality De	signation, R.Q.D=(To	tel lange of	-1:-4:				91111	ess tonico	in in in in in in in in in in in in in i			_1

^{*}R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cares langer than 10 cm)/(Total care length) × 100%
*LUGEON VALUE is I/min/m under injection water pressure of 10kg/cm
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

HOLE NO. KB-3 SHEET NO. 1 OF 1

		PROJE	CT :	STUDY FOR C	ONSTRU	CTION OF DA	M IN	MELEWA R	IVER :	SYSTEM	DEPTH	20.00 N	.1	ELEVATION	2191.00	M
•	1 1	SITE		Kipipiri Quarry	Site	COORDINATE 949 095.41				381.86	INCLINATION			DRILL RIG	2171111	
	^,	RECOV	CORE ERY			DA		FROM 6/JA			DRILLED		E34	LOGGED	JICA	
	<u>.</u>	E	NOI	ROCK TYPE	COLUMN				정표	E	CORE	200		<u> </u>		
		DEPTH	ELEVATION	OR	Come	DESC	RIPT	ION	BIT	GROUNDWATER	RECOVERY	R. Q. D.				E
	Щ	- 	닯	FORMATION	SECTION				BIT	3ROU L	% cm	50 (%)				<u>=</u>
		:			2	0.00~0.40 m			1							
		4	ł			core.	out w	ater sandlike								
		2			~	0.40~6.44 m]						•	
	E		1		~~	Fresh dark	grey	very hard		Recorded						125
	₹ Z	4			~	Fresh dark welded tuf brown color	f wi	th partially		Lowest						3
ĺ	3[İ			more than 50	cm.	mus spaced		<u>V</u>						
	- E			1	~ ~					(3.50)						43
İ	Ė	<u> </u>	1	1	~											5
	E	1		WELDED	~~	•										
	_	6.44	2184,56	TUFF		P. L. J. J.		1 1 1 1 1 1]							[6]
	- 1	1		HIGH	~~~	Fresh dark gre welded tuff w	ith ic	pints spaced								7
- [8 24	2182.76	WELDED TUFF	~ ~ ~	more than 50 seam.	cm,	, with clay	1 1	i						
	Ē.,						rev.	very hard		į						12.3
	- 59	1		ļ		Fresh dark g welded tuff w	ith je	oints spaced	}							9
Ì	K				~	more than 50 cr 8.00~8.60		1								
-	<u>.</u>	11100	2180.00	WELDED TUFF	~ ~	Slightly p	orous	1								10
-	E			NON- WELDED	1111	Fresh dark grey	, slie	htly friable								
1	12	12.00	2179.00	TUFF	77777	non-welded tuff										1
2	1 13				" "	12.00~13.17 m Slightly weat	nered	light brown								
5						lapili tuff wi	th hi	gh inclined l								13
	14				*	joints spaced :	50 to	30 cm.								-
ĺ	E .		ĺ		" "	13.17~16.50 m	امسما	(:_L. L	.]							
			ĺ			Slightly weath silt to sand g	rade	tuffaceous								15
	16	- 1	İ		· .	sediments.			ļ							16
	- 17		1		" "	Bedding at fl	at to	10° friable	- 1							
			ļ			with light brow spaced more th	vn co ian Si	lored joints (0 cm.	-							(7.
	18			MASSIVE	ļ ·	6.50~20.00 m										18:
1.	18			TUFF	" "	Slightly weath	ered i	light brown	- 1							
	E_			& LAKE	"	slightly friable light brown	: lani	li tuff with l	}							19
-	20	20.00	2171.00	SEDIMENTS		spaced 50 to 3	9 ст.	Loca joints								20
ľ				Ī	-					ı III					•	
	[-				- 1	END OF BOR	EHO!	LE		iii						HOLE
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ட				innation ROD=(Tol												

**R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

***LUCEON VALUE is !/min/m under injection water pressure of 10kg/cm'

**DEPTH and ELEVATION are in meter

***DIAMETER is in millimeter

HOLE NO. KB-4 SHEET NO. 1 OF 1

	PROJE	CT S	TUDY FOR C	ONSTRU	CTION OF DAM IN	MELEWA R	VER :	SYSTEM	DEPTH	30.00 M	ELEVATION	2179.59 M
AV.	SITE ERAGE	CORE	Cipipiri Quarry	Site	COORDINATE	949 000.68	3:210	801.83	INCLINATION	90°	DRILL RIG	2277.07 111
Ť	RECOV	<u>ery</u>	T	1	DATE	FROM 8/JA			DRILLED	MOWLEM	LOGGED	JICA
DATE	ОЕРТН	ELEVATION	ROCK TYPE OR FORMATION	COLUMN	DESCRIPT	TION	BIT &	GROUNDWATER LEVEL	CORE RECOVERY	R, Q, D,		
3 E	1 1.00	2178.59	TOP SOIL	X	Brown soil with roots.							
	2 2.15	2177.44	WELDED TUFF	~~	Moderately weathered by welded tuff with joints 10 cm.	spaced less than						1
THE STATE OF	3 3.35	2176.24	HIGH WELDED TUFF	~ ~ ~	Fresh to slightly weat high welded tuff with spaced joints.	hered very hard inclined closely						3
	5			\$	Fresh dark grey welded tuff with br joints spaced more the	very hard own collered han 50 cm						4
والتسلس	6.30	<u>2173.29</u>	WELDED TUFF	~ ~								<u>5</u>
ساتسلسلس	⊢	2171.09	NON- WELDED TUFF		Fresh to slightly we grey hard non-weld joints spaced 30 to 1	led tuff with i						7. B
ن اسال السال السال	2		:.	" "	8.50-20.35 m Moderately weat brown slightly fria lapili tuff with jo	hered light ble to friable bints spaced		Recorded Lowest				9
12				11 II	less than 30 cm.			(10.03)				11
14 15		-		n n	20.35~24.90 m Fresh light grey slig to friable lapili tuff spaced more than 5	ghtly friable with joints						15: 15:
16 17				" "	•		-				·	6 6 17
- 19				" 2	24.90~30.00 m Moderately weather light grey slightly friable lapili tuff spaced more than 50	friable to with joints						18 19 - 20
21				" "								213 113 223
23				, "								22
5		" "										24: 25:
7				*								26
8			MASSIVE	<i>"</i>								273 287
9	0.00 2	1000	TUFF & LAKE SEDIMENTS		END OF BOREHOL	ra l						10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

LOG FORM-B

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HOLE	NO. MB-1	SHEET	NΩ	1	OF 3
	***************************************	OTTULE	110.	- 1	Or O

		PROJ	ECT	STUDY FOR	CONST	UCTION (OF DAM IN	MELEWA F	IVER	SYSTE	М	DEPTH	75.00 N	1	ELEVATION	2151.42	\overline{M}
	<u> </u>	SIT		MALEWA D.				951 851.76			\dashv	INCLINATION	90°		DRILL RIG	2	
	'	RECO	E CORE				DATE	FROM 14/A	PR TO	28/AP	R	DRILLED	MOWL	ЕМ	LOGGED	JICA	
		æ	10%	ROCK TY	E COLUX				⊗ 20 100	GROUNDWATER	- 	CORE					\exists
	DATE	нтаза	EVATION	OR		1	DESCRIPT	TION	YET	UNDWAT		RECOVERY	R. Q. D.		VATER PRESSU	JRE TEST	E
			E	FORMATIO	N SECTION				BIT	INOU!	i [ç _ó cm	50 (%)				ä
		_ 0.2	2151.2	TOP SOIL			humic soil i	ncluding gras	s	1-9							+
		4		100018	_/ ~ ^	, Junis			_								
	1	2		1	~	0.20~1.	80 m									•	
	12	_]	İ			Mode	rately wea	thered brown								· .	2
	14	3			~ ~	with	tiy iriadie brown co	welded tuff lored joints							Lu = 3	3 1	3
	-[9		}	. ~	space	d more than	50 cm.	1								
	Ē	-			~ ~	1.80~2.	85 m				#				K = 3	.33 X 10-	<u>' 4 </u>
	lE	5				l hard	weided tuti	ed grey very with brown	1 1						Pc = 4	1.2	5
		<u>.</u>	İ		~	colore	ed joints s	paced more									
	-	.]	1	ĺ	~ ~	•	0 cm.										6
	12	7	}	-		2.85~14	.30 m	. voeu boul									7.
	ď	3	1		~	welde	ed tuff w	y very hard vith brown							Lu = 1	.4	
	٩V	1	1		~ ~	colore than 3	ed joints s	paced more							K -1	59 x 10 ⁻⁵	8.
	3	9	1				- U.III										9
	E 1	0	1	1	~										Pc = 6	.2	
	1] .			~ ~												10
	<u>-</u> Ľ	4]		1~												11
	1	2			.~	i											1
	Ŀ	1.			\~ ~	<u> </u>									Lu = 0	0	125
	~[1	1			·~]							i i				13
	44					İ									K = 1.0	00 x 10-5	1
	釒				~ ~	14.30~16	.30 m								Pc = 2.	5	14 =
	E.15	1	1		~	l brown	hard welde	d yellowish d tuff with						•			15
1	10	16 30	2135.12	WELDED TUFF	1	brown 30 to 10	colored jo	ints spaced	1								-
	<u> </u>	10.30	2133.12		1111			riable non-	ļ							·	16.3
-	_["	17.30	2134.12	NON-WELDER		welded tu	ff		İ						Lu = 0.	0	17
ĺ	18														K = 0.0	o	
	F					Fresh, weathere	partially d. vellowi	slightly ish brown							Pc = 0.0		<u>'</u>
	E 19					Slightly (riable lake	sediments l	İ						rc = 0.0	' [19
	20					more than	'n colorea je 50 cm.	oints spaced									
	Ě.				. — —			tuffaceous	1								20
	1				 	siltston	ie. sa	ndstone. I								ļ	ᆁᇎ
	22					conglome lamina of	rate and lap 7° to 10° dip	ili tuff with								į,	HOLE HOLE
					[– –]		· to to dip	·								1	-11
L	[62]														•]2	
ľ	24														(K - 68	9 x 10 ⁻⁵) 2	M M
1			j												(11 - 0.0	7 10 - 7	
		ļ	ĺ										- 1				<u>5</u>
J _Q	26		1	LAKE							▦				Lu = 2.5	.	, i
4	26	26.70	2124.72	SEDIMENTS			<u> </u>										쏔
a					11 11	Fresh grey	y partially	yellowish			∭				K = 2.9	7 x 10 ⁻⁵	27
	26		· [•		(lapili tuff)	riable mas with discol	ored joints							Pc = 2.6	; <u> </u>	28
ĺ			ł		W	spaced mor	re than 50 ci	n.		Ī						f	
	29			MASSIVE	,, ,,	· 4.				ii ii						į	=
	30			TUFFS							M					į	-]ω`
	# R.O	O is Ro	k Quality Ba	signation, R.Q.D= (Total Lauret .												~11

^{*}R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) x 100% *LUGEON VALUE is 1/min/m under injection water pressure of 10kg/cm' *DEPTH and ELEVATION are in meter *DIAMETER is in millimeter

FORM-C.

