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# EMPRESA NACIONAL DE ELECTRICIDAD S. A. REPUBLICA DE BOLIVIA

# FEASIBILITY REPORT ON PILAYA HYDRO-ELECTRIC POWER PROJECT

(APPENDIX)

MARCH 1982

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LINE

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FOR PILAYA HYDRO-ELECTRIC POWER

PROJECT PREPARED BY E.N.D.E.

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HYDROLOGY

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•	Table	A-I-1	i-(1)	Run-	off Da	ata at	Chillo	ara Ga	uging	Statio	n (O	-	Data)	
	DAY	Jan ,	Feb	Mar	Api	May	Jun	let	Buð	Sep.	Oct.	Nov	Dec.	
	1								17.97	. 10.34	1.36	18.40	27.40	
	,			*****					12.78	10.23	5.54	\$4.40	11.00	
	•	****			++++				12.45	10.16	4.13	40.40	9.05	
									12.53	10-14	1.00	77.09	4.20	
	4								17.65	41.01	4.88	[4.00	31.36	
		*****							12.40	4.44	4.70	70.60	33.57	
	7				***				12.87	10.07	4.54	89,47	17.60	
	•								12.40	10.16	4.40	76.40	11.07	
	•								12.95	10.76	4.16	78.67	17.40	
	10	****	*****					*****	L2.48	10.11	4.09	17.42	15-68	
	u -								12.43	4.40	3.60	9.40	20.21	
	iż	****				****		*	12.54	4.40	3.64	7.00	51-11	
	ii			****					17.40	9,80	1,69	7,00	Slaii .	
	14				*				12.20	1.24	3.67	6.34	82.00	
	15			****		****			12.20	1.16	3.74	5,40	40.00	
	14								12.20	8.75	3,45	34.05	133.07	
	iž		*****			****			11-46	*.25	3.73	32.99	112.04	
	iń								11.73	8,34	3.64	19.20	84.00	_
	19 /	****							(1.40	4.20	7.44	6,36	74.00	
	70						**	13.49	11.72	8.15	3.70	4.92	41.47	
	71							13.24	11.98	7.42	3.20	4.10	49.20	
	22							13.28	11.15	7.16	6.00	3.47	35.34	
	23							13.70	_ 11-07 _		. 13. <u>7</u> 4		_	
	24			****				11.55	10.74	7.36	71.31	3.15	24.88	
_	25			****				13.33	10.#2	7.20	44.45	12.61	25.84	
	26		****					13.33	10.61	6.69	45.72	4,00	19.52	
	27							13.33	10.24	6.76	39.60	4,36	14.17	
	ŻŔ							11.47	4,97	4,70.		Jz 11 _		
	79							13.70	10.15	6.07	41.47	1.04	11.63	
	10							11.04	10.16	5.40	29.72	47.24	13.27	
	71			*****				11.01	10-34		37.40		14.54	
	SUN							159.50	365.52	259.09	407.12	543.71	1187.39	
	4641							13.29	11.79	1.64	12.47	14.46	30.14	

Tab	ole A-	I-1-(2)	) Ri	ın-off	Data	at Chil	Icara (	Gaugin	g Stat	ion	(Origina	al Dat	ta)
				•								, 1973	
DAY	AOL	Feb	Mgt	Apl	May	Jun	Jul	Aug	Sep	150	Nov_	Des	
	11.15	62,27	194.20	24.73	22.45	161.)#	17-24	13.47	4.40	5.04		2-15	
,	17.00	96.37	\$47.71	23.77	22.+2	132-32	17.17	13.62	9.97	4.92		2-14	
3	[2.46	110.44	41.40	21.74	21.98	74.95	10.07	11.39	4.93	* * * * * * * * * * * * * * * * * * * *		2-15	
•	17.45	134.40	31.92	- 20.44	21.40	41.96	10.55	13.62	9.90	4.54		2-32	
9	44,47	101.45	41.10	74,41	21.03	33.32	14.64	13.42	9.53	4.3#	2.00	2.30	
_				32.40	21.40	48.12	16.64 -	13.34	9.13	4.11	2.57	2.45	
•	14.70	1[4.56 64.16	72.00	43.17	21.41	25.95	16.21	11.43	8.60	3.89		2.50	
1	175.04	##.00	74.60	32.45	21	25.14	11021	_ 11:23	4.77	3.03		2.38	
- ;	74.87	242.51	124.73	31.04	21.10	24.93	16.00	~ 13.04	8.57	3.40	4.02	2.13	
- 10	99.05	201.09	112.40	77,47	20.45	24.55	15.91	12.54	3.55	3.20	3.92	2.21	
	<b></b>			27.42		23.02	15.01	12.92	1.53	3.20	3.92	2-19	
11	101-07	134.92	92.49	24.4D	23.90 23.40	22.65	15.43	12.80 -	4.34	3.25		2.17	
12	121.65	134.44	46.04	26.72	20.40	21.92	. 12.31_	12.50		3.22		16,45	
13	34.43	11.43	19.26	24.12	20.95	21.21	13.66	12.16	1.02	19.40	3.84	25.20	
14	171.27	51.40	31.47	74.50	23.95	21.01	15.44	11.52		7.00	3.53	114-30	
						20.75	13.30	11.36	7.39	3.11	1.03	112.90	
. 16	134.13	37.41	44-47	84.28	20.10	20. 53	13.11	11.34	7.44	~ 4.31		9-47	
. ir	132.53		101.54	111.49	31.00	20.14	19-42		- 7,15	1.49		2.67	
11	79.33	14,64	124.94	17.00	21.25	20.05	14.40	10.68	6.92	3.44	3.23	3.10	
- 19	41.09	31.47 37.85	140.48	74.10	- 20.00	19.30	14.29	11.52	6.74	3.41		3.00	
									4.43	3.37	2.93	4.52	
21	70.40	37.19	122.77	32.14	20.80	14.25	14-32	12.32	1.11	3.20		17.11	
22	76.79	24,87	76-15	11-0K	20.60	18.99	14.32			بقدت		32-30	
23	112.04	51.50	67-11	26,40	20,50	10.01 10.30	13.11-	- 12.04		2.01	2,58	60.33	
24	77.20	24.35	41.74	25.58	20.80	17.07	14.27		6.17	2.61		77.33	
_ 75	54.05	24,13	41.74	144.04	20.80	11.01			****				
24	64, 11	30.15	34.33	23.95	20.00	17.24	14.73	10.01	8-04	2.79	2.32	44-10	
27	44.40	24.17	50.43	23.44	20.60	10.91	13.49		5.93	. 2.61		74-L8	
71	70.74	47,05	122.15	24,12	29,70	ilett.		12.13.	5.12	2.61		14.51	
1.	140.00		78.43	23,44	40.73	17.33			5.51	2.6	2.10	14-41	
30	190.08		41.44	73.44	40.73	17.44	14-23	9,40	- 5-24	2.51		36.40	
11	44.46		33.04		40.73			1.13		2.51	1	30.40	
2014	2572.90	2094.41	2501.63	1104.60	775.48	448.79	459.57	374.60	330-33	129-51	56.74	033.31	
₩ 44	43.00	74.87	\$0.76	14.89	25.02	32.29	15.12	12.00	1.07	4.11	3-23	26.48	
				-									

NOTE

Table	A-I-1	-(3)	Run-	off Da	ta at	Chillca	ıra Ga	uging \$	Station	(Ori	ginal	Data)
								-			Year	1374
D27	Jan	Feb	Mar	Apl	Moy	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	<b>5</b> 41.6J	>07,58	27.48	25.25	20.15	19.90	14,60	13.00	4.41	>.19	3.52	
,	11.27	701.59	40.54	17.54	21.98	19.80	10,60	13.00	5.53	>.>6	3.46	
3	**-23	701.04	710.70	39.44	22.64	20.20	19.00	13.00	Š,čJ	5.34	3.63	****
•	34.47	190,00	204-00	30,44	32.60	57.50	18.00	13.00	3.17	>.11	3.86	
•	1".40	197.00	144.70	61.70	22.04	30.20	16.00	12.00	4.63	4.69	3.75	
	31.79	194.00	114.10	111491	22-64	20.20	17.75	11.00	4.40	4.89	3.41	*****
•	24.20	194.00	104.73	182.54	21.60	19.76	17.15	10.92	4.40	4.43	3.18	
•	74.67	204.07	117.04	126.25	21.44	14.35	18.00	11.00	4.48	4,43	3.41	
9	, 71	241-14	107.22	117.77	21.80	18.00	16.00	11.00	3.80	4.43	3.94	
10	144.06	740,74	43.76	111.77	21.40	18.44	11.15	11.29	4.00	*- 43	13.43	1.13
11	67.67	259.19	107.17	94.00	21.00	18.00	17.00	11.31	3.56	4-43	11.21	12.69
12	62.00	613,70	117.97	14.93	23.50	10.66	17.00	11.42	3,20	4.20	7.14	61-02
13	54.47	447.70	90.73	62,20	52-80	14.66	_ 17.00	13.00		_ 4.43	4.57	90.80
- 16	19.00	- 614-99	109.33	51.34	21.27	19.00	17.00	[0.90	3.20	4.43	3.35	29.42
15	110.34	+05.47	h6.73	46.10	21.40	19.00	16.33	10.54	3.20	4.20	1.01	35.46
L6	152.97	461.66	56.13	47.20	21.40	19.30	16.00	10.04	3.20	3.48	4.00	106-18
11	251.30	419.45	56.60	38,40	21.00	19.00	\$0.00	9.54	2.45	3.75	4.09	94.41
18	144.44	410-41	71.74	35.46	ن ۽ مياج	18.75	12.39	2.11	_2.60_	3.52	3.40	40.46
19	147.93	410.45	44,70	34.00	22.00	16.00	15.66	9.50	2.93	3.32	3.63	103.68
>0	22.90	257.26	63.44	10.27	21.40	18.00	14.60	9.54	2.90	3.29	3.43	47.61
21	14.73	250.75	41.32	30,40	21.00	19.00	13.50	9.00	2.00	3.29	3.20	
"	17.79	279,65	39.69	26.6D	21.40	18.00	15.CQ	14.05	1.67	3.04	3.29	
21	151.44	184,00	46.41	\$6.00	- 31.49	LP LQC	14,59	30.00		3.00	4.49	
24	253.53	149.10	40.64	24.40	21.40	17-75	1 4 - 30	11.72	1-40	2.13	3.29	31.03
25	218.67	[37,80	15.00	24.40	21.06	18-00	14.00	14,17	1.40	2.40	4.09	27.63
26	730.15	114.40	33.00	23.45	20.20	17.75	14.00	12.63	1.24	2.81	.00	23.56
21.	250.14	92.50	31.40	23.00	23.50	17.33	14.00	10.79	1.20	2.40	20.15	14.71
24	222.50	81.40	70.30		73.20	16,00	14.00		1.10_	2.83	18,99	10.04
79	214.43		75.5D	21-40	24.20	17.00	14-60	7.93	0.95	2.43	17.77	19.30
17	714.47		74.00	- 22.63	23.20	17.00	13.15	7.40	0.80	1.06	16.63	150-18
11	220.14		13.00		23.60		17.69	4.77		1.29		14.94
5114	15*7.34	9419.44	2445.06	1530.71	****	>+0.60	444.49	144.03	91-34	121.11	152.12	1416.95
**	114.59	2=6.41	14, 20	51.02	57.30	18-69	10.Ci	11.47	3.11	3.91	6.41	53.57

Table	A-I-	1-(4)	Run-c	ff Da	ta at (	Chillca	ra Ga	uging S	Station	(Ori	iginal	Data)
											Year	:1575
DAY	not	Feb	Mar	IQA	May	Jun	Jut	Aug	540	QEI	Nov	Dec
ı	43-45	477,49				21.40	10,77	14.54	11,11	10.**	10.47	4.12
*	12.01	444-17				21.27	14.77	14.79	11.75	10.56	10.90	3.47
3	33.35	540.12				20.47	10.04	12.14	14.55	10.24	4.47	4.37
:	17-69	617.71				20.34	17,04	15.96	2 7 A/3	4,81	9,43	4.37
,	15.17	14,605				70.74	14.75	15.43	13.47	4.47	4.11	20.44
•	24.46	564.71				23.64	17.79	15.58	E3.38	9.44	9.51	•• ••
7	12.42	409-06			****	20.91	17,44	14.54	13.67	4, 17	9.47	20.11
	7. 61	374.64			***	20.75	17.14	14.41	11.04	4.00	9.14	21.17
4	7 . 74	727,74			*****	*0 - 41	17.74	15.14	12.49	4,41	1.10	(7.99
14	-2-11	156-15	*			20.47	17.71	15.47	17.17	4.0>	0.47	21.10
11	95.17	130-14				20 - L4	17.41	14.40	11-44	4.21	4.11	14.17
12	- 111.44	197.73				20.30	17.73	15,49	11.77	4.37	R. 44	71-10
13	136.63	370,74				20.11	17.53	15.40	11.55	4.44	4. 11	47.41
15	166.01	145.50				20-19	17.43	15.76	11.67	A.24	4.07	51.64
17	100.07	143.30				14-40	17,44	14.76	11.74	4.16	· 7.74	51.10
16	217.09	174.76				19-75	17.43	15.72	11.77	9.01	7.44	19.82
17	450.26	357.91				14.41	4.41	15.22	11.35	4.0	7.30	69.46
14 -	578.99	246,47				14.44	17.04	19,19	11,42	7,98	7.97	47.11
1-	355.65	251.14				19.44	7.03	15.49	11.58	7.70	7.11	47.03
20	144.20	270.47			****	14.44	14.42	15-12	11,41	7,44	7.44	44.42
21	126.21	201.91	*****		*****	19.09	16.23	15.02	11,34			
23	252.21	1177.01	*****			14.04	19.16	14.72	11.01	11.40	13.46	24.44
21	115.44	845,75				14.47	10.54	14.45	16.29	11.41		24.69
74	415.35	471.19		****		19.59	14.93	16.14	10. 11	14.00	30.02	- 27.32 61.19
25		52 R. AD				19.04	28-6A	14.14	19.77	12.04	12.40	2.24
							****			12154		42.20
\$4	475.66	549.79				19.09	15.43	\$4.17	14.78	11.45	12.72	37.72
27	427.44	443,41				10.49	14.43	14.01	LA.RY	11.40	12.40	27.44
20	504.61	510.51				10.44	14.44	11.97	11,44	11.01	9.70	_22.16
29	3*4.04				++		14.14	13.43	11.62	10.77	4,45	21.12
30 11	204.56		*****				14.77	13.42	10.45	10.77	P.34	24.41
"	342,19							11.25		****		*****
\$(j=	6717.91	11571.40				444.17	571 - 14	443.59	172.41	294,17	107.10	1046.74
4644	724.60	411,24				19.43	17.34	14.95	[7.41	4,86	10.24	14.45
			, -						-			
		NOTE					•					

 Period
 Source

 Jul. 1972 ~ Sep. 1974
 Calculated
 by
 SNMH

 Oct. 1974 ~ Sep. 1976
 Culculated
 by
 ENDE
 C Received In 1980 ?