007

HOLE NO. MB-1 SHEET NO. 2

OF 3

-,-			TATATA	LO	<u> </u>					
1		1 8	ROCK TYPE			Г	EB	CORE		
4	Ë	ΙĔ	1	COLUMN		f	돌급	1		WATER PRESSURE TEST
	DEPTH	%	OR	000	DESCRIPTION	1	UNDWAT	RECOVERY	R. Q. D	
	Ω	ELEVATION	FORMATION	SECTION		1	CROUNDWATER LEVEL			
	т	4				<u> </u>	2	% cm	× •.	
_	i				63.65-68.75m	1				Lu = 0.0
6		1			Slightly to moderately weathered slightly friable to friable lake sediments (tuffaceous sandstone) with lamina of 5° dip.					
	1	i			weathered slightly friable to	1	1 3			K = 0.0
	!				friable lake sediments		l i	1		14 0.0
7		!			(tuffaceous sandstone) with	1 .]	.		Pc = 1.0
	1	1	1		lamina of 5° din	1				FC = 1.0
					aminia or o cip.		i i			
68	1	1			68.75~75.00 m		l i			
}{		[<u> </u>	00.75~75.00 III	1	ł I			
ş	2	1 1 1			rresh grey to greenish grey		1			
	1	1	1		nard to slightly friable take		i !			
m	i	i			sediments (afternating beds of		l 1			
70	1	i			Fresh grey to greenish grey hard to slightly friable lake sediments (alternating beds of tuffaceous sandstone and tuff)		l #			Lu = 0.5
-	!	1			with lamina of 5° dip,		! · !			•
71		1					i i	掛曲		$K = 5.50 \times 10^{-6}$
	1	İ			•	li	1	###		1C = 3.30 X 10 =
		1								Do 2 0
4	1	1								Pc = 7.8
	l	1]	لــــ ــــــ <u>ـــــ</u> ــــــــــــــــــــ						•
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	t t		LAKE	<u>.</u>			Ì			
5	50.00	2101.42	SEDIMENTS		<u> </u>	I				·
		1			END OF BOREHOLE	1				
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	- 1	1	1	1			1:17	error 155		

HOLE NO. MB-2 SHEET NO. 0F 2

	ROJE		STUDY FOR	CONSTRU	JCTION (OF DAM IN	MELEWA	RIVER	SYSTEM	DEPTH	65.001	м	ELEVATION	2087.83 1	M
AVE	SITE RAGE	CORE	MALEWA D	AM SITE		COORDINATE	951 971.1	8:211	426.13	INCLINATION	90°		UNILL RIG		
7 <u>R</u>	ECOV	ERY	<u> </u>		T	DATE	FROM 11/			DRILLED	MOWL	EM	LOGGED	JICA	
4	DEPTH	ELEVATION	ROCK TYPE	COLUMN	1	DESCRIPT	TON	BIT &	DIAMETER GROUNDWATER LEVEL	CORE	R, Q, D,	¥,	ATER PRES	SURE TEST	Ē
	л Т	==	FORMATIO	N SECTION	1		·	BIT	GROUP	o _i , cm	50 (%)	- w		·	D.d.id
		İ		_	0.00~0.	50 m			.]						
2		1		۵ ۵	Brow	n soil.									1
- 2				Δ Δ	0.50~4.	45 m			1						3
3			j	Δ	Bould	ler of 65	cm in ma	x.							-
Ē.,					diame	ter and grav	els.								3
<u>E4</u>	4.45	2083.3	8 COLLUVIUN						Recorded Lowest						4
5					4.45~8.2	:0 m							(K ≈	6.23 x 10-	3)
-		1	1		Fresh friable	greenish g to friable la	grey slightl	y	- - -						5.
6		l			(altern	ating beds o	of medium t	0	(5.15)						6
7		ĺ			conglo	sandsı merates wi	th lamina c	√F J					•		-
8	-				5° dip) than 5(with joints	spaced mor	e					Lu =	4.3	J ^z
. 8				├ ┤	1								K =	4.50 x 10 ⁻⁵	8
9					8.20~22. Fresh	greenich a	rev hard #	,					Pc =	1.4	-
a					SUGNU	/ triable ink	e sediment	c i							9
_					tuttace	alternating	me inffanc	1 !						· · · · · · · · · · · · · · · · · · ·	-10
) i					- lapili tu	iff with lan with joints	ina of 50 to	, i					_		-
-					than 50	cm.	spacea mon	:					Lu = 3	3.1	
12					19.70~	21.90m		Ì					K = 3	5.52 x 10-5	12
13	- }		1		Weakly	sheared	zone with						Pc = 6	i.4	1
14					some si	ikenside.									
_	- }														и
15	İ			L											153
16															-1
-													Lu = 0	0.8	16
7				<u> </u>									K = 9	.10 x 10-6	lz.
8													Pc = 6	4	
.							•						10-0	. 7	18
9				<u> </u>											19
0															
															20
1			!								<u> </u>				213
2			LAVE]]							
22	2.75 2	2065,08	LAKE SEDIMENTS										Lu = 1	0.2	H
1		İ			22.75~26.			1		▓			K = 1.	16 x 10 ⁻⁴	23
ı		Ì		" "	friable	ellowish g massive t	uffs (lanili	1 1					Pc = 8.	.4	
		ĺ			tuff) inc	luding large with join	e scoria and	1 1							
				"	more th	an 50 cm.	apareca								25
				11 11											26
		ĺ				:							Lu = 0.	.4	
		1		"				.						20 x 10 ⁻⁶	27
4				11 11]					A = 4.	4U X 1U⁻♥	28
,			i j	"								٠		1	1
			MASSIVE												293
	L		TUFFS		·	 -									-, P

e:R.Q.D is Rock Quality Designation, R.Q.D.» (Total length of cylindric cores longer than 10 cm)/(Total core length) x 100% e.LIRGEON VALUE is 1/min/m under injection water pressure of 10kg/cm² e.DEPTH and ELEVATION are in meter substantial properties of 10kg/cm² e.DEAMETER is in millimeter

1. 26.90-41.35 m Tresh data recy partially (lightly fished massive taffs (lightly fished m		ш		NOL	поск түрг	COLUMN			CORE		WATER PRESSURE TEST] ₌
1.0 1.0		DAT	DEPTH	ELEVATION	OR FORMATION	SECTION	ION		RECOVERY %	R, Q, D		DEPTH
Lu = 1.4 Lu = 1.4 Lu = 1.5		1	1				Fresh dark grey partially				. •	313 323
Lu = 1.4 K = 1.63 x 10 ⁻⁵ Lu = 1.5			1				small scoria and much, small lithic fragments, with joints spaced more than 50 cm.					333
MASSIVE TURNS W Fresh greenish grey slightly friable lake sediments (alternating beds of lapilit utiff, tuff, tuffaceous sandstone and little congluments with stamming of some than 30 cm. Lu = 1.5 K = 1.63 × 10-5 M Lu = 0.4 K = 4.50 × 10-6 M M M M M M M M M		30				W					Lu = 1.4	35
Massive TUFFS	,	1.3				"					$K = 1.63 \times 10^{-5}$	36 38 39
From greenism grey stignty middle lake sections (alternating todd) of lapitit (aff., tuff. aff.) and the lake section with lamina of 5° to 12° dip) with joints spaced more than 50 cm. Lu = 0.4 K = 4.50 x 10-6 Lu = 1.1 K = 1.20 x 10-5 Lu = 1.1 K = 1.20 x 10-5 Lu = 1.1 K = 1.69 x 10-5 Lu = 1.1 K = 1.69 x 10-5 Lu = 1.9 K = 2.16 x 10-5 Lu = 1.9 K = 2.16 x 10-5 R = 2.	78.01		41.35	2046.48	T THE LOCK	11 11	and the state of t				In=15	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Lu = 0.4 K = 4.50 x 10·6 42·1 K = 4.50 x 10·5 42·1 K = 1.69 x 10·5 42·1	>	43					Fresh greenish grey slightly friable lake sediments (alternating beds of lapili tuff, tuff, tuffaceous sandstone and little conglomerates with lamina of 5° to 12° dip) with joints spaced more than 50 cm.					120 miles manue 110 miles
Lu = 1.1 K = 1.20 x 10 ⁻⁵ Lu = 1.5 K = 1.69 x 10 ⁻⁵ Lu = 1.7 K = 2.16 x 10 ⁻⁵ K = 2.16 x 10 ⁻⁵ K = 2.16 x 10 ⁻⁵	VM / UC	E									ì	5
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	MAY	49		·							1	անությունունու
HOLE NO. MB-2 Wall 153 Lu = 1.5 K = 1.69 x 10-5 Sall 166 Lu = 1.9 K = 2.16 x 10-5 K = 2.16 x 10-5		E									,	<u>Amatan Tanah M</u>
Lu = 1.5 K = 1.69 x 10 ⁻⁵ K = 1.69 x 10 ⁻⁵ K = 2.16 x 10 ⁻⁵ K = 2.16 x 10 ⁻⁵	/ MAY	53									$K = 1.20 \times 10^{-3}$	Ludenlin Kulu H
N Section N Section	22	56 57			-						Lu = 1.5	NO.
Lu = 1.9 K = 2.16 x 10-5 N See 2.16 x 10-5 K = 2.16 x 10-5 See 2.16 x 10-5 See 2.16 x 10-5 See 3.10 x	23/MAY	58 59									$K = 1.69 \times 10^{-5}$	<u> 18−2</u>
2 63	<u></u>	61 62									6	सित्तान्त्रीक्रमानाक्ष्यक्षेत्र)
I ANNO MARKANIA I I I MANAGAMANA I I MANAGAMANA I I MANAGAMANA I I MANAGAMANA I I MANAGAMANA I I MANAGAMANA I I		63 64	(5 M)	2022 82	LAKE SEDIMENTS		END OF BOREHOLE				K ≈ 2.16 x 10 ⁻⁵ 6	/ E.

HOLE NO. MB-3 SHEET NO. 1 OF 3

		PROJE	СТ	STUDY FOR	CONSTRU	ICTION OF DAM IN	MELEWA RI	VER S	YSTEM	DEPTH	70.00 1	u T	ELEVATION	2153.33	M
		SITI		MALEWA DA		COORDINATE	952 119.34 :	211 3	32.80	INCLINATION	90°		DRILL RIG	2133.33	IVI
	\ \ 	RECOV	CORE			DATE	FROM 6/MA	ΥTO	17/MAY	DRILLED	MOWI	FM	LOGGED	JICA	
	53	H.	TON	ROCK TYPI	COLUMN			BIT & DIAMETER	ATER L	CORE	R, Q. D.	Y	ATER PRESS	URR TEST	
	M	DEPTH	ELEVATION	OR	SECTION	DESCRIPT	ION	AME.	GROUNDWATER LEVEL	RECOVERY		-			DEPTI
		-	니디	FORMATION			······································	ត់ត	25	% cm	50 (%)	,			Ē
					~ ~	Front doub man								•	
	_	_			~	Fresh dark grey welded tuff with	discolored				ı				냭
	Σ	2			~ ~	joints spaced more t	than 50 cm.				1		 :		2
.	ဖွဲ့	3 3.05	2150.2	WELDED TUFF	~								Lu = i	5.0	
ļ		-				3.05~6.00 m							K = 4	1.92 x 10	5 3 3
ļ		<u>.</u>				Slightly weathers brown to brown	ed yellowish n hard lake	·					Pc = 2	2.7	4 :
ľ		5				sediments (alternatuff, tuffaceous sa	aling hede of I	Ì							5
- [E	- 6				conglomerates wi	th lamina 5°								
.	1	-				to 10° dip) with j more than 50 cm,	oints spaced partially 30						Lu = 3	3.0	6 3
-	E	7				to 10 m.							K = 3	3.44 x 10·5	7
J;	<u>الم</u>	8				6.00~10.70 m							Pc = 2	2.2	1
	Σ	.				Fresh dark grey sli to friable lake sedi	igntly friable ments.		į				-		<u> </u>
- ['	7	희			1 1	Rock facies same a	. !	- 1							2
	-	<u>0</u>		LAKE		NOON INCIES SAME	as above.	-							
	-	10.70	2142.6	SEDIMENTS				1							
ı						10.70~12.25 m Moderately weath	sered brown								
	Ē	2				slightly friable lap joints spaced more	rili tuff with b						. Lu = 4	.0	12
	E.,	3		NON-		12.25~14.00 m	man 50 cm.						K = 4	.59 x 10-5	
				WELDED		Fresh dark grey.		ļ					Pc = 6	.3	13
	111	14.00	2139.33	TUFF	7777	Rock facies same (is above.								14
	15	<u>.</u>			~ ~	Fresh dark grey welded tuff inclu-	very hard	.							
	F				~	welded tuff inclu- scoria and lithic frag	ding much	- 1							M
Y MAY		1				joints spaced more th	an 50 cm.								16
	<u> </u>				~ ~	•							Lu = 0.	.7	173
1.			1		~	•	· •	<u> </u>					K = 7.	70 x 10 ⁻⁶	
]]	~ ~	•		1	. #				Pc = 3	5	lia d
	19				~										19
	X				~ ~										1
	-		1		~										120
	E21			'	~ ~	•							Lu = 2.5	9	21 I
	22]	~								K = 3.3	30 x 10-5	
Ā	2.2				~ ~								Pc = 4.7		
\ <u>\</u>		.		[]	~								rc = 4./	!	Ö
"	24]	~ ~										- X 24 05
	25			· WELDED	_										-511
		25.50	2127.83	TUFF											25 U
Н	26			[. <u> </u>	/////	Fresh dark grey friabl with joints spaced me	e lapili tuff						Lu = 0.8	3 -	26
	27		. ;	NON-		cm.							K = 8.6		1
MAY		27 00	2125.43	WELDED TUFF											₹(.
ò	26	±1.7U	2123.43	1011	7777		·						Pc = 3.6	:	26
	- 29	1												ļ	~ [
				LAKE											w.
ا ا	-JUQ	.D is Roc	k Quality ()	SEDIMENTS	etal tenub of	cylindric cores langer than 10	1/7								307

[●]R.Q.D is Rock Quality Designation, R.Q.D.—{Total length of cylindric cores longer than 10 cm}/{Total core length} × 100%
■LIGEON VALUE is | Mini/m under injection water pressure of 10kg/cm!
■DEPTH and ELEVATION are in meter

#DIAMETER is in millimeter

*	~	*	~	Y		*	\sim	\sim	
D	К	1	1	ы		1	O.	(¥	

HOLE NO. MB-3 SHEET NO. 1

	PROJE	ест	STUDY FOR	CONSTRU	CTION OF DAM IN	MELEWA RI	VER S	YSTEM	DEPTH	70.00	M	ELEVATION	2153.33	<u>—</u>
	SIT		MALEWA DA		COORDINATE	952 119.34 :	211 3	82.80	INCLINATION	90°		DRILL RIG	2133.33	IVE
A\	RECOV	CORE VERY			DATE	FROM 6/MA	YTO	17/MAY	DRILLED	MOW	LEM	LOGGED	JICA	:
121	Ξ	NOT	ROCK TYPE	COLUMN			BIT &	ATER	CORE	R. Q. D.	1	WATER PRESS	· · · · · · · · · · · · · · · · · · ·	
LVC	DEPTH	ELEVATION	OR	SECTION	DESCRIPT	ION	Z A	SROUNDWATER LEVEL	RECOVERY			THE THEOLO	OWN IEST	14.43
Н	· 1	=	FORMATION				BIT	S .	% ca	50 (%				[2]
			ļ.	~ ~										
				~	Fresh dark grey welded tuff with	very hard discolored								1
MAY	2			~ ~	joints spaced more t	han 50 cm.								
1.5	3 3.05	5 2150.2	WELDED TUFF	~								Lu =	5.0	
	_				3.05~6.00 m		1	!				K ≈ 4	1.92 x 10 ⁻¹	5 3 3
	4		1	÷	Slightly weathers brown to brown	d yellowish						Pc = 1	•	4
-	.5				Sediments (alterna	iting bede of] .				L		c. /	
	-				tuff, tuffaceous sa	indstone and							٠.	5
	6.				conglomerates wi to 10° dip) with j	oints spaced						Lu = :	3.0	6
	7			 	more than 50 cm, to 10 m.	partially 30						K - 3	44 x 10-5	.] =
	-				6.00~10.70 m		[l life			1	7
ΜA	8				Fresh dark grey sli to friable lake sedi	ghtly friable						Pc = 2	2.2	а
1	9		1			• •								14
	_				Rock facies same :	is above.								9
	9		LAKE											ŧΩ
[T 16'V	2142.63	SEDIMENTS	1111	10.70-12.25 m									
E	2	1	ļ		Moderately weath	ered brown						Lu = 4	.0	
-				11111	slightly friable lar joints spaced more	than 50 cm.								12
[3		NON-		12.25~14.00 m Fresh dark grey.							K = 4	.59 x 10-5	1,33
	مر در ا	2139.33	WELDED TUFF			·						Pc = 6	.3	
	11332	2139.33	-	17777	Rock facies same a	s above.								и.
	4	Ì		~ ~	Fresh dark grey welded tuff inclu-	very hard	ļ							15
_ };E!			1.	~	scome and lithic fram	ments with l	- 1							
ž					joints spaced more th	an 50 cm.								16
0 1	4											Lu = 0	.7	17
F.18	ļ			~		1						K = 7.	70 x 10 ⁻⁶	
	1			~ ~		.]						Pc = 3.	5	JB.
Ē 19				~		1							_	19
E_x			İ	~ ~			İ							
E.				~			- 1			-				20
21		l		~ ~			-					Lu = 2.	9	
22			ļ	~ 1		1	Ì							
<u> </u>						. [30 x 10-5	44
Ž 23	.		 									Pc = 4.7		23
o - 24				~			İ							
		. 1		~ ~			J							24
25	25.50	2127.83	WELDED TUFF	~									·	25 C
26	∠3.30	<u> </u>		1777	Fresh dark grey friabl	e lapili mff						_		
				//////	with joints spaced me	ore than 50	ļ					Lu = 0.8	3 -	86
27	.		NON-	11114,	em.		Ì					K = 8.6	0 x 10-6	27
Z - 28	27.90	2125.43	WELDED TUFF		· 							Pc = 3.6		111
	T											1 0 ~ J,0		28
29							ŀ							
 30		. 1	LAKE SEDIMENTS		•									- 3 ω
400			esignation RODECT	<u>-</u>				拼		H444444				30]

[●]RQD is Block Quality Designation, RQD+(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100% ■LUCEON VALUE is Unin/m under injection water pressure of long/cm'

◆DEPTH and ELEVATION are in meter

◆DIAMETER is in millimeter

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HOLE NO. MB-3 SHEET NO. 2 OF 3

		·		DUILL		U	1101.	3 NO. 1	up-5	SHEET	NO. Z OF S	
	DATE	рертн	ELEVATION	ROCK TYPE OR	COLUMN	DESCRIPTION		GROUNDWATER LEVEL	CORE RECOVERY	R. Q. D	WATER PRESSURE TEST	рертн
	ď	DE	ELE	FORMATION	SECTION			GROUN	96 cm	q. D		DΕ
	107 MAY	32				Slightly weathered light gre- hard to slightly friable lak- sediments (alternating beds o tuff tuffaceous sandstone an conglomerates with lamina of 0' to 5° dip) with slightly discolored joints spaced more than 50 cm.	f				Lu = 0.8 K = 9.20 x 10 ⁻⁶	31:
i		33				joints spaced more than 50 cm.					Pc = 8.7	33 34
	۱۸۲	35										35
	11 M	36 37 36.8	35 2116.4	LAKE 8 SEDIMENTS		Fresh dark grey friable massive					Lu = 0.5	36 37
	-	_ 38			" "	tuffs (scoria rich lapili tuff) with slightly discolored joints spaced more than 30 cm.	1				$K = 5.20 \times 10^{-6}$ Pc = 4.6	36
	_	39 - 40			" "							50 1 4Q
	MAY	- 91 - 42 41.6	9 2111.6	MASSIVE TUFFS	" "						Lu = 1.2 $K = 1.29 \times 10^{-5}$	Line Financia
- 1	12 /	43 - 44				Moderately weathered yellow brown to brown hard to slightly friable non-welded tuff (lapilituff) with discolored joints spaced more than 10 cm.					Pc = 5.1	42 43
	, . Manulandini										$Lu = 0.9$ $K = 1.01 \times 10^{-5}$	اسال في سال
- 1	յում չէլ դրուդուրդույրուր	- 10 19		NON-		· .	·				Pc = 6.8	47
-	المتابسات		2102.68	WELDED TUFF		50.65~53.22 m						2
2018	سلسطتساس	2			~ ~	Slightly weathered light grey hard welded tuff with joints spaced more than 50 cm.					Lu = 0.6 K = 7.40 x 10 ⁻⁶	سطستقسيا
\$	ستنسلسان السائد				~ ~ ~ ~	53.22~61.60 m Fresh dark grey very hard welded tuff with joints spaced more than 30 cm.					1 1 2	Manufacture Manufa
NA.V	<u></u>	1			~ ~						Lu = 0.7	
15/	5.5	1			~~						$K = 7.50 \times 10^{-6}$	
F	60	2			~ ~						6	لاساليكيس
ΔY	61	61.60	2091.73	WELDED TUFF	777	Fresh dark grey slightly friable to					$Lu = 1.0$ $K = 1.12 \times 10^{-5}$ e	النتاسياس
16 / M	63				1111	friable non-welded tuff (lapiti tuff) with joints spaced 50 cm.					$R = 1.12 \times 10^{13} \text{ g}$ $Pc = 7.4$	
	3	1 1	2088.63	NON- WELDED TUFF			ļ					1

HOLE NO. MB-3 SHEET NO. 3 OF 3

DATE	рертн	ELEVATION	ROCK TYPE OR FORMATION	COLUMN	DESCRIPTION	CROUNDWATER C	CORE RECOVERY	R. Q. D	WATER	PRESSURE TEST	. Ottoba
WIND THE PROPERTY OF THE PROPE	8			11 11 11 11	Fresh dark grey slightly friable massive tuffs (lapili tuff) with joints spaced more than 50 cm. 63.2~64.4 m Weakly sheared with flat slickenside.	Redorded Lowest 2 (66.40)	% CB			Lu = 37.3 $K = 4.39 \times 10^{-4}$ Pc = 2.2	G£
7	70.00	2083.33	MASSIVE TUFFS	: · ·	END OF BOREHOLE					~	70
يبرايينا يتجانب أيتماعينا يتطيينا يسايسا ليساسي سياسا يساسي											
1000											
											-
	:					2			·		والموايينا ووالموايين يهامواريوا

LOG FORM-C'