 Jun. 1977 ~ Mar. 1981
 Calculated
 by
 ENDE
 C Received in 1981 ?

Tabl	e A-I	-1-(5)	Run	-off C	Data at	Chille	cara <sub>.</sub> G	auging	Statio	n (O	riginal	Data)
DAY	Jan	feb	Mar	Apl	May	nut	Jul	Aug	Sep	Oct	Nov	Dec
1	30.00	71-43	24,42	76.14	24-57	19.46	14.49	11.44	10.00			
•	12.44	91.72	47.03	27,51	74.44	19.15	15.63	11.44	9.97			
3	14.04	47,47	44.37	30, 11	74.46	10.20	14.17	11.40	11.01			
4	19.40	RQ.AP	14.44	12.22	71, 91	14.41	16,90	11.40	10.01	*****		
4	140,42	57.17	57,07	24,51	73,93	1=.46	14.76	11.40	10-11			
	240.02	51.53	140.58	39.67	21,74	14.51		40.11	10.74			
7	121.42	44.13	171.75	17.64	23,49	17.85		11.0)	10.28			
'n	*4.55	14.44	11.02	33.72	71.11	17.63	****	11.17	9,91			
	61.69	17.29	101.01	31.57	23.37	17.43		11.25	9.40			
10	54.79	51.56	171.66	78.47	21.24	17.58	13.41	11.47	10.11			
11	111.76	114.14	70.70	27.93	22.57	17.43		10.44	10.14	*****		
ij	190.97	461.01	64.44	21.64	22.70	17.53	11.56	31-14	10.07			
ii	213.40	432, 13	35.14	27.50	27.14	17.23	11.50	11.06	10.14			
ii.	59.26	174.45	10.91	31.44	21,92	17.13	13.63	10.44	10.11			
is	145.19	111.69	14.14	25.41	*6.50	14.64	13.34	10.70	10-14	*****		
16	47.25	111-44	*2.51	21.94	21.97	16.54	(1.67	10.47	0.47			
17	116.54	117.75	16, 48	24.54	21.39	16.41		10,45	9.94			
10	124.21	113.44	14.94	27-09	71.39	16.54		10.43	10.00			
13	115.97	47.31	14.99	76.66	21.10	16.6R		10.45	10.52			
70	114.47	59.99	14.45	24.35	* 21.94	16.74		10.33	10.47			
21	46.60	48.43	14.01	26.41	20.47	14.34		10.74	10.04			
77	193.02	47.43	16.48	7	20-33	14.54		10.11	9,71			
- 21	217-45	49.12	15.82	27.01	19.64	24.83	12.96	10.31	9.77		~~~	
74	***	46.47	15.27	25.15	19.46	17.49	14.54	10.47	9.67			
24	143,90	41.57	15.17	24,61	14.64	17.05	13.04	10,45	4.61			
76	154.29	70.49	27.23	25.21	[9.75	16.54	17.64	10.11	9,77			
27	124.61	27.79	27.79	24.74	14.25	16.79	12.47	10.10	9.77			
ź	119.45	27.73	21.00	24.34	19.75	[5,77	17.40	10,00	10.07			
29	100.65		10.61	74.57	17.64	14.77	12.16	4.41				
10	104.45		19,07	23,41	19.44	14.54	17.76	10.11				
ii	97.74		10.74		19.96		11.99					
504	1400.65	2754.37	2414,15	437.54	674, 75	474,06	287.57	371,46	200.00			
WFEM	116417	94,43	~ 78.04	27,75	21.77	17.53	13.49	10.74	10.03			

Table	A-I-	-1-(6)	Run	-off [	Data at	Chille	cara G	auging	Statio	on (C		Data)
DAY	Jon	Feb	Mar	Apt	Moy	Jun	Jul	ρυA	Sep	Oct	Nov	Dec
						17-63	[A.17 16.13	12.14	9,41	9.40	5, 79	9.15
1						17.63	16.11	12.47	0,74	3.16	4.10 7.70	9.57
1				-+			13.47		4, 16	4,70	7.71	1.00
4						17.63	15.67	32.42 17.29	9.07	1.01	3.31	7.35
4					*****	11.00	15.57		4.0-	7.0-	•, ,,	****
						17-63	15.24	11.91	9.36	4.47	5.04	4.17
7						17-61	15.24	111	9,68	4.47	13,50	19.14
						17.43	14.44	12-11	9.91	4.43	19.11	[9,34
•						17.43	14.64	12.11	4.48	4.37	71,40	13.11
10						17.63	14.44	11.74	N.64	73.74	11.53	-24
						17.63	- 14.46	11.76	4.64	13.50	9, 15	7. QA
(1						16.76	14-24	11.47	9.21	9. 79	0.47	1.11
17						7.03	11.49	19.44	1.03	4.70	5.46	20.00
19				*****		- 17.63	11.12	10.44	7.97	6.44	21.02	27.88
14						17.47	13.49	10-44	7.59	1.97	190.20	40.41
15						1,101	. , ,	*****	,,		******	*****
- 16						(*,63	11.49	10.44	1, 19	8.44	413.45	164.01
17						12.43	13,44	11.27	1-11	12.11	100-11	145.70
is						17.43	11.00	10.44	4.90	12.10	237+44	<u>*9,23</u>
ii						17.43	11.49	10.00	4.90	7.64	43.10	36.64
20						17.63	13.99	10.35	4.40	4.11	35.58	7*-17
-						14.96	13.49	10.35	6.51	34.95	29.25	65.50
71					-	14.44	(3.49	10.35	6.44	40.31	31.62	306.39
22		*****				16.76	13,49	10.40	7.21	35.25	36,60	1598.70
Ω						16.30	13.16	10.35	4.40	22.01	21.90	334.41
25	*					16.30	13,49	9.41	4.27	21.59	20.49	160.00
4.												
76						14.11	13.33	0,41	6.1A	16.69	19,74	128.09
21						16.33	11.11	10.04	5.94	17.69	13.65	120.03
28						16.10	19.33	4.41	4.04	11-68	11,41	. 85.53
29						16.30	13.16	10.04	3.69	9.15	10.29	52.60
10						14.30	17.93	7.41	5.61	7.18	4.15	99.18
ii							12.79	4.41		6.67		309-40 .
SUP						\$15.85	434.44	341.72	233.33	187,99	7739.54	3817.37
4684						17.20	14.19	11.09	7.74	12.47	74.45	127.44
,												

 Period
 Source

 Jul. 1972 ~ Sep. 1974
 Catculated
 by
 SMMM

 Oct. 1974 ~ Sep. 1976
 Culculated
 by
 ENDE
 1 Received in 1980 1

 Jun. 1977 ~ Mar. 1981
 Colculated
 by
 ENDE
 4 Received in 1981 3

NOTE

Table A-I-1-(7) Run-off Data at Chillcara Gauging Station (Original Data) Year , 978 0¢1 Dec Jul Apl May Jun Aug 540 DAY 14.39 15.39 15.39 14.75 11.37 10.44 10.44 10.44 6.41 6.41 6.48 6.48 14.75 14.75 71.30 34.76 44.73 4 4 8 10 64.80 76.17 69.00 69.51 72.13 16.75 16.75 16.17 16.14 17.55 456.66 161.74 170.75 150.76 245.67 16,39 31,99 33,53 31,51 35,14 11 12 13 14 15 16 17 19 19 71 22 21 24 25 786,44 2400.93 504 4010.15 10147.44 1042.72 644.04 594.46 570.54 41.1.65 234.04 417.39 104.47 177\_98 14.76 19. \*\* 11.31 9,21 7.50 17.91 106.77

Table	e A-I-	1-(8)	Run	off D	ata at	Chille	ara Ga	uging	Station	(O	riginal	Data)
											Yed	r ; 1375
DAY	Jan	Feb	Mar	Δpl	Мау	Jun	lut	Aug	Sep	Oct	- Nov	Dec
ı	20,441	1791,17	119.30	44, 17	16,23	78,44	15.40	27.57	15.41	10.00	7,44	
,	10.74	1721.54	171.07	74.67	14.03	29.14	74.93	31.47	14.41	10.04	7.44	1.85
3	*1.44	164, 27	111.14	64.64	11,04	27, 14	74 47	31.41	35,41	10.00	1.75	
4	47.45	745,00	97,71	34.24	11.04	77.34	*4.39	21.65	15.30	10.0	1.20	4.55
4	41.45	197,42	41.54	42,47	11,34	24, 14	25,04	21.65	14,30	10.0	19.00	4.09 5.31
*	40-41	104. **	124,04	+0.07	13.04	24,44	75.09	21.65	13.30	9.65		
7	475.57	149.44	744 47	41,40	11.05	74,46	75.00	21.45	15.35		17.49	4,17
4	743,45	211.14	747, 19	44.75	11.05	79,44	*4.09	21.45	14.70	1.63	13.44	4.20
4	147,46	171.65	107.44	60.74	12.04	74.44	74.04	20.86	14.70	1.21	12.78	1.85
10	174447	140.41	47,44	41-34	17.04	74.46	25.04	20.46	14.14	1,11	10,76	1.70
11	370.23	131.27	16,46	57.29	17.29	24.46	24.09	10.16	14.75	4.50		
12	814.17	144,17	114.76	48,44	37,00	74,44	25.09	27.09	14.17	10.35	11-03	29.49
13	502.31	2 37. 77	118.54	41.44	17.09	27.40	24.44	70.09	14.17	1.14	11.42	74.67
14	507,44	247.44	[57,90	51,54	17.00	27.64	46.46	21.01	11.55	9.19		24.67
15	317.94	177,16	7 Da. 44	40,48	41.15	27.40	75.44	19.34	11.51	9.54	26,37	16.77 74.48
Lé	- 334,63	112.44	160.41	40.40	11.15	27.40	75.04	14.14	11.01	4.44	*	
17	204.84	116,71	197, 91	40.74	31.15	27.60	24.44	19.67	13.21	10.70	26.46 26.73	63.46
10	147.47	99.00	142.30		31.15	27.40	75.07	11.62	33,0)	9.34	(4.7)	21.44
2.4	112.05	77,75	115.67	34,45	19,29	27.40	15.07	[A.63	17.01	4.34	11,42	23,21
20	141.40	71.86	79.61	1	10.21	27.40	*5.07	10.42	12.48	9.01	10.14	31.64 17.74
21	373.00	12,41	105.44	37.46	10.21	27.A0	24.14	17,41	12,48	8.40	4.59	
22	461.65	47.01	90.01	41.70	10.23	27. 43	74.18	17.91	11.17	4.37	7.19	27.42
23	122.02	45,74	127, 96	40.40	10.71	26.77	24.18	17.91	11.47	6.74	11.04	40.40
24	1551.01	45.14	94.25	\$4.27	30.23	78,17	*3.11	12.23	11.47	R.O.	14.63	31.05
25	1041-15	50,74	14.74	34.10	~ 24, 34	26.77	71.11	17.23	11,97	7.77	35.40	42.67
74	1040.42	41,33	47.25	17.11	24, 14	74.77	23.11	17.73	11.47	4.55	20.43	
27	3249.49	40.29	263.74	14.04	24. 14	24.79	22.47	14.57	11,47	7,77	12.74	430.07
76	1951.31	125.46	227.17	34.04	24.34	25,44	77.47	14.57	10.74	4.14	9.11	149.07
24	1414.61		794.40	15.01	74.14	25.45	22.47	14.57	10.11	3.04	7.46	740.49
10	2447.47		701.54	34.01	24, 14	24, 44	72.47	14.93	10.01	1.11	4.57	174.09
**	[444.83		114.77	•	24.44		77.47	19.93		2,77	4.17	133.46
\$44	14400.71	-187.49	4574.63	1409.60		437,76	745.64	448,44	402.44	247.45	414.07	2824.40
	441.96	247,21	144.28	44,99	11.27	27.14	*4.73	14.11	13,47	4.17	13,47	41.12
-		NOTE	•	-			-	-				

Colculated by SNMH

Culculated by ENDE | Received in 1980 )

( Received in 1981 )