HOLE	NO. MB-4	SHEET	NO.	1	OF 3

	ROJE SITE		STUDY FOR MALEWA D	CONSTRI	UCTION OF DAM IN	MELEWA R	IVER :	SYSTEM	DEPTH	70.00 M	1 ELEVATION	<u>3</u> 2129.77	. <u>V</u>
		CORE ERY	THE TYPE D	CINCOLLE		951 924.4			INCLINATION	900	DRILI, RIG		
T			1 2000		T DATE	FROM 10/DI			DRILLED	MOWLI	M LOGGED	JICA	
2	DEPTH	ELEVATION	ROCK TYI	COLUM			BIT & DIAMETER	CROUNDWATER LEVEL	CORE	R. Q. D.	TATER PRESSI	ire test	7
\$	DE	LEV	FORMATIO	SECTION	DESCRIPTI	ON	AME	UNDWAT	RECOVERY				
i I	0.60	2129.1		"	Brown clay soil	-	ă ă	CBC	% cm	50 (%)			۱
	<u> 0.00</u>	2129.1	7 TOP SOIL	-	<u> </u>		1						آ آ
				Δ	Brown sandy soil much gravels.	including	1	·					
	2.35	2127.4	5 COLLUAIN	мΔΔ									-
3					Fresh to slightly we	athered dark							
		'			grey slightly fr sediments (alternat	iable lake							
H				<u> </u>	tuffaceous sands	tone and					(K = 4)	1.15 x 10 ⁻⁴))
5	5.10	2124.63	LAKE SEDIMENT	.	conglomerates with to 5° drip).	lamina of 0°		Į.					
<u> </u>	21,13	1	- Joseph Harris	" "	Fresh to slightly wea	thered dark	! 						4
<u> </u>		1			grey slightly friable n (lapili tuff and tuff)	nassive tuffs		ä			Lu = 1	14.2	1
				· · ·	(rapin rati and mit)		- [ľ
			MASSIVE	" "	1	ļ	ĺ				K = 1	2.59 x 10 ⁻⁴	4
E B 8	8.00	2121.77	TUFFS	- (""			1				Pc = 0	1.9	
9			1		Slightly weathered li	ght brown,							ľ
					partially dark grey welded tuff (lapili tul	f including					•		
10			į ·		large scoria) with bro joints spaced 50 to 30	wn colored cm.							١
				VIIIA	,		İ						ť
				11111		j	- 1	#			Lu = 3	6.1	ŀ
12				VIIIA							K - 1	04 x 10 ⁻⁴	Į.
- 13]	11/1/		. [ľ
7				11117	ř	1	l				Pc = 0.	.7	Ŀ
14			ĺ	11111		1							
15				11111	•								ľ
_				VIIIA			.						13
16				11111							Lu = 0.	,	
-				11111	•		·					. [16
			NON-	11111							K ≈ 0.0) [17
<u>.</u>	. 40	2111.37	WELDED TUFF	11111							Pc = 0.4	4	
-	5.40 2	1111.37	TOPE	77777	19.40. 25.60								16
9				~ ~	18.40~25.60 m Fresh dark grey v	ery hard	Ì					<u> </u>	19
g		Í		~	welded tuff with brown colored join	slightly	- 1						_
]		İ		~ ~	more than 50 cm.	is sharen	- 1					——— [<u>ac</u>
1				~ ₂	25.60~29.25 m	!					Lu = 0.8	3 2	51
4	ļ			~ ~	Slightly weathered li	ght brown					K = 8.5	9 × 10-6	_
		• 1		~	hard welded tuff wir brown colored join	n slightly [ſ	:2
1		Į	:		50 to 30 cm.						$Pc \approx 2.6$	2	23
		J		<u> </u> ~ ~		1							-
				~			ĺ					2	4
1				~ ~		İ							- 5
		ļ				.							-
				~							Lu ≈ 1.0	3	6
1				~ ~			1				K = 1.09	x 10-5	27
		ļ		~	:						Pc = 2.5	Ţ.	-1
1			un per			İ					10-2.3	21	8
29.7	25 21	00.52	WELDED TUFF	~ ~		ł						2	9
[T			11114								٦	100
	Rock	Condity Per	ignation P O De / 7	Total III	cylindric cores langer than 10 co				# ##	1999 (1994)		3	ç

^{*}R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores lunger than 10 cm)/(Total core length) × 100%
*LUCEON VALUE is Umin/m under injection water pressure of 10kg/cm²
*DEPTH and ELEVATION are in meter
*DIAMETER is in millimeter

p	·	·		DRILI	L LO	G J	<u>IOL</u>	E N	0,	MB-4	SHEET	NO.	2 OF	3		
DATE		DEPTH	ELEVATION	ROCK TYP	e cornwn,	DESCRIPTION		GROUNDWATER	רבעבו	CORE RECOVERY	R. Q. D	WATER	PRESSUR	E TEST	DEPTH	
	L	<u> </u>	ELE	FORMATIO	SECTION		_	CROUN	3	96 cm	50 4.				30	
16/DEC	31	21.00	2207.0	NON- WELDED TUFF		Fresh to slightly weathered dark grey friable lapili tuff with joints spaced 50 to 30 cm.							Lu = 2.1	2	31	
	32	31.60	2097.9	1011	1,777	Slightly weathered brownish								5 x 10-5	32	
	33				11 11	Slightly weathered brownish grey slightly friable massive tuffs (lapili tuff including large and much scoria) with joints spaced							Pc = 4.5	5	33	
	34				, ,	much scoria) with joints spaced more than 50 cm.						:			39	
DEC	35				" "								· · · · · · · · · · · · · · · · · · ·	·	35	
177	36			1	"								Lu = 1.5 K = 1.7		3 <u>6</u>	
1 1	37				" "								R = 1.7 $Pc = 6.6$		37	
	39 - 39				"		٠	Recon Lowe				: '.			38	
	- - -				" . "			1.0%E	"						393	
	- 41				" "			(39.80)						100	
	_			MASSIVE TUFFS								-	Lu = 7.0	100	41	
/ DEC	- 43	42.15	2087.62	10.113		42.15~46.05 m							K = 8.09 $Pc = 5.6$	Ух 10-э	42	
19/1	- 44	,				Slightly weathered brownish grey friable lake sediments (medium to fine grained tuffaceous sandstone and little	,						10 - 3.0			
İ	45					tuffaceous sandstone and little conglomerates with lamina of									44	
[46				[]	conglomerates with lamina of flat to 5° dip) with light brown colored joints spaced more than 50 cm.			1				1 00		10	
	47					46.05~64.15 m							Lu = 9.9 K = 1.14	v 10:4	46	
ŀ.	18				[]	Fresh grey to greenish grey slightly friable lake sediments (alternating beds of tuff, tuffaceous silt, sandstone and			A STATE OF				Pc = 3.2	X 10	47	
ပန	19					(alternating beds of tuff, tuffaceous silt, sandstone and		-							45	
10 / 02 10 / 02						conglomerates with lamina of 0° to 5° dip) with joints spaced more than 50 cm.									49	
1				-									I.o 12 E		7	
-[2			·			İ						Lu = 13.5 K = 1.55	× 10:4	in the	
1,15	3			÷					William I				Pc = 6.0		Annie.	
1	4													ľ		
	5			•										j,	- T	HOLE
71 / DEC	6												Lu = 5.2	<u> </u>		L L
24.5	7												K = 5.93		<u> </u>	NO.
111111111111111111111111111111111111111	3							-					Pc = 9.0	-		NB
55	2													5		4
G	2													ءً	Surface Linuted	
													Lu≔ 1.4		اساسة	
Ē													K = 1.60 >	10-5	James -	
62													Pc = 5.3	6	1 (1 (1 (v
F-	64.	15 20	65.62	LAKE SEDIMENTS									4	-	Junta O	•
65					" "			-						Ĭ	Taral I	

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	рертн	ELEVATION	ROCK TYPE OR	COLUMN	DESCRIPTION		COUNDWATER LEVEL COLE	R. Q. D	WATER PRI	SSURE	TEST	
_	T.	립	FORMATION	SECTION			CROU	,				
3	G			11 11	Fresh grey slightly friable massive tuffs (lapili tuff including large scoria and pumice) with joints spaced more than 50 cm.				Lu	= 0.41		9
_ <u>ပ</u>	2			"	pumice) with joints spaced more				к	= 4.67	x 10 ⁻⁶	<u>6</u>
_ Ç4	1			11 11	than 50 cm.				Pc	= 4.9		S.
G!	9			"								6.
_ 7C	70.00	2059.77	MASSIVE TUFFS	" "					•			7
_					END OF BOREHOLE							ľ
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HOLE NO. MB-5 SHEET NO. 1

	_1	ROJE		STUDY FOR (ONSTRU	CTION					DEPTH	70.00 N	A ELEVAT	108 21	31.97 1	м
	AVE	SITE		MALEWA DA	M SITE_	-		952 048.30 ;	211 4	18.29	INCLINATION		DRILL			
-	TR	ECOVI	CORE	Т	- 		DATE	FROM 22/D			DRILLED	MOWL	EM Logg	ED JIC	CA	
į	a (ОЕРТН	ELEVATION	ROCK TYPE	COLUMN		DESCRIPT	ion	BIT & DIAMETER	GROUNDWATER LEVEL	CORE	R.Q.D.	YATER P	ressure 1	TEST	Ę
	1	5	373	FORMATION	SECTION				BIT	GROUN	% cm	50 (%)				DEPTH
				-		0.00~1 Blac	,20 m kish humic s .70 m	oil.	,							
L L	, <u>E</u> ,	1.70	2130.2	7 TOP SOIL		1.20~1 Bou	.70 m der of welde	ed tuff.								1
10	Œ					1.70~6	.20 m	red grey hard								2
8	1 3					i to si	ightly friabl	le alternating dstone and	1 1			H.				3
	1		ļ			cong	tomerates	with brown spaced more	i i				(K	Z = 2.4 x	10 ⁻³)	4
\vdash	5					than	50 cm.	spaced more					:	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		5
Sec	6					6.20~7. Mode	40 m erately went	hered brown					L	ı = 8.5		Ting in
23/	7					friab above	le sedimen	ts same as						= 9.77 :	x 10-5	
\vdash						7.40~9.								: = 3.5		
						Fresh sedim	dark grey sl ents same as	ightly friable s above.				i i i i i i				8.
/ DE	ĔΙ	9.85	2122 12	LAKE SEDIMENTS,												9
18		2.03	2122.12	SEDIMENTS (4 11	Fresh d	ark grey sli	ghtly friable	ĺ							Ю
						massive joints sp	tuffs (lapi aced more th	li tuff) with nan 50 cm.	1				Lu	= 9.3		п.
	12				,			Ì					к	= 1.07 x	10-4	- 12:
ပ	13				" "								Pc	= 4.5		133
) OE	٤				" "	٠.									•	1
53	_ 5	15.00 2	2116.97	MASSIVE TUFFS	" "							1				
	16				11111	Slightly t	o moderatel	y weathered to slightly				12				15.
	-					friable n	on-welded	tuff (lapili lored joints					Lu	= 8.1		16
	17.					spaced 50) to 30 cm.	loted Johns					K =	= 9.28 x	10-5	17
in the nati	18					Weather downwar	ing grade	increasing					Pc :	= 4.2		18
au line	19															19
NAC	ao.															201
77	- 21															The state of
1	-													- 7.8		21 HOLE 22 E
nu luì	-							.]						= 9.00 x	10-5	3 I
	-												Pc =	= 4.5		23 NO
7	-1			NON-											ļ	24 S
	25 2:	5.25 2	106.72	WELDED TUFF			·									- 1 25 U
7	36			1	~ ~	25.25~28	.25 m						Lu =	= 9.5		as:
A	7				~	32.50~34 Slightly	weathered l	light brown					K =	= 1.09 x i	10-4	11117
σ 2	9		ļ		~ ~	hard w	elded tuff v joints space	vith brown					Pc =		ľ	لسملت
					~	cm.	•								12	
	2			WELDED				İ							2	3/2
E3	의			TUFF /											3	<u>.</u>

#R.Q.D is Bock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100%

*LUGEON VALUE is Umin/m under injection water pressure of 10kg/cm!

*DEPTH and ELEVATION are in meter

*DIAMETER is in millimeter

LOG FORM-B

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HOLE NO. MB-5 SHEET NO. 2 OF 3

	1	DAIR.	DEPTH	ELEVATION	ROCK TYPI OR FORMATION	COLUMN	DESCRIPTION	CROUNDWATER LEVEL	CORE RECOVERY	R. Q. D	WATER PRESSURE TEST	DEPTH	
	I.	13		Щ		~ ~	28.25~32.50 m Fresh dark grey very hard welded tuff with slightly brown colored joints spaced more than 50 cm.	 <u> </u>	% Cm		Lu = 6.7 K = 7.70 x 10 ^{.5}	32: 32:	
	10.1		34.70	2097,27	WELDED TUFF	~ ~					Pc = 1.2	Manual Manual	
		35		2095.97	NON- WELDED TUFF		Fresh dark grey slightly friable lapili tuff.	•			Lu = 27.6	36	•
		35]			H 11	36.00-44.00 m Slightly, partially moderately weathered brownish grey to brown slightly friable massive tuffs (lapili tuff) with joints spaced more than 50 cm.	Rodorded Lowest 			$K = 3.18 \times 10^{-4}$ $Pc = 4.7$	7 3 1 39 1 39 1 39 1 39 1 39 1 39 1 39 1	
	NAL / III	1 4 1 1				" "	44.00~50.00 m				$Lu = 7.3$ $K = 8.41 \times 10^{-5}$	بابقاساقينانية	
		43				<i>u 1</i> 1	Fresh grey slightly friable massive tuffs (lapili tuff) with joints spaced more than 50 cm.				$R = 8.41 \times 10^{-3}$ $Pc = 5.2$	43 44 44 44	
		45				" "					Lu = 20.1 $K = 2.31 \times 10^{-4}$	45	
	12/34	ь.				" "					Pc = 6.5	47	
	-		50.00	2081.97	MASSIVE TUFFS	11 11	Fresh greenish grey slightly friable lake sediments with joints					ulum (Serlen	
	z	1 2 1 53 1 53 1 53 1 53 1 53 1 53 1 53 1					spaced more than 50 cm. 50.00~55.75 m Fine to corse tuffaceous sandstone with lamina of 0° to 5° dip.				Lu = 12.6 $K = 1.45 \times 10^{-4}$ Pc = 6.3	51: 52: 53:	
-		54	·				55.75~67.55 m Alternating beds of tuff and tuffaceous sandstone, rich in tuff.					5 min 2 min	FIOH
	l i	57									$Lu = 13.3$ $K = 1.52 \times 10^{-4}$	_16_	NO. MB
	-	58 59			·						Pc = 3.3	288	i Un
		<u>6</u> 1									$Lu = 1.1$ $K = 1.21 \times 10^{-5}$	뛼때마삤때하잖	_
	15/	63 - 64 -			LAKE SEDIMENTS						Pc = 9.4	∠ a⊒ _	2/2

LOC FORM

Γ		DRILL	T	<u> </u>	JULE			SHEET	-	···	
DEPTH	ELEVATION	ROCK TYPE OR	COLUMN SECTION	DESCRIPTION		GROUNDWATER LEVEL	CORE RECOVERY	R. Q. D	WATER	PRESSURE	TEST
	급	FORMATION	ozerion.			CROL	% cm	,	·		
<u>66</u>				67.55~70.00 m Fine to corse sandstone with cross lamina.						Lu = 0.7	
67	ļ.,	:		cross raming,						K = 8.22	10.6
-				.							X 10 0
<u>68</u>										Pc = 9.2	
69		LAVE									
70 70.0	00 2061.97	LAKE SEDIMENTS								,	
				END OF BOREHOLE						•	
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HOLE NO.MB-6 SHEET NO. 1 OF 3

		***************************************	DIGILI					S NO.N		SHEEL		I OF	<u> </u>	
	PROJE				UCTION OF DAM IN				DEPTH	70.001	M	ELEVATION	2088.24 N	v1
AVE	SITE		MALEWA DA	M SITE		951 977.86 :			INCLINATION	90°		DRILL RIC		
	RECOV	CORE ERY			DATE	FROM 23/N			DRILLED	MOWI	EM.	LOGGED	JICA	
ы	æ	NO.	ROCK TYP	E COLUMI	N.		BIT &	ă	CORE	R. Q. D.		VATER PRES	CHOR TEST	Τ.
DAT	DEPTH	EVATION	OR	and the state	DESCRIPT	100	8	UNDWAT	RECOVERY	н. Q. D.	ĺ	which this	ODNE TEST	112071
_]:	🚨	EL	FORMATION	SECTION	N .		PIT PIT	ROU	% cm	50 (%)				1
-	. [Blackish humic soi	1 .								
E	1	1	!	$\perp \vee$		-					ĺ			-li
F		1	1	$\perp \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \!$			ĺ	i						
ŞΈ	≤ 2.10	2086.	14 TOP SOIL		Y						1			2
	3		j	Δ	Brown clay soil	and arruals	İ							1
vE.		1	ļ		(max. 15 cm in dia	neter).								3
É	1	1]							4
E					·							(K = 4	4.16 x 10 ⁻²)	
Ė	1			\(\triangle \)				Recorded		10 11 11				5
								Lowest						-
Ł		2081.9	9 COLLUVIUM	<u> </u>	605.005			⊻				Lu = 1	10.6	16
7	1		ſ		6.25~8.35 m Fresh grey sligh	tiv friable to		(6.20)				· · ¥* 1	.22 x 10-4	7
E e			1		friable lake sedin	nents (sandy						,	LL X 10	
F	Ϊ	1			tuff).	-								8
- 9			1		8.35~15.00 m									-
<u> </u>					Fresh grey slightl sediments, medi	y friable lake								F
<u> 10</u>		-			tuffaceous .	sandstonel	i				<u>-</u>			10
Ē.,					accompanied by (6.90~7.60 cm)	coaly chale	.].
	l				flat lamina.	with almost		.				Lu = 9	8.8	
:13	ļ	İ						i i]-
_							l							۴
13							- 1					Pc = 8	.5	13
14								H						-
			LAKE				Ì							14
15	15.00	2073.24	SEDIMENTS	L			Ì							15
16				" "	Fresh dark grey slip	thily friable								
10					massive tuffs (characterized by larg	e scoria).						Lu≈9	.7	íē
17				1 %		1						K = 1	.11 x 10-4	
						ŀ						– .	.11 x 10	17:
18				" "										le:
-														أِــا
	l					}	i							19
20	İ		Ì	" "			ļ							2
-	1		1		:		1							SV
21			Ì		* **	1						Lu = 1	2.6	ZI
22	i			" "		ļ						K = 1.4	45 x 10-4	TITLE
				"		ĺ						no. e		22
23]											Pc = 8	.)	7
-				11 11			ļ						Í	¥
2	- 1			"		j	Ì						1	24
25													-	4
_],	ac en .	2062.44	MASSIVE TUFFS	11 11									}	<u>25</u>
26	. 100.62	2002,44	10173		25 00 20 00			▦				Lu = 1	20	25
-	ľ				25.80~30.00 m Fresh grey slightly	friable to		H						**
27	- 1				friable sediments (alternating						K = 1	38 x 10-4	27
-			[beds of tuff and sandstone accom	tuffaceous			▦▦			Pc = 8	.5	1
28			.[coaly shale).	Panicu by		₩.				0.	-	28
55					•]							}	[ا
	1		LAKE			ļ								
o <u>l</u>			SEDIMENTS ·				i_		##				- 1	30

^{**}R.Q.D is Rock Quality Designation, R.Q.D.-{Total length of cylindric cores longer than 10 cml/(Total core length) x 100%
**LUCKON VALUE is United under injection water pressure of 10kg/cml
**DEPTH and ELEVATION are in meter
**DIAMETER is in millimeter

LOC FORM-C'

,				DRILL	LO		HOL		6 SHEET	NO. 2 OF 3	
ш		Ŧ.	NOIL	ROCK TYPE	COLUMN			CROUNDWATER LEVEL MODERN	1	WATER PRESSURE TEST	Ξ
DATE		ОЕРТН	ELEVATION	OR	SECTION	DESCRIPTION		MA A RECOV	ERY R. Q. D		DEPTH
L			ᆸ	FORMATION				0 % %	cm 50 %		Ω
8		.			<u></u>	30.00~43.00 m					
1 1	31	ĺ				sediments, alternating beds of				Lu = 3.2	315
30/NOV	32					Fresh grey slightly friable lake sediments, alternating beds of tuff and tuffaceous sandstone accompanied by diatomite (36.00 m±) with almost flat lamina.	1			$K = 3.65 \times 10^{-5}$	32
ĺ						(36.00 m±) with almost flat				R = 5.05 K 10	
	33					lamina.	-			:	33
	31	- [34
	-	1								•	
	35	- [.									35
J	36	.				6.0				Lu = 1.8	36
빙	-										
-	37	- 1					İ			$K = 2.10 \times 10^{-5}$	34
	39			,				l Wis			1 3
▎▐	_										
	39	1									39
	40										400
ŀ											
27 DEC	=1	l		[Lu = 1.7	14
	42									$K = 1.98 \times 10^{-5}$	42
``E	_			ŀ		•				2	
	43			:		The same of the sa					43
3/DEC	9.1			·		43.00~70.00 m					
m	-]					slightly friable to friable lake					
	15	٠]	•	1		43.00~70.0 m Fresh brownish light grey slightly friable to friable lake sediments, alternating beds of tuff and tuffaceous corse sandstone with lamina of 0° to 5° din					35
Ē	- 16					sandstone with lamina of 0° to				Lu = 5.2	1
5/ DEC	-					5° dip.					
	12	-	ĺ	[• .				$K = 6.03 \times 10^{-5}$	975
જે 🗓	18									Pc = 8.5	
E	-										
1			- 1								49
				ŀ							
) DEC			1							· · · · · · · · · · · · · · · · · · ·	
2	<u>31</u>	Ì								Lu = 4.7	51
9 5			l	-					N. I	$K = 5.46 \times 10^{-5}$	
υĒ				<u> </u>						•	H
	3		-				<u> </u>			Pc = 8.6	535
<u>`</u>				-							
11										:	門.
_[5	5			, [.							The State of
	6			. -						Lu = 2.1	E
Ĕ										•	
	Z			. 1						$K = 2.44 \times 10^{-5}$	Sharing Manufactures
, E				 -			- 1			•	
E	1										SE
55	2]	Γ						3	50
E		Ì	1	<u> </u> -							THE STREET
Ē	1										605
61	4		į							Lu = 1.0	61:
-				-			·]			$K = 1.10 \times 10^{-5}$	1
) 62 1							ĺ			-* - **** **** ***	62
5 63	5			T.							33 V 33 V
F				-							٦
EGI	1						. [641
E.	1	ı	ı	<u> </u>		•	- 1		(HIII)		-3

	рерти	ELEVATION	ROCK TYP	10000	DESCRIPTION		GROUNDWATER LEVEL	CORE RECOVERY	R, Q, D	WATER PRESSURE TEST	11444
	Ö	ELE	FORMATIC	SECTION			CROU	% con	50 %		ļ
_											
66										Lu = 1.1	ľ
67										$K = 1.23 \times 10^{-5}$	6
67				<u> </u>						K = 1.25 x 10	
69	1					1					1
69											6
70	70.00	2018.24	1				r				۱.
.v	70.00	2010.21			END OF BOREHOLE						1
					·						-
-			Ì							•	Ŀ
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HOLE NO. MB-7 SHEET NO. 1 OF 1