Jul 1972 ~ 5ep 1974

Oct 1974 ~ Sep 1976

Table	A-J-	1-(9)	Run-	off Da	ıta at	Chillea	ara Ga	uging	Station	(Or	iginal	Data)
• • • • • • • • • • • • • • • • • • • •		• •						_				; 1950
DAY	Jan	Feb	Mar	Арі	May _	Jyn	Jul	Aug	Sep	110	Nov	Dec
			29.21	86.97	16,79	16. 12	14.79	11.51	9,41	3.49	17.47	4.04
1	477.4)	11.54	24.13	50.67	70	16. 19	14.79	ii.si	9,41	8.84	15.16	5.64
ζ,	201.01	29.36 21.54	15.44	32-19	14.79	16.19	14.79	11.51	9,17	4.64	14.12	4.73
	112.31	79.41	17.16	28.61	13.31	14, 19	14,79	11.31	9,17	3.00	17.29	76,51
•	41.7	11.73	119.41	14.94	15.31	16.19	15,25	11.09	9,17	4.46	11.44	11.74
•			•• •••	• • • •								
	42.39	29.74	19, 10	71.46	15.31	16.17	16.79	11.09	9.17	4.27	13,14	4.91
7	17.05	14.44	11.44	24.17	15, 31	16.7	16.77	11.09	9-41	5.08	4, 74 1, 85	17.79
4	11.75	15.00	# 7. P4	54.44	15.31		14.24	11-31	8.41	4,91	7.11	7.34
9	27.74	11.45	744.07	21.34	15.31	14.19	14.24	11.51	****	4, 57	6.46	20.85
10	40. 11	17.40	179.49	19.44	14.11	14.19	11.15	11.51	4.67	4. 11	41-0	
		12 40	175.01	14.4	55.33	14, 14	51.74	11.51	4.41	4.13	6.24	11,07
11	14.27	16.45	17.45	10.13	15.31	14, 19	13.78	11.09	4.14	4.40	4.04	25.90
17	14.17	13.05	48.45	11.14	11.11	15.79	11.10	11.09	4.14	4.74	3.44	11.04
12	30.65	12.19	116,05	16.56	19. 11	19.84	13,10	11.09	- 1,42	4.09	5.64	11.00
iš	17.44	11.44	102.37	[6.39	11.11	15.76	13,30	10.68	F. 47	4.09	5. 45	*.10
• • •	*****											
l é	11-10	38.93	66.93	19.44	14.44	14.46	19.74	17.10	7.51	4.91	3,41	***
12	24.44	47,44	14.46	[4, 19	14.19	17.84	13.74	11.94	1.41	4.24	1.08	1.11
14	41.74	17.17	46.50	16.96	16.19	14.84	13.70	11.94	7.21	4.91	1,60	
19	42.87	121.25	43,34	16.19	16. 39	[5,84	11,10	11.51	7.71	6.65	8, 89	55.7)
ža.	110.47	*04.91	47.24	15.44	14-19	15.96	17.41	11.09	4.40	4.76	11.94	4.69
		47.06	64,00	19,44	16.19	15,44	17,43	10.64	6.90	1.25	10.03	4.41
21	141.44	9.47	*2.0	15.44	14.19	4, 44	12.14	10.68		6.64	4,42	3.74
27 71	71.00	47.47	61,41	15,84	13.44	10,44	12.11	17.24	6.61	4-16	11,94	1,51
24	44.44	57.40	A1.7A	13.31	14.44	15.31	11.05	10.70	N. 12	11.28	8.34	1.75
53	47.50	64.27	44.70	11.11	15.56	15.31	11.96	10.24	6.17	A,#4	7.76	*.67
										4.40	6.24	5.84
76	16.76	47.40	41.43	15.31	14.44	13-31	11.51	90	4.04 P0.4	10.44	4.66	4.64
,,	20.44	51.16	77.14	15-31	16.19	15. 11	11.51	4.90	5.84	77.45	54.29	4.40
) A	17.46	41.41	40.74	15.31	16, 19	15.11	!! .!!	7.90	5.40	4.11	47, 17	1.74
74	47.47	11.10	44.15	15.31	14.19	19-15	11.31		1,58	21.37	6.00	6.40
10	40.60		-0.03	14.31	14.19	10.40	11.51	9.51	1. 74	14.00	2,42	4 40
11	44.44		41.15		10+14		*****	****				
ći in	7151.46	[ *A@, #]	2401.34	*64.69	644-11	479-51	409.47	111.07	279.17	714.10	100-45	117.51
46.64	49,14	41.44	77.46	27,16	15,75	14.44	11.29	10.94	7,45	A.A.	10.03	10.04

Tab	ole A-	I-1-(1	0) R	un-off	Data	at Chi	illcara	Gaugii	ng Sta	tion	(Origin	nal Data)
											Year	, 1961
DAY	not	Feb	Mar	Дрі	May	Jun	וענ	Aug	Sep	Qc1	Nov	Dec
;	4.04 *-16 6.44	17.51 F1.01	110.49 719.75 636.49									
;	40.16	371.92	484,15 480.48								****	
4 9 9	79.74 - 31.11 77.74 437.80 461.06	331.92 300.44 200.46 211.97 774.49	720.14 [12.19 764.66 205.76 [64.40				*****				*****	
11 17 13 14	374.64 64.63 94.01 94.01	764.55 747.66 796.36 168.86 99.70	719.01 80.76 64.47 61.18				******					
16. 17 18 19	144.41 17.05 16.48 10.26 27.69	44.44 79.43 79.67 43.05 53.65	50.15 41.84 52.05 45.04				*****		*****		*****	
21 22 23 24 25	44.45 70.77 37.12 41.45	13.79 13.21 13.43 40.37 10.00	140.43	*****		*****		 				
26 27 28 79 30	132.60 280.06 46.42 70.77 64.70 67.56	46.48 214.77 219.04									*****	*****
504	1191,69	1916.01	5154.00	•								
WEER	103.05	717.07	232.55									
								•				

Culculated by ENDE (Received in 1980 )
Calculated by ENDE (Received in 1981 )

NOTE

Oct 1974 - Sep 1976

Table A-I-2-(1) Water Level Data at Chillcara Gauging Station (Year 1972)

( Unit 1 m )

					` `						( 01111	(1) 7
DATE	Jan	Feb	Mar	Ap1,	May.	Jun	Jut	Aug	Sep	Oct	Nav.	Dec
ı				_		-		1 69	1 61	1 46	1 80	1 86
2						-		1 69	1 61	1 +5	T 80	1 63
3	-	-		_	_	_	\$	1 68	1.61	1 44	2 08	1.58
4	-	***			-		-	1 68	161	. 45	1 86	1.55
5	_		-	_	-	-	1	1.68	1.61	1 42	1 83	1 85
6		_	-	-	-	-	-	. 1 68	1.61	1.42	1.87	1 47
7	_		-	_	_			170	1 61	1.41	2 57	1 70
- 8				_		_		176	1.61	1 41	2 40	1.67
9					_	_	-	1.70	1.61	1 40	1.90	1 68
10	-				-		_	_ 1 67	1.61	1.31	1 79	173
. 11		-			_	_	_	- 62	1.60	1.38	1.72	1 83
12			_		_	_	_	1.68	1 60	1 3F	1 65	1 98
13	-	-	_	_				1 68	L 60	1.38	1 65	2 16
14			-	_	_		_	1.67	1.53	1.37	1 63	2 46
15		_		_	-	-		1 67	1 59	1 37	1 60	2 44
16	_	-	-	_	_		-	67	1.58	35.3	2.02	2.85
17	_	_	-			_	_	1 66	. 58	1.38	1 89	26.
18			_	••	-	-	_	1 66	1 57	1 37	1 84	41
19			-	_	_	-		66	1.55	1 36	163	. 38
20			-		,	_	_	1 6É	1 55	1.35	158	2 37+
21		-		_		-	1 64	_ : 65	1 5+	1 35	1 54	2 2 4
22		-	-		<i></i>		1 69	+ 64	1 . 3	1 47	1 ( 7	2.03
23		1	-		_	_	1.70	1 65	1 .	1 62	150	13-
24			•	_	_	-	170	1 63	157	1 84	15.	
25	-	-	-		-	_	170	10.7	7 1 1	2 15	175	1 41
26			ł		-		170	165	150	2 14	161	1 8
27		-			-	_	170	1.62	l it	65 4	] [5	i ĉ
28		1		-		_	1 70	1 60	1.53	2.11	155	1 5-
29			_		-	-	170	61	1 43	10	1 49	1.68
30			I	-			170	1 61	1 47	1 77	184	17:
31							1.70	1 61		2.0€		171

Table A-I-2-(2) Water Level Data at Chillcara Gauging Station (Year 1973)

(Unit 'm )

											( Unit	m)
DATE	Jan	Feb	Mor.	Api	May	Jun	Jul	Aug	Sep	0c1	Nov	Dec.
1	167	2 1.	105	7 00	1.68	2 93	1.87	21	173	1 59	1 47	i +-
2	1 72	- 06	2.85	1 97	1.87	2.85	1 26	. 21	72	1	1 47	1 42
3	.63	2 42	2.46	17-	1 86	2 48	1.86	1 51	1 73	1 57	1 47	1 44
4	_ 1_71	: -2	1 77	1 73	1.85	2 17	1 86	1.81	1 73	1 56	1 .7	1 46
5	2.18	2 62	C'f	1 99	1.62	2 08	1 86	1 81	1 72	1 55	1 43	1 44
6	2.07	273	2 21	2.08	1 45	2 03	1 86	1 40	1, 71	1, 55	_ 1 46	1, 44
. 7	271	2 FG	2.37	2 10	1.86	2 00	l 85	1.81	1.70	1 53	1 47	1 46
8	2.68	2 49	2 43	_ 00	1 86	1 66	1 85	1.8n	.1 70	1.53	1 73	1 45
9	2.78	3 : 5	2 79	1 98	1.85	1 99	1 85	1, 79	1. 69	1 5!	_158	1. 49
10	2.52	5 O	2 68	1.95	1.84	1 96	95	78	1 69	1_50	1 54	1.45
11	2 59	2 82	2.53	193	1.84	1.95	1.85	1.78	1 69	1.50	1 53	1 43
12	2.75	2.32	2 -6	1 90	! 64	1 95	1 84	1 79	1 68	1 50	1 35	1 47
. 13	2 01	2 37	2 13	1 94	1 24	1 93	84	1,79	1.69	1 50	1 55	1 63
†4	2.31	2 /5	2.06	1 89	. 1 85	1 93	1 84	1 79	1, 68	1 27	1.5	.I. E3
15	2 93	2 2 2	1 99	1.89	1 65	1 93	1, 84	176	1 67	1 65	1.52	2.50
16	7.83	0.5	2.20	2 40	1.85	.1.92	1.83	1, 76	1, 66	1 56	1 57	1.47
17	3 273	. 93	- 7	2 67	1 8.	1 97	1 83	. 1 76	1 66	1 54	1 5.	1.76
18	442	2 04	2 68	2 52	1 85	1.91	1.83	1 76	: 67	1.53	1 5?	1.71
19	2 29	1 77	2 75	2 41	1.85	1 91	1.84	1.75	. 65	1. 51	1.50	1 67
- 20	2 46	כי בי	2.81	2.39	. E4	1.90	1 23	1 76	1.64	1 51	1 49	1.68
21	2.30	2 0 4	2 76	1 76	1 84	1.89	1.82	1 78	1 63	1.51	1.46	1 69
22	242	37	2 55	1 93	1 84	1.8%	1 83	179	1, 63	t 50	1 47	1.91
23	275	1.53	2.40	1 93	1. 24	1. 59	1 51	1. 79	1 62	1 49	1 46	1 94
24	2 41	190	2 34	1 91	1 54	1. 85	1.62	178	1.63	147	1 46	2 10
25	2.25	1 89	2.15	1 95	1 84	188	1 82	77	1.63	1.47	1.45	2.28
26	2.30	1. 98	2.11	1 64	1. 54	1 27	1.8≀	1.75	1 62	1 47	144	2 11
27	2 13	199	2.24	1.88	1 84	1.86	1.81	74	1.61	1.47	44	2 04
28	2 36	209	₹ 79	190	1 84	1.87	181	1.73	1.59	146	1 42	186
29	291		2 46	188	2.05	1.67	1.61	1 73	1.61	146	1 42	1.72
30	3 96	,,_,,	2 15	1.8	2,32	1.87	1.82	1 73	1.59	1.46	1 42	2 42
31	2.51		2 cF	•	2 66		1 51	172		1 47		2 01

Table A-I-2-(3) Water Level Data at Chillcara Gauging Station (Year 1974)

(Unit m)

DATE	Jon	Feb	Mar.	Apl	May.	Jun	Jul	Aug	Sep	Oc1.	Nov	Dec
1	2 /3	2 98	2.28	1 86	_ / 87	1 86	1.84	179	1 72	159	1.49	1.42
2	ο,	2 96	2 27	1 95	1 86	1 86	1 85	/ 79	1.71	/ 58	150	1.42
3	34	2 94	108	2.01	187	1.87	1 84	1.79	171	1.57	1.50	1.42
4	1 97	. 93	3 18	2 01	187	1 86	. 184	1 79	1.70	/ 56	1,50	1.42
5	186	2.92	2.86	2 16	, 97	1 86	1 84	1.78	1.70	155	150	1,41
6	. 11	2 91	2 67	2.64	1 88	/ 86	1 84	1.77	1.10	154	147	141
7	196	291	2 63	2 39	1 87	1.80	1 84	1.77	1.69	/5÷	148	142
8	1 86	2 93	2 74	2.51	1 87	1 86	1.84	1.77	169	12=	149	142
9	2.53	3, 25	2 64	2 64	187	1 86	1.84	1.77	1.68	/59	151	141
10	2.72	3 36	2 56	: 37	1.87	1.86	1 84	/ 77	169	_ <u>, 5</u> €	172	171
	263	3 23	- 46	2.37	187	1.85	1.84	1.77	168	1,53	174	7.70
12	. 29	3 63	248	2 34	1 86	1 85	1.84	177	167	153	167	2:0
13	2 42	4 12	2 34	2 29	187	185	/ 83	1.77	1 68	753	161	282
14	2.41	4 75	2 44	2.28	187	185	1.83	177	1.67	1.53	158	198
15	271	4.74	2/9	228	187	1 86	183	1.77	167	152	158	20%
16	2 73	4 56	2 14	2 20	/ 87	185	183	1.76	167	151	150	252
17	2/0	4.29	2 14	2 26	4 27	/ 85	182	176	1.66	150	152	240
18	2 /0	3 77	2 25	- 14	1 87	1 85	1. 81	1.75	1 66	150	150	7.45
19	199	3 63	2.30	2 /3	187	185	./ 82	7 76	1.67	147	150	250
20	1.92	3.24	118	1.73	1.87	1.85	1 82	1. 76	169	148	147	2.67
21	1.84	3.31	207	1.93	1.87	1.84	1.81	1 75	1.63	1.48	148	2.7
55	1.78	3.32	20/	192	187	1 24	1.81	184	1.65	148	148	210
23	67	286	2 06	191	1.87	1 84	7.80	195	1 63	147	154	2.08
24	3.17	268	2 03	190	1 87	1.84	1.80	1.84	162	146	147	177
25	3 14	2.61	1.98	1 39	1.86		180	180	161	146	151	195
26	3.70	2.47	1.97	1.88	1 86	1 84	1.80	1.79	161	1.46	160	191
27	3.08	2.35	1.95	1 55	1.87	1 84	1.80	177	1 60	145	187	184
28	3.06	2 29	1.97	1 88	1.87	184	180	1.75	160	146	195	195
29	3.04		191	1.87	1.86	1.34	181	1.74	1.59	140	1,84	154
30	3.02		1.89	1.88	187		180	1.73	1.59	148	1.80	. 65
31	3 05		189		187		1 19	172		148	استسير	2.4