		PROJE	C I	STUDY FOR	R CONSTR	UCTION	OF DAM IN	MELEWA R	WED	everna	DEPTH		T. T.		~
		SITE		MALEWA D	DAM SITE		COORDINATE	951 575.24	· 211 /	3 1 3 1 E (YI	INCLINATION	70.00 M		2159.60) M
	ΑV	ERAGE RECOV	CORE ERY			······································	DATE	FROM 27/O	CTTC	16/NOV	4	90°	DRILL RIG		
				ROCK TY	PE J			1-11-11-27-0	8 E	I &	j	MOWLE	M LOGGED	JICA	··
	DATE	рертн	FLEVATION	OR	COLUN	IN	DESCRIPT	INN	BIT &	GROUNDWATER LEVEL	CORE RECOVERY	R. Q. D.	VATER PRESSU	RE TEST	==
		DE	375	FORMATI	ON SECTION	NC	procut t	1011	E 8	LEVEL	WECOAFKI				DEPT
i			 -						8 5	ğ	95 cm .	50 (%)			
- 1	E			1	~ ^	Fresh	lark grey har	d welded tuff							
	ᄹ	_ [1			with bi	rown colored	joints spaced					•		1
.	양.	2	1		~ ^	, 30 10 1	o cm.								1
-	ΝĘ.	- [İ	ĺ											2 =
- 1	E	_	2156.0	WELDED S. TUFF	~				1						
ŀ			2130.0	1011									Lu = 5	.8	
I.	Ē	.]				- Siighiiy	/ to moderate rown_friah	ly weathered le, partially							4
- E		5				l slightly	/ friable lak	e sediments	1 1				K = 6	.34 x 10 ⁻⁵	14
		:		Ì		(alter	nating	beds of idstone tuff	1 1				Pc = 2	.5	5.3
ľ	` <u>`</u>	식	-			🗝 and lap	illi tuff with	almost flat							1 = 1
f	Ē.	.]	1	İ		lamina)	with joints	spaced more	i 1	į.					
ŀ	_	7		1	<u> </u>	than 50	cm.	÷		ĺ.					7.
- [8	3 <u>E</u> 8	4	1			<u> </u>				i i			Lu = 1	0.5	
6										l l			K = 1	18 x 10-4	8
) [3	4	ĺ		<u> </u>	4									
	E _{1Q}					ľ			1				Pc = 2.	7	1
	E	1		1		1			- 1				····		0
1	Ē					,			1						14
													¥	_	岬
1	12	1 1				1			İ				Lu = 0.	9	
1	<u> </u>			1				ĺ	- 1				K = 9.9	92 x 10-6	
l _≥		13.50	2146.10	LAKE SEDIMENT:	s			. 1	ľ				•		133
1/ NOV	14				1111	Eresh d	ark arau fe	inhla no-					Pc = 0.6	;	
	F 1					welded	tuff (lapili	riable non- tuff) with							14
1	15			NON-		joints spa	aced more th	an 50 cm.							
1.	-16	16.00	2143.60	WELDED TUFF		-									1153
	- 101		21 13 00	1077	V7777	F					▦▦		Lu = 0.0	1	16
	17	- 1			~ ~	welded to	ark grey off with parti	very hard l							
					~	colored j	oints spaced	more than					K = 0.0		17
H	18	-			~ ~	50 cm.			- 1				Pc = 1.6		4
		1												ļ	184
E		ı			~			1						1	19
[~]	20				~ ~			1							
E	_]				1~ 1			• }	ĺ						<u>20</u>
	21								Ì				1		4
		- 1			~ ~				- 1				Lu = 5.4	ľ	ᆁ동
Ė	4		1		~								K = 6.07	x 10-5	
اع إ	23		J		~ ~								$Pc \approx 3.2$	ľ	1
ON.	_]		j		1 1] -		躝			16 = 3.2	يَوْ :	3 S
W.	ᆀ		- 1		~									1	1/2
F	.		ĺ		~ ~				ĺ						MB.
F	4	ر أي	[~										
E.	- 2	5.55 21	134.05		1 1	Frank d-	rk ass] .
<u>_</u> ["	1			NON-	11111	welded tuf	rk grey h ff (lapili tuff)	ara non-					Lu = 7.1	<u>la</u>	6
Ęz	z 2	7.10 21	32.50	WELDED TUFF	11111										-
≥Ę	Γ	7.10 21				Frank to -!	inhely was d		1				K = 7.90	x 10-5	4
ŽΡ	8		ĺ			eresn to si grey to lie	lightly weath tht brown fr	iable lake					Pc = 0.8	2	= 81
ù E			ĺ		├ -	sediments	with joint	s spaced	- [1
É	1	-		LAVE		more than:	ou cm.]						3.	- 1
3	<u> </u>			LAKE SEDIMENTS				Ī							<u> </u>
* 8	.Q.D	is Rock (ignation, R.Q.D=(Table 1						#) [24]	minini			ゴ し

^{*}R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) x 100% *LUGEON VALUE is Wain/m under injection water pressure of folkg/cm² *DEPTH and ELEVATION are in meter #DIAMETER is in millimeter

Alternating beds of tuff, lapilituff, sandstone and conglomerates with intercalation of diatomite. 33	TEST H H H H H H H H H H H H H H H H H H H
Lu = 1.5 Lu = 1.5 Lu = 1.5 K = 1.71 x Presh dark grey friable massive tuffs (lapili tuff including large scoria) with joints spaced more than 50 cm. Lu = 9.0 K = 1.04 x Pc = 3.6 Slightly weathered light grey to light brown slightly friable to friable non-welded tuff (lapili tuff). Lu = 9.0 Lu = 1.4 Lu = 1.5 Lu =	10·4 <u>32</u>
Lu = 1.5 Lu = 1.5 K = 1.71 x Presh dark grey friable massive tuffs (lapill tuff including large scoria) with joints spaced more than 50 cm. Lu = 9.0 K = 1.04 x Pc = 3.6 Slightly weathered light grey to light brown slightly friable to friable non-welded tuff (lapili tuff). Large pumice (3~4 cm in diameter) included below 49.50	333 343 343
than 50 cm. Lu = 9.0 K = 1.04 x Pc = 3.6 Slightly weathered light grey to light brown slightly friable to friable non-welded tuff (lapilituff). Large pumice (3~4 cm in diameter) included below 49.50	35.3 36.3 10·5 37.3
Lu = 9.0 K = 1.04 x Pc = 3.6 Slightly weathered light grey to light brown slightly friable to friable non-welded tuff (lapilituff). Large pumice (3~4 cm in diameter) included below 49.50	39 111
Pc = 3.6 Massive TUFFS	40 41 41 10-4 42
tuff). Large pumice (3~4 cm in diameter) included below 49.50	433
E	45 17 46 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Pc = 3.2	181 495
Recorded Lu = 13.2 Lu = 1.51 x	505 505 515 107 107 107 107 107 107 107 107 107 107
Pc = 8.6	533 7111 541
Slightly weathered dark grey hard welded tuff with joints spaced more than 50 cm. Slightly weathered dark grey hard welded tuff with joints spaced more than 50 cm.	HOLE NO. MB
Slightly weathered yellowish	0-7 MB - 7
grey slightly friable non-welded tuff (lapili tuff). Lu = 0.1 K = 1.57 x 1	The Burling of
Pc = 2.3 NON- WELDED TUFF 64.55 2095.05 TUFF	(2/3)

spaced more than 50 cm.	SSURE TEST
66	= 0.7 = 8.77 x 10 ⁻⁶
END OF BOREHOLE	= 4.7
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LOC FORM-C'

	RAGE		DRIL STUDY FOR MALEWA DA	CONSTRU	ICTION O	COORDINAT	E 951 691.86	: 211	SYS'	TEM	DEPTH	70.00	M	ELEVATION DRILL RIG	2157.03	M .
<u> </u>			L DOOR THE	_ 1		DATE	FROM 9/N			ΟV	DRILLE	MOV	VLEM	LOGGED	JICA	
2	рертн	ELEVATION	ROCK TYP	COLUMN		DESCRIP	Thom	BIT &	ROUNDWATER	๘	CORE	R. Q. D.		WATER PRESS	URE TEST	
	30	ELEV	FORMATIO	SECTION		DESCRIL	TION	TI	l So	LEVEL	RECOVERY					
E	T	7			Cliabeles		ately weather		 ቼ		% em	50 (96)				
Ľ					grey to	light b	rown slight	ly l	ĺ							- 1,
F 2				 	friable to	friable ating	lake sedimen beds	ts f							÷	
		1			conglom	erates.	sandstone an lamina) wit	al :								2
3		1			partially	brown	colored ioin	n ts		i						3
4		1			spaced m	ore than	30 cm,							•		
5				<u> </u>												19
																5
6																6
7		-						ļ.,								ĺ
	7.80	2149.2	LAKE SEDIMENTS	,						ĺ						1
8		1		1111	Fresh dar	k grey h	ard to slightly	7								E
9			1		friable no tuff) with	on-welde 1 ioints	ed tuff (lapil spaced more	i		ı						
- [than 50 cr	n.	opacou mon	7								١
10			·		1 1] [Ħ						K
ᆈ																
12			NON- WELDED													Ĭ.
_	12.50	2144.53	TUFF	[[[]		•										13
3			1	~ ~	Fresh dar	k grey	very hard to									13
4					colored jo	ints spac	with brown									
					50 cm.	•										14
1			ļ	~ ~								I				<u>15</u>
6				~												16
7				~ ~												
			ļ	~						H						<u>17</u>
∄				اہ ما												18
2																10
		:		~												<u>'-</u>
4	- 1			~ ~												20
1	ı		שבו הכה	~												21
2	1.80	2135.23	WELDED TUFF													21 22
1					Slightly v brown had	eathere	d yellowish welded tuff									22
			į	1////	(lapili tuff)	with br	own colored han 50 cm.	1								23
			NON WE BE	11///	jouns space	a more (nan Ju CM.									-
2	1.70	2132.33	NON-WELDED TUFF													24
					24.70~32.1		modernist	İ								25
					weathere	d grey t	moderately to yellowish friable to	İ								75
					brown : friable se	slightly diments	friable to (alternating									-
1	-		•		beds of	tuff and	tuffaceous	ļ								<u>27</u>
					sandston	5,		Ì								28
										₩						
			i													

LOG FORM-B

LOG FORM-C'

	J							 -						
	DATE		DEPTH	ELEVATION	ROCK TYP OR FORMATIO	CUCTIO	DESCRIPTION	GROUNDWATER	CORE RECOVERI		WATER	PRESSURE	TEST	ОЕРТН
-	12 / NOV	32 33					32.10~35.00 m Fresh dark grey hard to slightly friable sediments (conglomerates and sandstone) with faint lamina.		1111					323
		34 35	35.00	2122.0	LAKE SEDIMENT	s	Fresh dark grey partially light brown friable to soft massive tuffs (lapili tuff).				•			Tan Carlos Fred 18
	13 / NOV	37 38	ooe	2118.0	MASSIVE 3 TUFFS	" "	turs (rapin tur).	Recorde Lowest	-					38 ml
		40 41					Slightly weathered yellowish brown hard, partially slightly friable non-welded tuff (lapili tuff) with partially brown colored joints spaced more than 50 cm.	(38.40)						9
		43												
- 1	/ / 1	45 46 47		·										
	medamatana.	- 48 - 49 50 50	0.002	2107.03	NON-WELDED TUFF								4	ուսենուն
						~ ~ ~ ~ ~	Fresh greenish grey very hard welded tuff with brown colored joints spaced more than 50 cm.	ļ					5	an Market First Brands
	منتثير فسطئتسا بوعلته	3 3 4 5			WELDED	~ ~ ~ ~				į			<u>5</u> 5	HOLE HOLE
VON / 81		8	.70 2	101.33	TUFF NON-WELDED		Slightly weathered yellowish brown hard non-welded tuff (lapili tuff) with partially brown colored joints spaced more than 50 cm.						56 57 58 58 59	NO. MB –8
/ NOV /	1.6	1	80 2	097.23	TUFF	" "	Slightly weathered brown slightly friable massive tuffs (lapili tuff) with joints spaced more than 50 cm.						<u>es</u> <u>ec</u>	,))
1/41	1 6 1 6			·	MASSIVE TUFFS	" "					:		63 64	2/3)