Table A-I-2-(4) Water Level Data at Chillcara Gauging Station (Year 1975)

(Unit I m )

						_						
DATE	Jon	Feb	Mar	Apl.	Моу	Jun	Jul	Aug	Sep	Oc1.	Nov	Dec.
1	207	4.01				1.89	164	1.80	173	1.66	1.66	1,53
2	200	370		-		187	1,84	1.79	1.72	1.66	1.64	7,52
3	198	4.15		_	_	189	/83	1.79	1.76	1.65	1.63	1.51
4	7,86	4.50		_		1,87	7,82	179	1.74	164	1.63	1.51
5	1.72	421		ļ		188	/82	178	173	/63	1.62	_/.87
- 6	2 00	4/3_	-		_	1.87	182	178	173	1,62	7.63	1.87
7	1.80	- 72	1	-	_	188	18:	178	1.72	7,62	162	190
8	1.72	= 50	ı	-	_	189	182	/ 78	/72	1.62	162	122
9	/87	307	-	_	_	187	182	/ 28	171	1.61	1.61	1.83
10	206	2 28	1			187	7.82	178	_1.70		1.50	1.87
11	250	2.65	_			/87	/8/	1.28	1.67	1.61	_1.60	228
12	154	2 22	1	_		187	1,82	128	1.69	1.60	1.59	2.28
13	260	÷ \$0			<u> </u>	/87	18-	1.77	1.68	1.60	1.59	2.27
14	25%	291		-	-	1.81	7.83	1.77	1,67	1.60	7.58	226
15	2.7.7_	290	-	_		7.86	/.82	1,28	_ 1,69	1.59	1.52	<.25
16	290	2.8∧	_			7.66	184	1.22	1.67	1,56	1.54	224
17	327	: 53	1	-		7.86	180	177	1,68	1,58	7.5%	2 23
18	407	. 34	-	_		1.96	151	1.27	1,68	1,58	1.5%	2:22
19	3.55	317		-	_	1.96	181	1,72	7,68	1.57	155	2.2
20	- 24	9.03	1	+		7,86	1.80	1.72	.7.68	7.56	1.56	2.27
51	7.64	299	-			7.85	1,80	1.72	. 468.	1.58	1.69	206
22	9.14	538				1.85	1.80	7.26	167	1.64	1,80	1.78
23	346	4.79		<u> </u>		185	1,80	1.25	1.62	1.65	1.78	1.79
24	376	- 51				1.85	181	1.25	1.46	1.70	1.86	: 33
25	5.20	3 76			<u> </u>	7.85	180	1.75	7,66	1.74	1.62	2.63
26	5.05	397				7.85	1.80	1 25	1.78	1.70	1.70	/2
27	441	y 73	_	-		1.85	1.80	1.74	/8/	1.67	1.70	1.25
28	7.75	4.95		_		185	1.80	1.74	174	1.68	1.6	178
29	2.65		_			154	1.80	1.74	1.68	1.67	1.60	1.92
30	2.22					1.84	180	7.23	166	166	157	197
31	345	1	L —	<u> </u>	_		180	172		166		1,70

Table A-1-2-(5) Water Level Data at Chillcara Gauging Station (Year 1976)

(Unit:m) DATE Jan. Mar. May. Jul. Oct. Dec 187 256 2.0/ 1.97 1.94 1.86 1,28 1.69 1.64 1.64 204 2.55 2,22 198 1.94 1.85 1.28 7.68 1.64 1.64 207 253 -21 2.03 194 1.85 1.22 7.68 1.44 1.64 2.14 2.09 2.05 2.55 193 1.84 1.26 7.68 1.64 1.64 298 224 200 1.93 2 33 1.84 7.68 1.26 1.64 1.64 2,87 2./3 1.93 1.65 1.84 1.67 1.26 1.64 272 2./8 3.57 1.75 7.62 7.65 1.64 8 237 2.86 3.87 2.07 1.23 /.82 <u>\_\_\_2\$</u> 1.67 434 7.65 163 243 205 <u> 322</u> 204 1.92 /82 1.24 1.67 1.64 10 231 228 3/2 200 192 1,82 1.74 1.67 1.64 1.63 11 264 2.77 2.46 1.99 191 7.82 1.24 7.62 1.44 1.63 12 300 2.25 220 1.89 191 1.82 1.23 1.67 1.64 7.63 13 310 2 10 197 190 3.66 1.81 1.23 167 1.64 1.63 14 296 2.03 2.02 190 181 1.23 7.66 7.65 1.62 15 2.9/ 268 1.99 1.95 1.89 1.80 1.23 7.66 1.66 **∠6**₹ 16 190 250 362 1.89 1.90 1.80 1.63 17 280 248 176 1.95 189 1.80 **L22** 7.66 1.54 /.63 18 277 2 68 1.76 *1.78* 1.89 1.80 1.22 7.66 7.68 7.62 19 265 253 197 7.88 1.76 1.80 1,22 223 1.62 20 27/ 1.97 1.87 2.34 1.76 . کک 1.22 1.22 1.65 1.62 21 246 2,32 1.92 7.87 1.29 1.64 1.22 1.65 1.62 22 278 222 1.80 1.96 1.87 1.80 1,52 1.65 1.63 1.62 23 308 223 1.78 1.96 1.86 1.93 1,22 1.65 163 24 283 219 1.77 1.95 184 1.82 1.72 7.62 1.63 1.62 25 2.64 216 1.22 1.96 186 181 1.71 1.65 7.63 1.62 26 27 291 2.04 1.96 1.95 1.85 122 1.80 1.65 1.63 1.62 2.75 1.99 1.99 194 7.85 1.29 1.20 1.65 1.63 1.62 28 198 1.98 1.94 1.78 1.20 1.64 1.64 7.63 29 1.84 266 201 194 1.64 <u>/,63</u> 1.28 1.68 30 263 202 1.93 1.86 169 1.64 1.62

Table A-I-2-(6) Water Level Data at Chillcara Gauging Station (Year 1977)

169 -1.64

7.62

186

2 59

202

(Unit.m) Jul. Nov Dec. Aug Oct. DATE Feb. Mat Apl. May Jun Sep 1 76 170 1.49 1.60 1 63 1.51 1. 78 1 63 1 77 1.76 1. 76 147 1.70 1.76 1. 69 4 1 78 1 75 1..69 1 63 1\_50 1. 49 1.59 1. 78 1, 69 1..62 1,50 1.51 1 56 178 1 74 1.68 1.63 1\_48 1 46 1.60 1. 78 1 63 1.70 74 1 84 1. 68 1 48 8 1.69 1.64 1 47 1.78 74 1 80 1.84 9 1.78 73 1 63 1.47 184 1.72 1.69 10 1.78 73 1 70 1 59 1.78 1 68 1.61 1. 58 1 55 12 1 77 73 1.67 1.60 1.52 1.51 199 13 1 78 1 72 1 67 1.59 1, 59 1 48 1 66 1 59 1.97 14 77 1 53 1.86 1. 78 15 72 1.66 1. 58 1.50 3.73 1. 78 16 2 76 1.70 1.79 17 1.78 1 72 167 1.57 2 4L 2 69 1 79 1 78 18 72 1 66 1.56 1 68 2 87 2 19 1 56 1.58 1.49 2 07 19 72 166 2 38 20 21 77 1.97 1. 78 1.65 1.56 2.00 77 1.55 72 1 65 2 00 1.94 2. 30 22 77 2 05 3,12 23 24 1 77 ור.ו 1.66 1.57 2,00 4.40 1 76 1. 71 1.65 1.56 1.85 3,17 76 76 76 25 ורו 164 1.54 184 182 2.74 26 71 164 1 53 1 76 262 181 27 1 64 1.78 1.71 ī.53 1. 21. 2 59 1.76 1.76 28 j.53 2 46 1 1 1 64 1 66 167 29 164 1, 60 30 1.76 170 153 1.55 1.60 ] 70 2 88 1 63 1.52

Table A-I-2-(7) Water Level Data at Chillcara Gauging Station (Year 1978)

Sep Nov Dec. DATE Feb. Mar. Apl. May Jun Jul Aug 130 Jan 1.76 3.38 3.78 213 1 84 347 2 25 1.28 181 1.69 1.58 1.58 1. 15 211 1 24 209 1 29 1.20 1 68 2 10. 2 04 1.80 1 76 | 68 1 84 4 47 1.88 1 84 2 2 3 299 4.22 2.04 201 1.24 1.80 175 1 68 1.77 1 9.7 3 00 2 00 1.99 1.87 4 05 201 1.83 1 80 1 75 1.62 2.07 2 46 2 28 2 37 2 31 1.67 1 20 4.99 1 27 1.83 1 80 1 75 1.72 2.00 1 90 200 1. 1/3 5.54 1.87 1.23 1 80 1 75 1 617 1. 68 1.83 1.80 1 82 . 39 . 67 172 2.04 161 4 20 186 1 74 2 32 2.01 1 98 1 74 1 7i 186 1 10 3 57 1.23 1.67 1.65 2.34 2.19 1 16 1 79 1.86 1.22 1.63 301 3 12 2 23 1.66 3.2R 197 L£i 1.79 173 1 60 32: 2 13 2 10 172 12 1.95 186 1.79 1. 75 2 7a 2 54 13 1.96 23.1 1 23 1.79 1.72 1 66 1 60 1 5/4 1 66 1.78 1.64 791 207 1,94 1.85 180 1 72 1 65 1.58 15 132 1.72 . 46 2 9 L 200 1 97 1 25 1 64 1 57 1 64 1 77 16 -1 2 : : 185 182 1.78 1 (4 1 66 107 1.95 1 53 \_1.56 241 273 1 7/2 1.77 216 4.23 1,99 1.32 1.64 1.55 1.31 228 207 18 100 7.87 1.82 182 1.77 1 /2 1.63 1.55 1. 49 19 198 185 177 1.72 1.54 47 16 2.59 2.76 2.95 2.47 20 15. 2.35 1.96 1 45 181 1.22 J 171 1 63 1 34 21 1 95 1 92 3 09 1.21 : 76 ! 76 171 , ዓጵ ذكت 1.85 1.64 \_\_\_\_5: 172 3 C. 22 1.62 1.62 153 761 1.25 1 ex 23 191 1.57 1 84 1 21 1.48 . 54 1.54 24 3.39 -2.27 1.84 1.16 1.40 . 11 1 54 2.40 7 01 13.1 220 214 211 217 1 5... 25 -11 304 1.89 1 84 177 1'10 1.61 16 2.80 2.33 26 1.91 1 84 1 / (f1) 1 21 111 3 23 2 60 1 90 1.84 1 70 1 (0 1 62 1 '74 1 21 28 1. 29 1 84 111 1 22 1 22 1 80 . 10 1 60 131 220 1 66 1.70 1.59 · 16 1.88 1-6-1 . 28 232 235 - 3. 1.73 1.21 30 155 1 76

Table A-I-2-(8) Water Level Data at Chillcara Gauging Station (Year 1979)

DATE	Jan	Feb	Mar	Apl.	May.	Jun	Jul.	Aug	Sep	Oci.	Nov	Dec.
1	2.72	ه در	259	2.84	194	188	1.97	191	177	1.11	1.70	164
2	221	-0.29	2.74	224	1.74	1.02	_ <u> </u>	12/		161	1.70	1.72
3	202	25.24	208	2.18	173	1.82	1.85	1.81	/22	101	1.42	1.65
4	1.95	2.79	2.26	2.12	193	1.82	1.84	180	171	- 661	167	1.65
_ 5	1.71	1.42	232	2.10	193	1.09	184	180	121	1.61	1.27	1.61
6	170	3.15	2.52	2.06	1.93	1.88	184	1.80	171		1.25	1.59
7	242	2.07	214	204	1.53	1.00	184	180	121	160	1.88	1.56
B	417	7.87	2.05	204	1.93	_/#R	184	180	1.70	160	185	154
9	7.77	2.74	2.62	2.15	1.22	188	1.04	1.79	1.70	_/.57	1.00	
10	2.27	2.67	2.20	216		188	66	178	170	100	184	1.27
11	131	2.0	721	213	197	1.28	1.84	178	120	1.77	151	2.11
12	11.32	242	246	2.02	192	1.88	185	178	1.67	1.75	/82	1206
13	1.12	2.17	2.48	2.13	1.72	1.17	1.86	1.78	10	174	1.76	206
14	185	2.52	2.18	2.01	192	127	1.86	1.78	./68	1.77	2.00	1.23
15	122	2.75	2.68	2.00	1.21		1.85	1.27	1.68	1.77	173	2.11
16	120	2.14	2.67	200	191	1.17	1.85	127	1.67	1.76	2.07	242
17	200	2.82	284	2.00	121	1.82	_ 2.85	1.26	1.12		2.08	210
ΙÐ	2.72	2.01	2.70	1.22	121	1.87	1.84	176	167	1.76	1.90	204
19	2.04	224	2.42	1.18	110	187	1.88	1.76	167	1.76	783	217
20	2.70	220	2.21	1.98	1.90	1.87	1.00	1.76	1.66	175	178	2.21
21	פני		24	198	190	1.17	1.93	125	1.66		1.75	2.10
22	2.00	7/5	2.3/	2.01	1.90			czt	1.65	1.75	1.78	240
23	2.7/	2/2	2.53	2.00	1,90		1,93	1.75	1.55	1.75	1.79	224
24	000	2.02	2.75	1.27	120	1.86	182	174	1.0		1.22	لتبعا
25	#.52	208	230	1.28	1.57	1.86	1.83	1.78	1.65	171	7/7	210
26	a. s.s.	2.11	211	1.77	1.09	186	1.82	174	1.19	1.75	2.00	117
27	V.81	244	3.07	1.26	1.02	1.86	1.61		1.14	1.71		227
28	244	2.52	2.93	1.76	1.89	185	1.81	173	. 164	174	1.79	1.16
29	141		2.17	1.95	1.27	1.04		1.73	1.12	/.72	1.71	2.70
30	5.18		2.86	190	1.89	185	181	/22	161	121	157	3.90
31	20		7.47		1.00		181	1.72	سنسا	171		329

Table A-I-2-(9) Water Level Data at Chillcara Gauging Station (Year 1980)

(Unit m )

											· Comm	*** *
DATE	Jan	Feb	Mar.	Ap1	May.	Jun	Jul	Aug	Sep	Oct	Nov	Dec.
1	- 4"	191	183	236	1.73	126	1.23.	166	1.61	195	2.04	167
2	28	183	1.29	2.14		176	1.73	166	1.61	1.80	112	1.66
3	2.51	1.50	191	1.78	1.73	175	/. 73	1.66	1.60	2.66	126	161
4	221	183	195	194	174	176	173	1.66	260	163	_181.	221
5	2 09	1.86	251	1.09	1.74	176	172	160	160	1.70	190	1.25
6	1.28	173	241	187	1.74	1.76	177	1.15	160	1.64	1.85	1.67
7	172	1.68	2.23	1.81	174	176	1.72	1.65	1.59	163	183	112
в	1.88	1.52	234	1.22	1.74	1.76	172	1.66	1.52	162	1.76	1.91
9	181	1.56	2.99	184	174	1.76	172	1.66	1.58	161	1.23	178
10	126	154	2 27	1.82	174	176	171	1.66	.758	100	170	2.11
II	252	154	2 76	180	1.74	1.76		1.66	1.58	1.61	. 169	2.03
12	124	1.62	2.48		174.	176	171	2.65	157		110	220
13	202	154	2 40	1.78	174	176	2.70_	265	157	2.58	2.66	190
14	194	155	259	176	174	1.75	170	1.65	156	1.52	1.66	193
15	183	152	2 42	1.76	1.75	125	120	1.58	156	1.02	1.65	117
16	185	194	2.20	175	1.25	175	171	1.68	255	162	112	1.66
17	182	193	210	1.76	176	175	171	167	155	1.58	163	1.17
. 18	127	193	2 02	1.22	176	175	170	167	1.5%	162	125	152
19	122	2.53	1.22	1.76	126	175	170	166	1.54	159	180	2.50
20	242	257	1.98	1.25	1.76	1.25	167	165	153	1.83	190	1.71
21	2.62	2.37	200	1.75	1.76	125	169	1.6%	255	1.67	1.8K	1.60
22	718	2.11	207	175	176	1.75	168	164			2.22	
23	2.23	203	2.12	175	122		268	123	152	4.56	1.20	- 1.53
24	7.79	2.08	2.17	174	2.75	1.79	157	1.43	151	166	128	151
25	198	7.21	211	174	175	229	7.67	163	1.51	150	174	1779
26	192	2 20	202	1.74	175	1.74	1.60	1.52	150	172	162	1.17
27	182	2.07	2.27	174	176	1.28	1.66	1.62	1.50	1.86	116	1.66
28	1.87	1.27	Z 06	1.74	176	128	166	162	147	214	1.14	159
29	1.98	185	2.00	174	1.76	124	166	_/AZ	1.47	2.28	2 98	1.06
30	236		196	1.74		173	166	161	148	212	172	159
31	202		197		126		1.56	161		232		وسورر

Table A-I-2-(10) Water Level Data at Chillcara Gauging Station (Year 1981)

(Unit m)

DATE	Jan	Feb	Mor	Api	May.	Jun	Jul	Aug.	Sep	Oct	Nov	Dec.
1			7.44				<u> </u>	-			<u> </u>	<u> </u>
2	1.48	7/2	7 60					<del> </del>	<del></del>	· · · · ·	ļ	-
3	181	2.27	4.00					<del> </del>	<del>                                     </del>		<del> </del>	<del></del>
4	120	1.11	185				_		<del> </del>	<del>├</del> -		<del> </del>
5	183	_121	431					<del> </del>	<del> </del>			<del>-</del>
6	240	2.16	3.75		<del></del> -		<del> </del>	-			<del> </del>	<del> </del>
7	2.26	1.22	2.25		-			<del> </del>		-		<del> </del>
	228		270				<del></del>		<del> </del>	<del></del>		<del>!</del> -
9	23	289	2.09				<del>:</del>	<del>                                     </del>			<del> </del>	<del></del> -
10	150	Z 9 9	210		<del> </del>		<del></del>	+	<del></del>			<del> </del>
111		401	2.25		<del>!</del>		├	<del></del>	ļ			-
12		4.02	1.01		<del> </del>		<del> </del>	<del> </del>		<del> </del>	<del> </del>	<del> </del>
13	2.72	1.10	222		<del> </del>		<del>                                     </del>	<del> </del>	<del> </del> -	ļ	<del> </del>	<del> </del>
14	Z 37	212	224		}	<del> </del>	<del> </del>		<del> </del>	<del>├</del> ──	<del> </del>	<b>├</b>
15	Z.32	2.76	Z/8		<del> </del>	<del> </del> -	-	<del></del>	<b></b>	<del> </del>	<del> </del>	
16	216	244	2/8		<del> </del>	<del>                                     </del>	<del> </del>	-	<del></del>		<del> </del>	<del> </del>
17		237	202		<del> </del>	<del> </del>	<del> </del>			<del> </del>	<del> </del>	<u> </u>
18	Z.//_	2.12	2.10		<del> </del>	<del> </del>	<del> </del>			<del> </del>	<del> </del>	ł-——
	192	229	Z.//		<del> </del>	<u> </u>		<del>- </del>	ļ	<del> </del>	<del> </del>	<del></del>
19	194		2.04		<del> </del>		ļ		<u> </u>	<del> </del>	<u> </u>	<del> </del>
21	- 103	Z12	2,37	<del> </del>	<del> </del>	<del> </del>			ļ	<del> </del>	ļ	
	ZOF	211	2.68	<del></del>	<del> </del>	-	ļ	ļ		<del> </del>	<del> </del>	<del> </del>
22	2.25	2.11			<del></del>			·	<u> </u>	<del> </del>	ļ	<u> </u>
23	195	2.17				ļ		-		ļ	<del> </del>	ļ
24	Z.00	2.17	ļ. —		<del> </del>	ļ	-	<del> </del>	ļ	<u> </u>	<u> </u>	<u> </u>
25	7.43	208	<del> </del>	<u> </u>	1	<u> </u>	ļ	<del> </del>	<del>                                     </del>	ļ <u>.</u>	<u> </u>	ļ
26	2.F.C	2.07	<u> </u>		-	ļ	ļ	<del>  </del>		<b> </b>	<u> </u>	
27	.1./3	213	<del> </del>	ļ	1	<u> </u>		ļ	ļ	ļ	L	<b> </b>
28	2.36	299		ļ	<del> </del>	ļ	L		ļ	ļ		
29	2.25		<b></b>		↓	<del> </del>	ļ	<del></del>	1			
30	244		ļ <u></u> .			<u> </u>			1	<u>!</u>	1	
31	2 2 3		l		<u> </u>	<u> </u>				` _		

Table A	4- I-3-(	(1) F	Run-off	Data	at Cl	hillcara	Gauç	jing St	ation	(Mod		on Dat	ta
DAY	Jqn	Feb	Mar	Αμί	May	Jun	Jul	Aug	Sep	Oct	Hov	Dec	
								12.47	10.14	5.36	14.40	27.40	
Ĺ	*****							12.78	10.23	4.44	14.40	11.00	
?			****					12.65	10.16	4.13	40.40	9,04	
			***					12.53	10.16	4.07	72.39	9.70	
i i		**						17.65	10.14	4.44	14.40	31.30	
								17.40	9.94	4.70	70.60	33.57	
4								17.47	10.02	4.58	49,47	17,60	
!								12.99	10-10	4.40	76.40	17.07	
2						*****		17.95	10.34	4.16	28.67	17.40	
10								17.44	10-11	4.09	17.92	15.68	
•-								12.63	9.40	3.89	9.40	20.21	
13	****						*****	12,54	9,40	3.65	7.00	31.11	
12								17.40	9.40	3.69	7.00		
11								15-50	9.24	3.67	6.16	45.00	-
14				+				12.70	9.16	3.74	5.40	*0.00	
15								12.20	****	14	,,-,,		
16				+			v = ===	12.20	0.75	3.45	16-85	133.07	
iř								11.88	A.20	1.73	12.00	117.04	
16								13.73_	8.36	3,68	15-20	64.00	
4.								11.40	8.20	1.44	6.36	74.00	
20							17.44	11.72	8.15	3.70	4.92	41.47	
21							11.26	11.51	7.42	1.20	4.10	69,20	
22			*****				13.25	11.35	7.36 -	6.00	3.47	35.39	
21					+		13.70	11.03	7.37	11.74	3.70	25.76	
ź							13.55	10.74	7.36	71.31	3, 15	26.55	
25							13.13	10.42	*. 20	44.55	12.61	25.44	
							13.11	10.61	6.49	64.77	6. D#	19.57	
76							13.33	10.20	6.26	34.60	4, 16	14.87	
27							11.42	4.97	6.20	47.60	3.53	20.37	
2A							13,20	10-15	50.0	41.41	1,04	13-63	
79							11.01	10-16	5.60	79.17	17.24	13.27	
10					*****		11.03	10.14		32.80		14.29	
*4				•			,	404311		440			
\$0*							144.50	365.52	259.09	+07-12	543.71	1147.39	
MEAN							11.29	11.79	*.64	17.97	19.46	74.14	

Table	A-I-3-	(2)	Run-off	Data	at C	hillcara	Gaug	ing St	ation	(Mod	ificatio	on Data)	
		-									Ye	or: 1973	
DAY	r Jan	Feb	Mor.	Apl	Moj	Jun.	Jul	Aug	Sep	0 <i>a</i>	Nav	Dec-	
t	13.15	A7_27	174,22	76.23	24. 70	+91.10	21.95	14.75	11.74	6.75	1.40	2.41	
;		06.77	147.74	77.77	71.77	164 . RT	**.77	19.75	11.14	4.7	7.56	2.40	
,		110.48		21.74	27.62	147.20	21.11	10.00	13.24	4.40	3.96	4.12	
	17.95	110.40	11.97	20. 4	27.16	40.10	17.46	14.75	13.24	6.29	1.46	3. NT	
;		101.44	41.10	24.07	11.71	51.59	21.27	14.40	12.97	5.94	1.09	3.70	
		114,50	3D. *A	37.40	22.31	47.45	21.06	12.30	12.31	5.78	1.65	1.17	
•		PR. 16		43.17	71.04	34.64	77.47	14.52	11.49	1.31	3.44	3.63	
t		PA. 00		12.43	22.77	17, 11	72-14	18.15	11.78	5.17	13.26	3.42	
•		247.51		31.04	21.01	36.69	22.16	17.07	11.64	4.78	A. 45	1.75	
•	174.87			77.47	21.30	37.17	21.99	16.52	11.37	4, 43	3.47	3.34	
10	99.05	701.44	1144-0	71.4-7									
31	101.07	134.92	92.49	27.97	31.30	33.17	21.40	17.00	11.37	4,47	5.27	3.00	
iż		136,44		74.40	71.64	31.75	21.64	17-14	11.07	4.61	5.41	2.42	
		77.40		24.72	21.16	10.0	71.54	17.21	11.17_	<del></del> >\$ <u>1</u>	5,72	50. <u>+8</u>	
iá		49.43		24.12	22.18	24,49	71.19	16.93	11.07	23.77	5.44	20.4#	
13		41,40		74.50	22.16	\$4.40	21.70	15.52	10.31	4.45	4.97	177.45	
		37.41	46.42	84.75	71.71	- 24.44	10.91	15.58	9.94	6.14	4.98	164.30	
16		15.4*		111.69	21.71		20.72	15,52	10.03	5.61	4.98	15.39	
17		34.64		91.04	22.51	27.37	20.32	15.39	10.17.	5.39	19	. 17.52	
18		31:47		77.00	71.11	27.37	20.07	16.75	9,41	4,85	4,49	10.56	
14	41.04	37.45		74.10	21.54	26.15	20.44	15.65	4.14	4.86	4.70	10-44	
78	71.01				-								
21	70.40	31.15		37.14	71.30	25.46	19.91	16.86	4.65	4.68	4-10	11.27	
22		29.87	46,15	28.0A	21.14	25.76	14.52	17.35	8.65	4.42	3.90	27,47	
21		27,20	44,44	74.40	21.14	24.37	19.21	17.44	_5.37				
24		24.11		25.58	21.72	24, 44	19.68	16.45	8.73	3.97	3.65	54.59	
79	14,01	71,17	41.76	74.44	21-14	24.70	19.52	15.71	1.43	7.74	3.44	46.16	
26		30.75	26.33	73.95	21.10	24.21	19.69	14.75	8.06	1.00	3.20	55.84	
21		24.12		23.44	21.30	27.71	10.43	14.76	7.69	3.82	3.20	12.81	
źá		47.01		24,57	21.30	23.54	19.05	17,78	7,25	1,71	2,97	.23.04	
£4			78.11	21.44	44.00	24.14	14.21	11.66	7.49	1,69	2.97	17-44	
10			41.44	23.44	107.51	21.47	14.24	19.55	7,19	1.64	2.43	141.85	
ñ			13.04	•	765.49		14.71	17.17		1.76		34.78	
								410.30	*** **	174.64	136.03	1023-17	
2017	2572.40	2094.41	2503.45	106.60	1034.34	1404-44	441.43	510.38	304.12	117480	1 18. 54	tn. 1414	
-	43,90	24,41	4D.74	74.80	33, 31	43.50	21.02	16.45	10.30	5.67	4.56	**.OD	

Table A-I-3-(3) Run-off Data at Chillcara Gauging Station (Modification Data) Year; 1974 Dec Oct DAY 17.42 17.42 17.42 17.42 18.72 4.10 4.53 4.53 4.53 4.53 2.93 2.87 7.79 7.47 2.65 2.89 2.47 17.71 10 11 12 13 14 15 3,44 3,44 3,65 3,65 1,47 4,10 7455.06 1552-36 4014.44 504 14.40 EA.74 10.04 4.78 4.63 22.12 51-49 1