DRILL LOG HOLE NO. MB-8 SHEET NO. 3 ROCK TYPE GROUNDWATER COLUMN WATER PRESSURE TEST LEVEL OR DESCRIPTION RECOVERY R. Q. D SECTION FORMATION (as above) 70 70.00 2087.03 END OF BOREHOLE HOLE NO. MB-8

HOLE NO. MB-9 SHEET NO. 1 OF 3

	-	PROJE	CT	STUDY FOR C	ONSTRUC	TION OF	DAM IN M	ALEWA RI	VER S	VSTEM	DEPTH	30.00	AA CLS				7
		SITI		MALEWA	DAM S	ITE	COORDINATE				INCLUNATION	70.00 90°		LL RIG	2157.25	M	
i	AVI	ERAGE RECOV	CORE				DATE	FROM28/O			DRILLED	MOWLI		GGEO	JICA		1
		in:	ĕ	ROCK TYP	E COLUMN]					CORE	<u></u>	<u> </u>			7-	
	ž.	рерти	ELEVATION	OŘ		f	DESCRIPT	IÓN	BIT &	GROUNDWATER LEVEL	RECOVERY	R, Q. D.	TATE	R PRESSI	IRE TEST	Ę	
Į	_	Ω		FORMATION	SECTION	"			BIT	NO II	% cm					DEPTR	
ļ	E	- [0.00-2	00 m		T	9	% cm	50 (%)		~~~~		╁┪	1
	F	4		-		High	ly weathere	d brown sof	ì 📗				<u> </u> -				
İ		2		Ì		sedir	nents (medi stone).	um to cors	=					* .		-1	ľ
•	ĕ	.]		1												1	
	8	3				2.00~8. Mod	erately	to highly	,							1	
ĺ	Ē.	1			 	weati	hered grey	to vellowish	ıl I								ĺ
- 1	-]				l (alter	nating beds	sediment: of sandstone	.1 1	l					*		
ł	F.5	4		1		l łapili with	tuff and co	nglomerate:) with brown								5	
	-				 	COLOR	ed joints spa	ced 30 to 16					/12	=1.89	104\		i
[,	-	1				cm.							(1)	.~ 1.09)	(10.)	6 -	
9	F	1		<u> </u> -						Î						7	
				1				•						56.0=ב			
İ	E	8.75	2148.5	LAKE O SEDIMENTS	;										-	8	
-	9					Fresh	dark grey	very hard	1 1					=5.75x	10 '	9	
L	10				~ ~	welded	tuff with br paced 50 to 3	own colored		H			Po	=3.0			
ľ	Ē.,				~	jemes oj		o ciii.							·· ·	10	
1		ĺ			~ ~											1	
12	!2				~					#						4	
S S	1	i .														123	
-	[13				~ ~								Lu	=3.4		13	
	14				~								K=	3.76x1	0-5	-	
	15				~ ~								Pc=	≈3.3			
 	Ē					•										5	
ĺ	16	-			~					#						111	
	17				~ ~	-				i i						1	
					~											17	
[m	18				~ ~l								Lu=	3.4		18	
	19		į		~								K=3	3.78x10	1-5	1	
													Pc=			193	
	20				~ ~	20.36~2 Slight	l.15 m Iv weathered	i yellowish					rc=	4.4		20	
	- 21	2115	2136 10	WELDED TUFF	~	brown	very hard of	rtially hard	ĺ							4	
ĮŠ		21.13	2136.10	TOFF	1111	welded	rait.		- 1							21 TO LE 140.	H C
	- 1			1		Fresh to	slightly wea	thered soft								22	
	 23	07.05	2134.00	NON-WELDED	11111	non-werd	led tuff (lapi	i tuff).	- 1						. [z.
1	— •	23.23	2134.W	TUFF	7777				-				Lu≃	10.2		④:	S
Ì₫	24					Fresh to	slightly wea	Hered dark					K=1	.17x10	•	4	∑ D
1/2	24 25					grey to ye friable to	ellowish bro friable lake	wn slightly sediments					Pc=	2.6		Martin Ball	ĺ
	-	Ì				(alternati	ng beds of	tuffaceous								뛜	ע
	26	ľ				tuff) with	e, conglom i brown col	ored joints								raj	
Н	27					spaced m	ore than 50 c	em,	}							4	
	_		i												ľ	4	
6 / NOV	28							-					Lu=	177.6	k	a	
9	- 29												K=2	.04x10	3 <u> </u>	- [-	
	-	ĺ		LAKE				. •					Pc=0		4	텔 \ - I u	ì
Ш	:30 <u>]</u>			SEDIMENTS									(ا ا	

*R.Q D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than £0 cm)/(Total core length) ≈ 100% **ELECT VALUE is L'min/m under injection water pressure of 10kg/cm²

**DEPTH and ELEVATION are in meter

**DRAMETER is in millimeter

HOLE NO. MB-9 SHEET NO. 2 OF 3

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMI	DESCRIPTION		CROUNDWATER	CORE RECOVER']	WATER PRESSURE TES	DEPTH
3	1				(as above)						31
NOV T	32.5	52124.7	LAKE O SEDIMENT	s							32
- 35				" "	Fresh to slightly weathered friable, partially soft massive tuffs (lapili tuff) with brown colored joints spaced more than 50 cm.					Lu=19.3 K=2.22x10 ⁻⁴ Pc=1.2	33 34 7 35
36	36.70	2120.5	MASSIVE TUFFS	" "	:						20 ml
70N / 8	7				Slightly weathered yellowish brown hard non-welded tuff (lapili tuff) with brown colored joints spaced more than 50 cm.					Lu=0.8 K=8.63x10 ⁻⁶ Pc=3.1	\$
70N / 6										Lu=1.7	43 m
44		2111.95	NON-WELDED TUFF							K=2.00x10 ⁻⁵ Pc=3.8	442
0 / NOV			1011	~ ~	Fresh dark grey hard welded tuff with joints spaced more than 50 cm.				######################################	Lu=2.7	17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
49				~ ~						K=3.11x10 ⁻⁵ Pc=4.1	19 11 150 500
Military Salaman				~ ~ ~ ~							2 Sandan Sanda
[-[<u>54.10</u>	2103.15	WELDED TUFF	~	Slightly weathered grey to		Recorded Lowest			Lu=12.3 K=1.41x10 ⁻⁴ Pc=9.3	533 541 11
55			NON-WELDED		Slightly weathered grey to yellowish brown hard non-welded tuff with brown colored joints spaced more than 50 cm.		(54.25)				55 m m m m
50 L. 50 L.	57 30	2099.95	NON-WELDED TUFF	" "	Slightly to moderately weathered dark brown slightly friable massive tuffs (lapili tuff) with joints more than 50 cm.					Lu=12.0 K=1.38x10 ⁻⁴ Pc=9.4	10 20 10 20 10 20 10 20 10 20 10 20 10 20 10 20 10 20 10 20 10 20 20 20 20 20 20 20 20 20 20 20 20 20
6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6				# # # #							
- La Garage			MASSIVE TUFFS	" "						Lu=9.0 $K=1.03\times10^{-4}$	ساستنساستاسا

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			DRILL	LO	<u>G</u> .	HOL	E NO. M	B-9	SHEET	NO. 3 OF 3	
	Ĕ	NOIT	ROCK TYPE	COLUMN			WATER EL	CORE		WATER PRESSURE TES	T:
UATE	DEPTH	ELEVATION	OR FORMATION	SECTION	DESCRIPTION	Ì	GROUNDWATER LEVEL	ECOVERY	R. Q. D		ST :
-	Ι	 		" "	(as above)	 	5	% cm		· · · · · · · · · · · · · · · · · · ·	
66				1							
E-67				"							
	ļ.		MASSIVE	11 . 18							
68	68.10	2089.15	MASSIVE TUFFS	"		ļ				Lu=7.4	ŀ
- 69			Ì		Fresh dark grey slightly friable to friable sediments, alternating beds of sandstone and lapili tuff.					K=8.46x10 ⁻⁵	
1			LAKE SEDIMEIVTS		beds of sandstone and lapili tuff.	Ì				Pc=2.9	- [
	70.U.	2087.23	SEDIMICIVIS		END OF BOREHOLE	 	1				
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HOLE NO. MB-10 SHEET NO. 1 OF 3

Γ	PROJ	ECT	STUDY FOR C	ONSTRU	CTION OF	DAM IN				<u> </u>		ar Ma		: 3	
-	SIT		STUDY FOR C	DAM :	SITE		952: 214.98			DEPTH		DO M	ELEVATION	L 100. L	2 M
AV	ERAGI	CORE VERY				DATE	FROM	TO	11 306.71	INCLINATIO			DRILL RIG		[
			ROCK TYPE	.					Te	DRILLE	P MO	WLEM	LOGGED	JICA	
DATE	DEPTH	ELEVATION	OR	COLUM	N	DESCRIPT	taki	BIT &	GROUNDWATER LEVEL	CORE					×
à	DE	EV	FORMATION	SECTIO	N	DE 2CRIS.1	104	TAMA	UNDWA.	RECOVERY		ĺ			1130
. }		—— <u>—</u>		-				E 5	8	% cm	50	(%)	~~	-	2
	7				000 4	42		ĺ							
					0.00~4. Fresh	45 m Dartially	moderately								13
	2				weath	iered grev	friable to soft							<u>.</u>	별
1	-	İ	· ·		lake s	ediments.(s	sandy tulf).								2:
	3	ł	1 .												3.
	4		1		-			1	Ì						
1 6	1				4.43~8.4				}				(V _2 20	11-31	4
읎	5				Mode brow	erately nish or	weathered by friable						(K=2.29x)	10-)	1 4
				L	sedim	ents (altern	ating beds of	1				₩	·		- 5
58	5	1	1		tuff an	id corse sai	ndstone) with olored joints				i i i				6
	-	1		 	spaced	I more than	50 cm.	ĺ							
	1				-										7
	1		LAKE		1			İi							14
1 🖡	ì	3 2151.79	SEDIMENTS	 	ļ								Lu=143.2	!	별
E	뷕	1		11 11	Moderate	ely weather	ed brownish						K=1.61x1	10-3	2
		1	•		brown co	olored ioin	tuffs with						Pc=0.7		1 7
	1		İ	"	to 10 cm.	•							PC=0.7		Į.
	4												•		
1 🖡				" "	i ·										閆
1 [12	4		j	"					ĺ						12
1 13		İ													
	1] .	ļ	11 11				Ì					Lu=99.9		134
1		ĺ	1	, ,				ı					$K = 1.12 \times 10^{-1}$	n-3	
				'				-	-						143
<u> [15</u>	1]	11 11				. [Pc=0.9		4
100	ĺ	İ .	Maccine					- 1	į						1 1
8		2143.72	MASSIVE TUFFS	"	· .]	ı						16
1 [17	ļ	.		~ ~	Fresh da	irk grey	very hard	İ	ı						
	Î i	İ	į		Dartially i	bard welde	d tuff with	1							胃
18				~	more than	10 cm,	nts spaced	- 1	8				Lu=9.0		18
19				~ ~					ä					2.4	=
				. 1								1	K=1.01x16	, .	193
Z.				~					15				Pc=8.7		20
E				~ ~				İ							
21			: [~					i i						21
22			WELDED]								1-11-
DEC SS 23	ZZ 30	2137.92	TUFF	~ ~	Frack -										
Ö 23	1		-		slightly i	y to brow friable to	soft lake l	- 1) r	_u=2.5		23 0
- 21			·		sediments	(alternatir	ig beds of l	[攤			9		_	1 31
51	·		F		cross lamin	siltstone ar 1a of 0° to 5	o° din) with f						$\zeta = 2.81 \times 10^{-3}$	5	Ţ 24. U 1 U
25					brown co	lored join	ts spaced					F	c=2.6		4 1
	ſ				more than :	ou cm.		}	#						25 C
26	ļ	- 1	}-												7 26:1
27		j	1												
	-	1	· -												27
O 128	. [į.										_		
72	- 1						ļ						Lu=2.4		<u>4</u>
" 22		•	LAKE				1						K=2.7x10	5	201
<u> </u> - 2	9.802	130.42	SEDIMENTS										Pc=8.8		[]0
<u> </u>			signation ROD (To	7777						HHH (4)		1	0.0		Ecel