Table	A-I-3-	-(4)	Run-off	Data	at C	hillcara	Gaug	ging St	ation	(Mod	ificati	on Dat	ta)
		ŕ									Y.	ear, 1975	,
DA	Y Jan	Feb	Mar.	Apl	May	AUL	Jul	Aug	Sep	Oct	Nov	Dec	
ı	57.41	477,44				71.50	10.77	14.54	11.11	19.77	10.67	6.17	
,	14.00	444.17	*****			21.27	19.77	16.79	13.24	30.44	10.00	4.47	
1	34.52	540.12				70.47	10.04	17.16	[4.54	10.24	9-67	4.32	
4	77.64	£37.21	-+			20.54	17.96	15.96	13.80	4.41	9.47	6. 12	
•	13.14	140.61				73.75	14,75	15.63	13.67	4,47	9. 11	70.64	
	10,54	464.71				70.44	17.79	15.50	13.14	4,44	4.51	20.13	
,	10.00	404.06				20.41	17.44	14.56	13.17	4.37	9.47	21.10	
P	12.97	335.64				20.15	17.74	15.63	13.04	9.08	9,34	21,17	
. ?	24.04	227-24	*****	*		20.41	17,78	15.58	17.69	9,47	4.14	17.99	
10	47.73	156.15				20.47	17.73	15.47	17.12	4.07	8.47	31-10	
11	95.17	130.16				70.19	17.43	15.40	11.84	8.77	4.77	54.17	
12	111.99	152.71				70.10	17.75	14.49	11.77	4.77	7.44	71.10	
\$3	101-0-	370.75				20-13	17.51	15.40	14.45	8.44	4, 31	17.51	
16	\$16.63	140.48				20.19	17.53	15.74	11.43	4.74	4.07	\$1.64	
15	166.04	145.50				19.80	17.46	15.36	11.74	4.14	7,78	91-10	
16	217.09	175.76				14.75	17.43	14.22	11.77	*.01	7.64	49.82	
17	450.26	357.41				14.41	14.43	15.72	11.55	4.07	7.50	40.44	
Į.a.	574.94	744,47				14-44	17.08	14.75	11-42	1.98	3.47	47.11	
1.9	355.61	257.16				19.65	17.03	15.49	11.54	7.70	7. 11	47.03	
50	147.20	220.47				14.44	14.47	15.t2	11.41	7.44	7.44	46.42	
71	178.27	701.41				14.04	16.73	14.00	11.14	11.40	13.46	29,44	
2?	252-26	1172.41			+	14.04	14.48	[6.72	11.03	10.31	17.00	24.89	
21	115.44	AA5. 75	*****			14.47	16.56	14.45	11,24	11.41	14, 12	27.72	
74	415.35	471-19				14.04	14.73	14.14	10.41	14.04	20.02	41.19	
25		524.40				19.04	16.65	14-14	10.77	12.04	12.48	97.26	
26	975.64	549.79	*****			19.04	16.43	14.19	14.74	11.45	12.72	37,17	
27	627.86	441.41				11.99	16.43	14.01	14.43	11.40	17.40	27.44	
28	504.67	510.51				10.40	14.48	13.47	[1.54	_ [[.0]	3.70.	_27.16	
29 30	344.04 204.54						14.76	13.43	11.42	10.77	9.83	23.1Z	
					*****		16.73	13.42	10.45	10.77	8.34	26.45	
31	345-14			-		•		17.25			-		
5114	6777.97	11577.40				545.27	571.16	441.39	172.61	295.17	107.10	1046.29	•
<b>484</b> 4	224.60	417.28	_			19.43	17.35	14.95	12.41	4,84	10.34	14.4A -	•

le`A	4-I-3-	(5)	Run-off	Data	at Cl	hillcara	Gaug	jing St	ation	(Modi	ificatio	n Dat
		, - ,									' Yac	ı, 1976
DAY	Jan	Feb	Mor	Apl	May	Jun	Jul	Aug	Sep	011	Nov	Dec
			20,42	26,75	26.52	19.86	16.49	11.45	10.30			
1	20.0*	41.45	47,05	27.51	24.44	19.55	14.63	11.15	9.47			
,	12.64	91.70	46.321	10.31	74.64	19.20	15-17	11.40	12.11			
1	14.04	27,57	16.46.	37.27	71.43	11.61	14.40	11.40	10.07	*****		
•	19,40	44,68 57.77	42,07	79.51	23.93	1 - 56	14.76	11.40	10.11		*****	
	219.07	51.51	140.58	19.67	23.74	16.51		11.06	10.78			
÷	171.47	44.15	121.75	17.66	21,49	17.85		11.03	10.20			
í		14.44	61A.02	33.77	71.11	17.61	~~~~	31-17	9,97			
-	*4.45	17.29	501.61	31.52	21,17	17,51		11.25	9.10			
10	64,69 44,79	51.44	171.66	24.47	21.25	[1.56	13.91	11.17	10.11			
11	111.76	114.14	70.70	27.93	22.57	£ 17,63	13.90	10-49	10.14			
ij	140.92	461.01	44.64	21.60	72.70	17,53	13.54	11.14	10.07			
iš	213.40	432.43	× 35-18	27.54	22.15	17.21	13-50	11.06	10-14			
		174.45		31.64	21.97	17.13	13.63	10.44	10.31		B#	
15	49.26 145.19	111.69	28.14	25.81	11.50	14.48	13.3"	10.70	10-14			
16	47.25	111.44	12, 47	71.98	21.97	14.54	13.67	10.67	9.97	*****		
17	114.54			76.55	21.19	16.91		10.45	9.94		4	
16	24 71	113,49		27.09	71.39	16.54		10.63	10.00			
13	15.97	A1.11	14.49	76.48	21.10	16.65		10-45	10.52			
50	118.47	59,94		76.35	71,54	16.34		10.31	10.42			
21	. 46.60	18-11	16-01	26.41	70.47	14.14		10.24	10.64			****
22	143.02	47-41	16.44	75.86	20.33	14.54		10.11	9.71		*****	
- 21	217.85	47.17	15.82	27.01	19.66	24, 83	12.96	10.31	9,77			
<b>3</b> :	PA . R 4	40.47	15.33	25.15	19.86	17.4	14.54	10.42	. 4,67			
25	41.90	43.97	(5-17	24.61	19.64	17.09	13.05	10.45	9.63			
76	146.79	10.45	27.23	25.24	19,75	16.54	17.65	10.31	9,77			
27	124.41	21.19		24.76	19.25	14.29	12.97	10.18	9,17		*****	
7.8	119.45	27.21		24.35	19.75	15.77	17.40	10.00	10,07			
29	101.65		10.61	24,47	14.64	14.77	12-16	9,47				
10	104.39		29.07	21.41	14.64	15.50	17.36	10.11				*****
iĭ	41.24		10.16		[4,46		11.49					
\$11×	1500.65	7754.07	241-14	A37.54	424, 25	425.46	247.57	373,46	720,40			
	114 17	08.61	78-04	27.75	21.77	17.53	11.69	10.78	10.03			

Table	A-I-3-(	6)	Run-off	Data	at C	hillcara	Gau	ging St	ation	(Mod		on Data)
DAY	f Jan	Feb	Mar	Apl	Мау	nut	Jul	Aug	Sep	Oct	Nov	Dec
1						17.67 26.76 17.41 17.63	16.37 16.30 16.11	12.77 17.79 12.42 12.42	9.41 9.61 9.70	5,50 5,69 5,14 5,79	5.79 5.30 4.79 5.21	9,15  4,6   4,57  4,00
;						17.61	15.47	17.29	9.07	4.5	4.31	7.15
6 7 8 4						17.63 17.63 17.63 17.63 17.63	15.24 15.06 14.84 14.64	11.91 11.91 17.11 17.11 11.76	9, 3,4 9, 4,8 9, 4,8 8, 6,9	4.47 4.43 4.37 23.24	13-50 13-50 19-11 21-80 11-51	#,37 19,36 19,16 11,13 #,24
11 12 13						17.63 16.96 17.63	14,46 14,29 11,89 13,12	11.42 11.42 - 10.44 10.46	7.69 9.26 9.01 7.97	00.03 P7.8 P7.4 BR.6	4.35 4.67 1.66 71.02	7,06 4,47 = 24,44 27,88
iš 10						[7.63 [7.63	13.44	10,94	7,59 7,59 7,33	9,47 8,43 15-11	190.20 413.95 100.13	40.44 146.01 143.70
17 18 19 20						17,63 17,63 17,63	13.49 13.49 13.49	10.94 10.40 10.33	4.90 4.90	27, 10 7,89 7,71		16.66 29.12
21 22 23 24	*****	===				- 16.96 16.96 16.96 16.50	[].RT [].49 [].49	10.35 10.35 10.80 10.35	6.18 6.48 7,21	34,95 40,11 35,21 22,08	29,25 31.62 26,60 28.90	45.50 308.39 1598.70 334.47
25 24						16.30	13.49	9.41	6.27 6.16	16.59	19-76	124.09
21 28 24	*****					16.30 16.30 14.30 14.30	11.13 13.33 13.16 17.95	10.04 9.91 10.04 4.91	1,44 1,29 5.69 5.61	17.69 21.6A 9.15 7.19	11.49 - 11.49 - 10.24 V.15	120-03 - <b>1</b> 5- <u>5</u> 1 52-60 99-18
31 504						515.85	17.79 419.84	4,4A 143,72	213.13	4.67 387.49	7719.54	206.80 3812.37
MFAN	-					17.20	14.19	11.09	7,74	12.57	74.65	127.44

ble-A	1-3-(	7) R	un-off	Data	at Ch	illcara	Gaugi	ng Sta	tion	(Modit	ficatio	n Data)
				-							Y,	Bar; 1975
DAY	noL	Feb	Mor	Apl	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	****51	147.41	21.40	AU.07	24,49	71.04	14.43	15, 19	11.17	8.41	14.75	1.01
,	191.50	241.71	4.41	36.75	24.41	71.30	78.15	15.14	10.44	4,41	14.75	47.47
,	140.41	447.70	44.71	44.00	74.40	71.70	15-15	35,39	13.44	A.4A	71.13	113.27
•	250.63	776.41	19.56	40.00	*1,95	21.10	14.15	14.75	10.44	4.44	14.76	743.11
4	460.14	847.57	17.52	34.77	71,04	27.44	19-15	14.75	13.44	4.24	44.71	101.41
٨	454.64	1467.78	A4. RO	16.94	**, 45	70.48	14.15	14.75	10.44	17.47	18.37	17.15
,	161.75	2154.91	76.17	34.27	21,45	70.48	ta.ts	14,75	10.40	10.44	13.37	29.15
	170.75	760.75	A4.00	44.45	>1,04	20.44	14.15	14.17	10.40	13-14	11.02	23.29
•	140.76	406.79	80,41	19,46	21.04	20.48	17.07	14.14	10.40	9.47	16.24	19,34
10	245.67	321.54	72-13	16.47	23.04	19.91	17.64	13.55	10.40	6.44	10.07	14.76
11	195.26	737.54	34.45	14.39	23.94	70.48	17-42	13.55	9.94	7-61	9.40	27.46
13	366.67	159.95	46.97	31.94	21,04	20.72	17.47	13.14	9.94	7.15	6.39	[4,44
11	799.23	141.17	15.01	13.53	72.16	70.48	17.47	12.97	9.40	7.50	4.40	14447
14	182.75	101.49	42.49	11.51	27.16	[4,68	16.77	12.97	9.49	6.41	7.74	[4,6]
15	4P. 12	A1 - A1	39.46	35.14	72.14	19.44	16.77	12.47	4.06	6.48	6.0*	13.45
16	63.56	71.20	34.36	12,13	27.16	19.44	14.72	12.97	9.04	6.17	5.22	14.61
17	46.17	71.70	91.71	12.73	27.10	19.64	16.04	12.97	9.76	9.87	4.70	11.75
13	34.92	64.47	134.5R	13.17	72.14	19.91	16.74	12.47	4.45	4.47	4,10	70.71
19	74.74	A4.00	147. = 1	36.42	*7.16	19.44	14.04	12.97	4.45	44.8	3.86	34.10
70	31.17	21,44	110.85	31,53	27.47	14.90	16.64	17.42	4.44	5,58	5.11	143.05
71	74,64	101.44	115-61	37.33	17,42	19.11	14.54	17.42	4.17	1.10	6.48	294.22
22	112.14	105.02	170.91	24.95	22.42	19.90	14.14	17.97	8-25	5.10	6.48	264.04
21	104"84	106.10	103.41	27,49	71.56	\$4.40	15.10	17-42	4.25	9,58	24.71	141.43
24	126.34	331.97	41.46	27,57	21.36	[8,90	15.39	11-89	1.47	4-48	133.84	124.80
25	P7.67	7 1.04	A9.74	76.15	71.05	14.90	15.44	11.49	7_A7	5.40	40.48	124,71
76	56.17	143.11	NL-40	27.57	71.30	14.40	16.04	11.49	7.40	5.10	25.00	543.77
77	17.46	71.60	56.78	26.86	21.30	14,90	14.04	17.05	7,50	10.4#	12.12	16],95
74	76.69	44.12	34.00	24.45	71,30	14,93	16.04	17.89	7.50	7.61	9.80	135.63
24	44.54		112.72	25.14	21.30	14.40	16.48	17,49	7.15	6.21	4.76	12.43
10	65.05		176.50	25.10	24.64	17.70	15.54	12.40	7.36	6-41	6.41	. 0. 49
11	PK, 97		74,44	•	*3.44		, 15.30	11.37		14.75		64.34
₹9 <del>14</del>	40.70.15	19847.49	2430.91	1012.72	A44.84	594.48	470,54	41>.65	716.00	*34.0A	517, 39	1109.45
45 64	144,47	120.94	13.15	14.76	12,57	19.47	14.74	13.31	4.21	7,55	17.91	134,77

Table-A	-1-3-(8	3) A	lun-off	Data	at Chi	llcara	Gauging	Sta	tion	(Modif	ication	Data)
											Ye	ar, 1975
DAY	Jon	Feb	Мат	Apı	May	Jun	Jul	Aug	Sep	00	Nov	Dec
ı		1 191, 11	139.30	25. 11	14.71	**-	74.49	22,47	15.93	10.44	7.44	1.45
	*3.74	1723.48	177.02	74.47	14,31	27, 16	14.47	27.+ <b>1</b>	14.93	10.04	7.44	
3	47,44	844.77	113.76	64.45	11,04	17, 14	14,01	**.47	14,71	10-05	7.20	6.94
•	47,75	244.04	97. *7	56.24	11,35	27- 14	24.09	21.45	15,10	10.00	7.23	1.01
•	41,45	347_93	41.54	47,57	*****	<i>71</i> , 11	75.04	21.67	17,10	19.00	[4.03	4.11
<b>1.</b>	40.41	104,44	124,04	40.07	13,04	79,44	24.04	21.45	15.10	9.65	17.49	4.17
7	475.57	247.40	745,52	49.49	71,04	74.44	74.00	71.65	13-30	7.45	14.44	4.20
*	7#1.45	711.14	757,40	44,75	11,04	24.46	**.03	21.65	[4.70	4,65	12.74	3.95
•	367,56	171-45	3 D T. A A	60.74	37.07	74.46	25.00	20.00	14.70	*-71	10.74	1.79
10	)7A,A?	140.41	47,45	61.30	17.09	74,46	75.04	79.46	14.70	4.71	17.73	4,7A
11	170.21	111.77	40.50	47,74	17,34	24.44	15.04	20.16	14.70	4.44	11.01	34,44
iż	FLAAR	146.17	114. TA	41.54	17.04	78.46	24.04	75.04	14.17	10.39	11.47	24.41
13	502.31	217,72	111.56	43.54	12.09	27.60	76.44	23.09	14.12	4,54	9,24	24.67
14	503.46	267,49	157.40	57.54	17.0	77.69	76.44	79.09	17.55	9.54	26.37	14.77
- (1	117.94	177.76	3 DW. 44	40.40	71.15	77.60	75,41	14.34	11,55	4.5#	4,17	74.49
18	334.63	140.44	140.51	.0.40	31.15	27.63	25.49	19.34	11.01	4.44	26.68	63.90
17	204.84	116.71	[47.4]	40.74	31.15	27.40	25,49	14.07	11.01	10.74	26.13	27.AB
18	167.67	44.04	142. 19	19,26	11,15	27.40	75.07	10.62	11.01	9.34	14.43	, 73.27_
19	112.04	79.75	115.67	38,95	10,73	27.60	71.0*	14.67	13.01	4.14	11.42	37.64
70	141.00	71.46	75.41	34.14	10.77	77.60	~<.01	10.62	12.48	4.01	10.64	37.76
21	373.00	72.51	105.44	37.86	10.73	27.40	24-14	17.91	17.45	*.6*	8.59	27.92
22	441.51	67.01	90.01	41.70	30.73	77.43	24.19	17.41	11.97	4.37	7, 19	40.4D
23	255-05	65,24.		40.40	30.Z1	26.77	14.18	17.71	\$1497	4,24	15.04	41.04
24	1551-01	40-14	44.25	39.20	10.21	24.17	23.31	17.73	11.47	R.06	18.45	10.42
25	1091-15	44.74	74.24	34.18	24.34	26.77	23.11	17.23	11.97	7,77	15.40	47.67
26	1060.62	61.33	42.45	37.11	21, 14	26.77	23.11	17.73	11.47	8.19	20.43	634.67
27	[2=4.49	60.29	243.04	34.06	24.14	24.77	72.47	16.57	11.47	7.17	12.78	144.02
28	1951.33	175,46	227-17	14.06	29.34	25.45	77.47	16.59	10.22	8,40	4,11	240.99
24	1914.61		744.60	35.03	24, 14	75.95	72.47	14.49	10.51	4.04	7.06	134"04
10	1842.47		701.**	34.03	29, 14	24.45	12.47	15.43	10.01	7.77	6,57	413.96
31	1845.87		119.27	•	24,44		77.47	14.93		7.77		144.02
304	19900.71	4183.69	4574.63	1404.60	964, 78	A17.74	745.64	44,65	402,55	7=7.45	414.07	2424.60
4644	441.76	292.21	145.25	44.99	31.27	27.34	*6.70	19.31	13.47	9.17	11.47	41.12

Table-/	4-1-3-	(9)	Run-off	Data	at Cl	hillcara	Gaug	ing St	ation	(Mod	ificatio	on Data
		•-•					_	_			Ye	or, 1950
DĄY	Jan	Feb	Mar	Api	May	Jun	الال	Aug	Sep	Qei	Nov	Dec.
			'									
Ţ	413.91	35,14	29.21	E6.67	14,74	[6, ]?	14,77	11-31	9.41	1,49	17-41	4.84
,	10. 41	29, 16	36,61	10.67	14,79	16.33		1151	9,41	PA.R	15-31	1.44
	117,41	27,56	11,14	12-14	14.14	15.39	14.79	11.51	9.17	1,85	14,12	5-77
4	A=. 67	29,43	39, 16	24.61	15.11	14.10	14.77	31.51	9.17	1,00	12.29	74.51
4	41.74	11.11	119.61	76.96	15.11	16.39	14.7	11.09	4,17	4.44	11.94	13.76
	47.37	22.74	79.70	23.46	15.31	16.39	14.75	11.09	9.17	5.77	13.14	9.44
7	17,05	19,74	11,48	26.37	15.7	16.19	14.74	11-39	6.91	5.08	9,74	4.91
5	11.25	15.00	A7, 74	26.94	15.11	16.39	14.24	11.51	6.81	4.41	7.85	15.29
•	77.75	11.65	744.07	21.34	15.71	14.39	14.24	11.51	9.47	4,73	7.13	6.34
<b>1</b> D	40.11	17.40	120.69	19.48	15.3)	16.39	13.74	11.51	8.47	4, 57	6.46	2D. 95
11	36.44	12.40	173.01	10-06	15.31	16.19	11.74	11.51	8.47	6.73	6.24	17.07
iż	78.29	14.64	117.93	18.11	15.31	16.39	11.74	11.09	H. 14	4.40	5.04	25.90
11	14.70	13.05	74.45	17.36	11.11	16.19	11.10	11.09	A.14	4,74	5.64	11.55
16	17.65	17.19	134,65	16.56	15, 11	15.46	11,10	11.09	7.42	9,04	5,64	11.00
15	17.49	11.98	102.37	16.19	15.44	15.66	11,10	10.48	7.42	4.09	5.45	4.10
le.	31.10	18.91	66.93	15-84	15.64	15.86	11,74	17.34	7.51	1,91		5.64
17	24.04	37.94	55.44	16.39	16.19	15.84	13.79	11.94	7.51	1.71	4.9I 3.08	
ii	41.24	37.32	+6.5R	16.96	16.39	15.85	13.33	11.44	7.31	3.91	7.60	1.34
17	47.47	127.27	43.36	16.39	16. 19	15.44	11,30	11.51	7.71	4.40	7.80_	55.71
żó	110.47	704 91	42.26	13.94	16.19	15.46	12.03	11.09	6.90	9.74	11.94	h.68
10	.,,,,,,	104141			141.27	, , , , , ,	12107	11,54	B. 40	7.14	11.74	0.00
21	141.42	97.84		15.44	16.19	15.44	17.93	10.68	6,90	4,75	10.01	6,87
27	A4.76	58.47	42.04	15.44	16.39	15.46	15.34	10.68	6.41	*.69	R.67	3.79
23	71.00	47,62	63,41	15.64	15. 14	14.44	12.34	17.24	5.63	9,16	11.94	1,51
34	74,51	47.60	A1,2#	15.31	15.94	15.31	11.44	10.74	A. 12	11.76	8.34	3.25
21	17, 14	64,77	55.10	15.31	11.46	15.31	11.44	10.24	6.17	.,.,	7. 16	*167
26	34.76	47.40	41.43	15.31	15.44	15.31	11.51	9.90	6.00	4.20	4.74	5.44
27	20.84	51.16	11,14	[5.3L	16.14	15.11	11.51	9.90	6.04	10.44	5.44	4.64
24	12.48	41.43	50.28	15.31	14.19	14.71	tl.51	9,90	5. RQ	27.45	5.29	4.40
29	47.87	11.10	64.35	25.31"	16. 19	15.15	11.51	9.40	5.49	11.11	47.57	1.94
30	90.69		40.03	15.31	[6.]9	14.94	11.41	9.43	5,58	21.17	4.90	4-40
11	46.64		41.15		16.19		11.51	9,53		34.00		4.40
<b>51</b> ≠	7143,46	1760.41	2601, 34	PA. 244	484.11	414.11	404.32	734.07	220.37	274.70	100.45	312.53
4544	49.10	41,44	*7.44	27.16	15,75	14,94	11.79	10.04	7.45	A , 86	10.03	10.00

Table-A	-1-3-(1	0)	Run-off	Data	at Cl	nillcara	Gaug	ing Sta	ition	(Modi	fication	Dat	a)		
											Yeq	11981			
DAY	Jan	Feb	Mor	Apl	May	Jun	Jul	∆ug	Sep	Ocı	Nov	Dec			
1	4.94 9.16 6.44	47.4t 77.07 491.63	755,75												
•	40.36	704,10 577,92													
7 9 9	29.74 31.11 27.74 437.80	311.97 300.44 200.96 231.97	152.79 264.86 205.78			*****									-
18 12 12	403.06 776.64 167.93	774.44 749,55 347.66	239.01 #0.79												
12	44.01 79.01 78.76	156.16 166.16 14.10	91-19 91-19 - 19-19	===					IEH-	-==	-IIIE -				
16 17 •18 19	169.97 97.95 76.58-	88,49 79,93 - 75,87 - 61.05	- 45.04		,					. ==== -					
20 21 22	27.47 46.55 70.27	53.85 53.29 53.29	87.69 [50.45 85.95												
21 24 25	37.12 41.44 97.49	40.32 50.90	-=== -						=== -						
26 27 20 27 30	132.60 280.64 86.62 70.21	44.41 714.77 211.94	*****											ü	
31. 504 MEA4	97.58 93.69 103.02	5934.61 717.07	\$114.00 232.55		****									-	

Table A-I-4-(1) Precipitation Data for Calculating Average Precipitation in the Project Catchment Area

( Unit , mm ) Station Feb Aug Oct. Dec Year . 1966 38 6 20 0 23.0 48.0 25.8 5.0 13.0 17.0 0 5 0 0 Functing. 47.4 0 ō 0 60 130 7.0 13.0 69.0 117.0 69.0 86.0 10 33.5 14.0 <u>El Puente</u> 0 Ô Ω 0 Oploca 0 õ 0 ñ 400 La Quigca 0 0 Year 1967 92 3 15 0 57 5 26 0 86 0 2 0 25. 5 0 7.0 0 6.0 12 5 0 19 5 3 5 0 86.5 13.0 147.5 40 2 Punut mà 0 n 0 26 0 44 0 30 0 El Puente 0 14.0 0 0 0 70 Oplota 0 ō Ö La Qulaca 14 0 ō Û 910 ٥ Year 1968 73 0 214 0 39 0 25.0 99 0 121 0 111.0 170 0 0.5 0.5 22 0 67 0 88 0 0 0 3 0 3 0 16 0 0 53.0 18 0 17 0 43.0 58.0 54.0 62.0 19.0 Chaquilla El Puente 20 9 00 16 0 00 1.0 0 Ō. Oploca 1.5 Vills zon Ô Ō 0 Year 1969 247 0 90 0 28 0 27 0 41 0 27 0 118 0 53 0 26.0 5.0 1.0 5.0 7 0 53.0 35.0 83.0 9.0 60.0 4.0 296.0 0 5 0 1.5 4 0 Chaguilla El Piente Ö 110 ddd 0 0 5 0 4 0 0 Oploca Villa 2011 0 0 Ú. 1180 Year. 1970 102 0 134 0 117 0 89 0 4 0 26 0 109 8 35 2 50 0 113 0 35 0 53 0 Chaquilla El Puente 61.0 5.0 6.0 113.0 0 26 0 50 0 53 0 16.0 4.5 20.0 Ç O 0 0 124.0 4.0 64.5 0 19.0 000 Ç Û 30\_0 Oploca Mojo 0 7 0 O 0

Table A-I-4-(2) Precipitation Data for Calculating Average Precipitation in the Project Catchment Area

	,	—,									( Unit	mm l
Station	Jan	Feb	Mar	Apl.	May	Jun.	Jul.	Aug.	5ep.	Oct.	Nov	Dec
Year 1971				-	_			-				
Chaquilla	85.0	187.0	36.0	1.0	0	n	0	0	0	2.0	34.0	89-0
El Puente	100.0	145.0	0	0	0	<u> </u>	. 0	Ŏ	ň	7.0	44.0	
Oploca	124.5	133 0	7 0	0	0	n	0	i ö	ñ	1.5	43.0	31.5
Mojo	65.0	9≎.0	_22.C	0	0	a_		Ö	ā	u.c	4.0	67. C
Yeor: 1972								<u> </u>				
Chaguilla	146.0	5 I O	÷7.0	- r	1.0	0	0	0	1.0	1-0	20.0	101 0
Camaron	_	-				3.0	ŏ	ň	2 0	27. 5	12.2	70 3
El Puente	37.0	ויַר	F; C	5.0	2.0	1.3	ŏ	n	5.0	44 0	37.0	115.0
Oploca	. 93 0	116.C	32.0	5 5	n	0	ŏ	Ö	0	6.5	1.5	50. 0
Meso	100.0	64_0	54 0	15.0	Ö	ň	Ö	n	n	12.0	0.3	- 68, 0
Year 1973							· · · · ·					DO- D
Chaguilla Camarge El Puente	131.0	51.0	48 C	16.0	3E.0	1.0	0	7.0	n ,	4.0	18.0	12.0
Comarge	1098	29.6	51.3	22 7	23.5	19.5	<u> </u>	0	ñ	2 2	6.2	30.3
El Puente	81.0	Ç. C	. 27 C	0	0	G	0	Ö	Ö	'n	8-0	16.0
Opleta	104.0	46.0	52.5	5-0	8.5	20 5	Ö	ŏ	Ö	0	0	19.0
Moso	910	48.0	62.0	7 C	22.0	0	Ŏ	ń	n	ň	8 0	31.0
Year 1974												
Pintumani	120 C	112.0	46.C	33.0		0	0	59.0	0	0	3.0	18.0
<u>Camargo</u>	66.5	113.5	_3 I O	33.5	С	O	. 0	1.5	2.5	2.5	5.3	31 1
El Puente	55.0	75-0	24_0	32.0	C	0	0	0	Ð	2.0	10.0	26 0
_Oploco	65.5		20 0	30.0	0	0	0	0	0	0	7.0	44.0
Mojo	43.0	58 O	66-0	13.0	0	0	0	0	0	0	15.0	
Year: 1975	<u>                                     </u>	i										
SaltoLeon	102 3	74.4	: 4	4.5	3 3		0	0	5.0	15.6	0	47.5
Camargo	161.7	72 2	59.4	3.0	0.2	0	0	0.5	2.5	16.5	2.0	37.2
El Puente	97 0	100.0	75.0	8.0	4.0	ň	n	Ŏ.	4 0	12.0	33.0	31.0
Opleca	125 0	144.0	35.5	, 5	C	C	0	Õ	C	3.5	0	113.4
Mejo	53.0	78 C	SG 0	2.0	0	0	0	n	<u> </u>	310	ň	75.0