RRQD is Nock Quality Designation, RQD= (Total length of cylindric cores longer than 10 cm)/(Total core length) x 100% mLUCFON VALUE in Visin/m under injection water pressure of 10kg/cm² w DEPTH and ELEVATION are in mater water w DIAMETER is in millimeter

	,		r ····	DRILI	LL	OG	<u>H</u>	<u>OL</u> I	E NO. N	1B-1	O SHEET	NO. 2 OF	3	
DATE	DEPTH		ELEVATION	ROCK: TYI OR FORMATIC	001.0	DESCRIPTION			GROUNDWATER LEVEL	CORE		WATER PRESSURE	TEST	DEPTH
/ DEC	31 - 32 - 32.	<u>60</u>	2127, 6	NON-WELDS TUFF	ED	Fresh to slightly weather grey partially brown friable lapili tuff with brown colored joints more than 30 cm.	red dark slightly slightly spaced		10	% c	m			312 32
2,	54 - - - - -				~~	Fresh dark grey verwelded tuff with slightle colored joints spaced m 50 cm, partially 50 to 10	ry hard y brown ore than orm.		Recorded Lowest			Lu=12.9 K=1.44x10 ⁻⁴ Pc=7.8	·	S. 1 S. 1 S.
3/DEC	56 57				~	>			(35,20)					Market Stranger
։ Դուրերդուդուդու					~ ~							Lu=1.7 K=1.96x10 ⁻⁵		중(휴(휴
30 / 4 	2				~ ~	•							:	420
	445	χ) <u>2</u>	:115.72	WELDED TUFF	~~~	Fresh dark grey slightly to soft lapili tuff,	friable					Lu=1.8 K=2.05x10 ⁻⁵		44
17	17.19	0 2	113.12	NON-WELDE TUFF		Fresh grey to brownish friable sediments (alterbeds of fulf tuffaceous sai	n grey,					Lu=3.5	4	ումումումումում
Trong 100 100 100 100 100 100 100 100 100 10						and conglomerates with lamina of 5° dip) with some colored joints more than 50 cm.	ndstone th rare slightly spaced					K=3.90x10 ⁻⁵ . Pc=5.8	4	աԹահաՄարա
51 8						-						T. a.s	<u>5</u>	նուրա Մուրանունում
54	55.70	210	04.52	LAKE SEDIMENTS								Lu=3.5 K=4.00x10 ⁻⁵ Pc=7.7	5-	31
55 57 58				· · · · · · · · · · · · · · · · · · ·	<i>ii ii</i>	55.70~60.00 m Fresh dark grey slightly massive tuff (lapili including much scori rock fragments).	friable tuff a and					Lu=8.6	56 57 58 58	Market Indianal Mark
9 6 6	:			İ	# #	60.00~65.60 m Slightly weathered bro light brown hard to sl	wn to					K=9.61x10 ⁻⁵ Pc=9.5	59 60	The state of the s
62					W //	friable lapili tuff.						Lu=29.6	<u>ව</u> හු	
64 65			٨	MASSIVE TUFFS	" "		-					K=3.40x10 ⁻⁴ Pc=4.1	64	<u> </u>

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HOLE NO. MB-10 SHEET NO. 3 OF 3

DATE	DEPTH	ELEVATION	ROCK TYPE OR FORMATION	COLUMN	DESCRIPTION	GROUNDWATER	CORE RECOVERY	R. Q. D	WATER PRESSURE TEST	рерти
8 / DEC 7 / DEC	<u>5</u>	2094 62	NO!t-WELDED		(as above) 65.60~68.80 m Slightly weathered light brown hard to slightly friable lapili tuff with brown colored joints. 68.80~70.00 m Fresh dark grey very hard lapili tuff.		-		Lu=3.8 K=4.40x10 ⁻⁵ Pc=4.9	66 00 00 00 00 00 00 00 00 00 00 00 00 0
and the standard and and and and and and and and and an			TOPP		END OF BOREHOLE					արդեր հայերարությունը և հայերակայի արևարարարարությունը և ակարհայարարարարարարարարարարարարարար
والمارية المراسية والمراسية والمراسية والمراسية والمراسية والمراسية والمراسية والمراسية والمراسية						,4				antantantantantantantantantantantantanta
بإيدانيوا وراويدا ويرايوا فيتراوي										ակավաղաղակավումակայիտ

HOLE NO. MB-11 SHEET NO. 1 OF 3

ſ	PRO	JECT	STUDY FOR CO	NSTRUC	TION OF	DAM IN I	MALEWA RIV	/ER S	YSTEM	DEPTH	70.00	M ELEVATION		
		TE	MALEWA	DAM S	ITE	COORDINATE	951741.62			INCLINATION	90°	DRILL RIG	2115.2	2M
	REC	GE CORE OVERY				DATE	FROM 21/NO	√T0_2	/DEC	DRILLED	"	LOGGED		-
L	l g	. š	ROCK TYPE	COLUMN				BIT &	TER	CORE			l 	一
DAT	DEPTH	ELEVATION	OR	SECTION	8 8 E	DESCRIPT	ION "	MET	SROUNDWATER LEVEL	RECOVERY	R. Q. D.	VATER PRES	SURE TEST	Ę
L	ļ	<u> </u>	FORMATION	SECTION	. : -			PIA	GROU L	% ca	50 (%)	•		0.59
ğ				<u></u>	0.00 0	** 0								+
- 12	E		•		0.00~3 Fres	./Om h dark gr	ev soft lake							耳
. [~	2				sedir	nents (alteri	ey soft lake							
				 	siltst	one with I	ili tuff and amina of 5°]						5
			}		dip),		•				9 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			3 =
	4	ĺ	ĺ		3.70~1	l.10 m		1						1
	5		-	<u> </u>	weat	n, partial hered fr	ly slightly iable lake	ll				(K=1.13x)	10'3)	
					seam	ienis, altern	ating beds of	1 1					:	5
	6				with	amina of co	nolomoratae	1 1						6 3
>	7		ļ		(3.70	ntercalation ~4.10 m),	of diatomite							
NO.			1		•	,.	• .							7
8	8											Lu≈14.2	•	8
	9	İ]]									K=1.60x10	D-4	
			1 . 1										,	9 3
	10											Pc=4.2		10
	11													1
	-				11.10~3	2.85 m						*.		閆
	12		1		Fresh	grey :	soft lake ting beds of	- 1						12
	13	1			sandsta	one and silv	with lamina	- 1	-			_		
	- 14	ľ	}		01 0- 10	5° dip.						Lu=15.0	i .	
] [_]		1									$K = 1.68 \times 10^{-1}$)-4	M
	15		 									Pc=4.6	•	15
	-		1 <i>\</i>											15.
YON /	- 1				Almos slice or	i of core s	haped like							16
183	7]]	31100 ()	sand.								17
	в	1	-											
	.]						Ì					Lu=5.6		10
1	9]]				1					K = 6.28x10)-5	19
	Ø	1	[j					Pc=3.8		1
			ł -				ĺ					-		202
	7]				Ì							21 1
NON/	2						ļ							21 HOLE 22 E
24 / 1	,	1					•	- [1 4
125	4											Lu=9.4		24 N
2	∜		Γ.									K=1.10x10	•	<u> </u>
1			-									Pc=0.8		MB-1
	Ĩ							İ						25 🗔
20	ž]								1		 26.
2	.]		-										.]	
QN 2	1						1						1	<u>27-</u>
355	1											Lu=32.7		28
20							Į					K=3.76x10	ĺ	
	İ		LAKE										ļ:	3 .
<u> [30</u>	0000		SEDIMENTS raignation, R.Q.D=(Tota									Pc=5.5		30

^{*}R.Q.D is Rock Quality Designation, R.Q.D=(Total length of cylindric cores longer than 10 cm)/(Total core length) × 100% ** LUGEON VALUE is !/min/m under injection water pressure of 10kg/cm! ** DEPTII and ELEVATION are in meter ** DIAMETER is in millimeter

HOLE NO. MB-11 SHEET NO. 2 OF 3

	DAIL	обрти	ELEVATION	ROCK TYPE OR FORMATION	COLUMN	DESCRIPTION	GROUNDWATER LEVEL	CORE RECOVERY	8. Q. D	WATER PRESSURE TE	DEPTH TS:	
		32.85	2082.35	LAKE SEDIMENTS		(as above) Slightly weathered brownish	Recorded			Lu=15.3	33	
// //	35			-	" "	Slightly weathered brownish grey slightly friable massive tuffs (lapili tuff with much scoria and rock fragments).	(33.30)			K=1.76x10 ⁻⁴ Pc=0.8	35 mg	
VON 7 BC	38 39 40				11 11 11 11					Lu=3.3 K=3.79x10 ⁻⁵	35 ml 38 ml 38 ml 48	
27 / NOV	1.4	41.70	<u>2073.50</u>	MASSIVE TUFFS	" "	Moderately weathered light brown, partially grey slightly friable to friable sediments (tuff, sandy tuff with lamina of				Lu=14.5	42 111 42 111 43	
	45 46 47					conglomerate).				K=1.66x10 ⁻⁴ Pc=9.3	45	
28 / NOV	48									Lu=1.8 K=2.06x10 ⁻⁵		
29 / NOV	1.51 1.51 1.5	5185	2063.35		" "	Fresh dark grey slightly friable, partially soft massive tuffs (lapili tuff).				Lu=2.0 K=2.31x10 ⁻⁵	51	
	55 56 57	58.10 2	2057.10		" "					Lu=2.5	56 57 57	HOLE NO. MOIL
ı	5 <u>9</u> 60		2057.10			Slightly weathered light brown slightly friable to soft lake sediments (alternating beds of tuff, sandstone, conglomerate and siltstone with lamina and cross lamina of 0° to 5° dip.				K=2.91x10 ⁻⁵ Pc=9.4	and Strains and G	
	62 63 64			LAKE SEDIMENTS						Lu=1.6 K=1.82x10 ⁻⁵ Pc=9.1	' E!	(2/3)

		DRILL	LO	\mathbf{G}	HOLE	NO. N	<u> 18-11</u>	SHEET	NO. 3 OF 3	
рертн	ELEVATION	ROCK TYPE OR FORMATION	COLUMN SECTION	DESCRIPTION		GROUNDWATER LEVEL	CORE RECOVERY	R. Q. D	WATER PRESSURE T	ЕЅТ
66.00 204	9.20	LAKE SEDIMENTS	1	(as above)		O .	% (SR	,		
67			" "	Fresh dark grey slightly friable massive tuffs (lapili tuff).					:	
58 - 69			11 11						Lu=0.2 K=1.97x10 ⁻⁶	
70,000 204	5.20	MASSIVE TUFFS	"	END OF BOREHOLE					v=1.5\X10 .	
				DAD OF BORISTOES						
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LOC FORM-C'

APPENDIX B X-RAY TEST OF BORING CORES