Table A-I-4-(3) Precipitation Data for Calculating Average Precipitation in the Project Catchment Area

		1 10)	,00 00			-					( Unit '	mm }
Station	Jon	Feb.	Mar.	Api.	May	Jun.	Jul	puA	Sep	061.	Nov	Dec
Year 1976_								0	2.5	<del>-</del>	0.4	47. 0
Saltaleon	96 0	510	40.0	_0	0	_ [0]	0	_ <u>``</u>	1.5-0	1.5	20.2	19.5
Camargo	116.0	2 1. 0	41.0	_10_2	_ 0	<u> </u>		17.0	13.0	2.0	45. C	26 C
El Piente	50.0	15.0	46.0		_16.0	0_	0	2.5	9.0	0	10.5	20 0
Onlora	83 5	52. D		0 5	_ <u>o</u>	1.5	<del>- "</del> -	12 0	8.0	0	17.7	28 5
Мото	242.0		0	13.0	0	0_		12 0	-6-4			_69
Year . 1977									6.9	7.9	34.5	245 4
SaltoLeon	113 8		123.2	_0_	0	<u> </u>	- ŏ	- C	0.3	28.2		
Camarao	63.5		64.5	0	0	0_	Ď		'n	54.0	59.4	52.8
El PuenTe	61.0	84.0	47.0	0		0	0	C <sub>O</sub>	3.0		107.5	
Oploca	75.5	70 0	54.8	4	0	0	0	<del>                                     </del>	13.5		107.0	115.5
Maic	66.0	46.0	32 1	0	С	<u> </u>	[ <sup>U</sup>	U	13.5	22.5	03.0	112.2
Year 1978								0	0	2.7	17.8	60 S
Chagu. Ha	51 4		24.0	3 9	0	C	0		2 0	5.5	16.5	129.0
Canaran	93.5	97.0	54.0	0	C	0_	O O	3.5	2.0		26 0	
El Puente	118.0	69.0	37.0	1.0	0		0	0		0	- <del>40 0</del>	211.0
Opleta	1120	133.5	27.5	7-0			00	<u>Q</u>	0-	44.5		102 5
Moro	88.0	87.0	69.0	4 0	C	0_	0_	0	<del></del>	44.5	22-0	102 3
Year: 1979				<u> </u>	<u> </u>					42.5	7.0	126 0
Chaguilla	178_1	23.4	79.2	20.3	C	0_	0	0	<u> </u>	43.5	-60	139.0
Caniargo	54.0	23.0	89.5			3.0			<u>D</u>			132.7
El Puento	98.0	210			00	0_	4.0		<u>Q</u>	12 3		
Oploca	1159 0	310	63.0	0	0	Q F		0	0			96.8
More	1435	30.0	130 5	0		0	3.5	0	0_	6.5	21.0	23.5
Year, 1980		T		<u> </u>			<b>├</b>	<u> </u>	<u> </u>	├	<del></del>	<del>├</del> -
	47.0	39.0	45 0	0	0		<u> </u>	<del>  -</del>	<del> </del> _	<del>  -</del>		<del></del> -
Corarão	7 7		89.5						<del>                                     </del>	<del></del> =		<del></del>
El Puente	310	32.6	17.2		0		<u> </u>	<del>  -</del>	<del></del>	<b>├</b> =	<del>  -</del>	<del></del> -
Opicto	4 7. 7		68.3	0	0		<del> </del>	<b>↓</b> —	<del>                                      </del>			<del> </del>
Meio	75.0			0	3.0	<u> </u>	<del></del>	<u> </u>		<u> </u>		<del></del> _

Table A-I-5 Observed Discharges (H ≥ 2.0 m)

																					•		]
Run – off (m³/s)	32.	72.2	200.4	253. 1	138.0	135.8	260.2	228.4	157.4	74.8	50.3	36.5	103.6	144.1	72.1	88.8	88.3	352.3	345.1				
Water Level (m)	2.04	2.47	2.895	2.985	2.73	2.66	3.21	3.145	2.85	2.29	2.09	2.01	2.335	2.705	2.25	2.37	2.32	3.57	3.11				
Date	15 Mar. 1978	17 Mar. 1978	3 Jan. 1978	4 Jan. 1978	7 Jan. 1978	8 Jan, 1978	10 Jan. 1978	12 Jan. 1978	14 Jan. 1978	16 Jan. 1978	18 Jan. 1978	20 Jan. 1978	22 Jan. 1978	24 Jan. 1978	26 Jan. 1978	28 Jan. 1978	30 Jan. 1978	9 Feb. 1978	11 Feb. 1978				
Run – off (m³/s)	85. 1	77.5	61.4	46.6	45.2	153.5	99.4	88.7		98. I	145.4	168.4	0.16	102.3	50,9	42.7	59.0	64,4	48.7	35.5			
Water Level (m)	2.385	2.205	2.12	2.065	2.03	2.705	2.425	2.355	2.32	2.44	2.725	2.85	2.34	2.22	2.08	2.02	2.39	2.35	2.225	2.095			
Date	29 Mar. 1978	31 Mar. 1978	2 Apr. 1978	4 Mar 1978	8 Mar. 1978	13 Mar. 1978	15 Mar. 1978	17 Mar. 1978	19 Mar. 1978	21 Mar. 1978	23 Mar. 1978	25 Mar. 1978	27 Mar. 1978	1 Mar. 1978	3 Mar. 1978	5 Mar. 1978	7 Mdr. 1978	9 Mar, 1978	11 Mdr. 1978	13 Mar. 1978	233,90H+157.18		
Run – off (m3/s)	152.6	530.2	188.6	260.1	142.3	93.0	79.8	64.3	55.3			234.6	105.3	238.9	77.7	9.16	131.0	120.0	68.8		2H <sup>2</sup> -233,90	¥=0.973	
Water Level (m)	2.63	3. 785	2.74	3.00	2.57	2.26	2.19	2.125	2.04	2.89	2.61	2.975	2.405	3.02	2.185	2.469	2.715	2, 509	2.18	2.115	0 = 87.02H <sup>2</sup> -		
Date	1 Mar. 1981	3 Mar. 1981	7 Mgr. 1981	9 Mar. 1981	11 Mar. 1981	13 Mar. 1981	15 Mgr. 1981	17 Mar. 1981	19 Mar. 1981	21 Mar. 1981	20 Dec. 1978	22 Dec. 1978	24 Dec. 1978	27 Dec. 1978	30 Dec. 1978	19 Mar. 1978	21 Mar, 1978	23 Mar. 1978	25 Mar, 1978	27 Mar. 1978	Note:		

Fig. A-I-1 Evaporation at Chillcara Gauging Station (Jun. 1977 ~ Feb. '81)

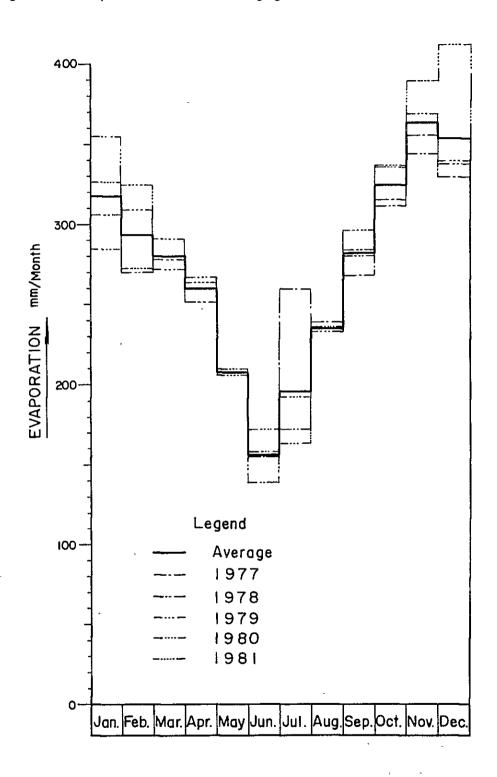
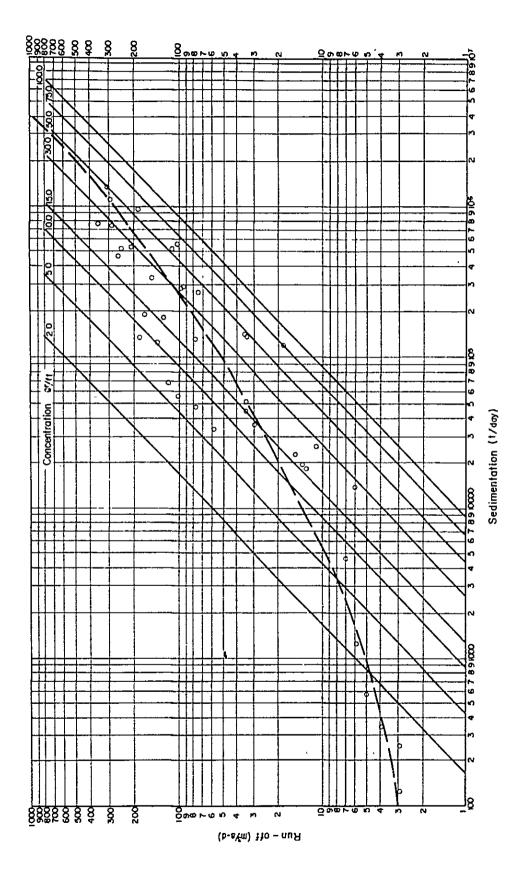


Fig. A-I-2-(1) Sedimentation Curve at Chillcara G.S. (Dec.  $1980 \sim \text{May}$  '81)



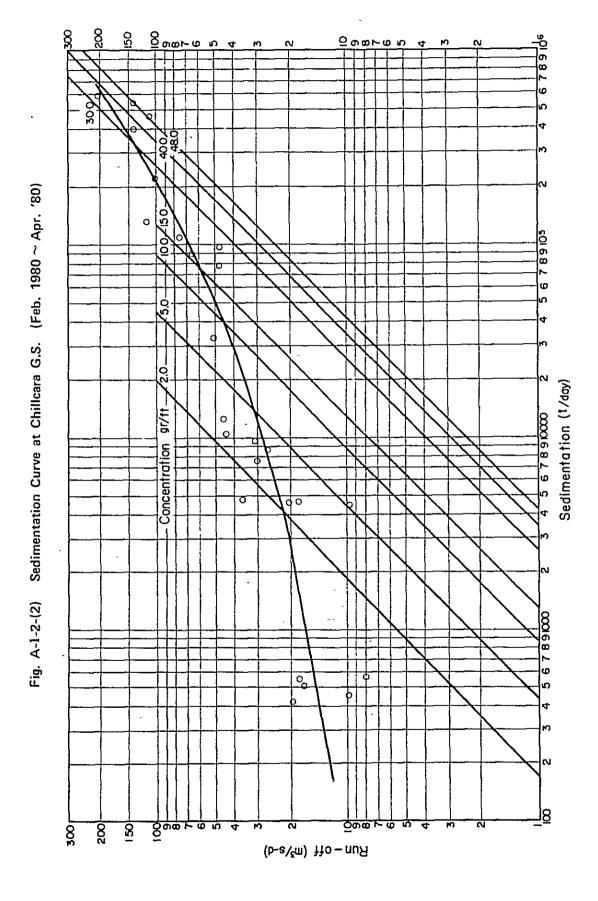
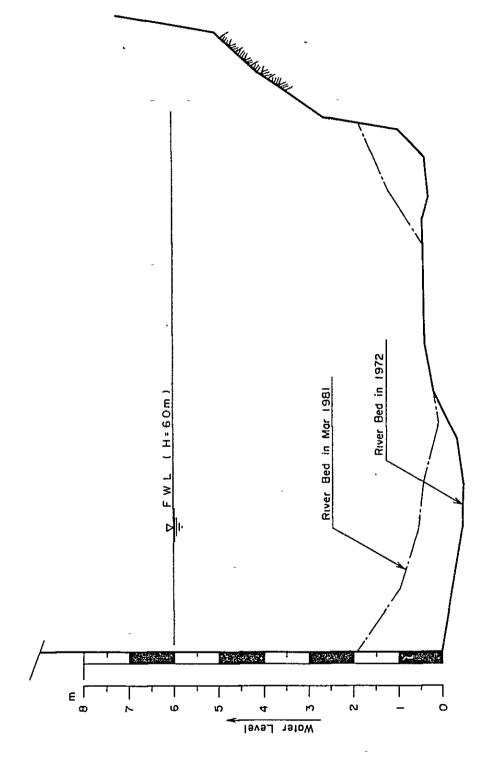


Fig. A-I-3 Cross Section at Chillcara Gauging Station



### APPENPIX—II

GEOLOGY



#### TABLE LIST

Table A-II-1.	Chemical Analysis of Thermal Water
Table A-II-2.	Chemical Analysis of River Water
Table A-II-3.	Standard of Rock Evaluation
Table A-II-4.	Classification of Core Character in Drill Hole
Table A-II-5.	Water Pressure Test in Drill Hole

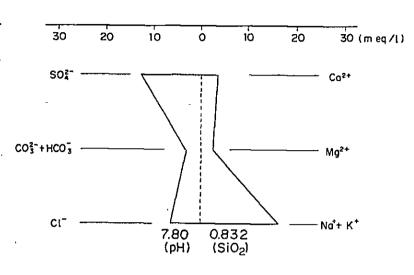
#### FIGURE LIST

Fig. A-Π-1.	Logs of Exploratory Adit
Fig. A-II-2.	Geologic Log of Drill Hole
Fig. A-II-3.	Photomicrograph and Petrographic Description of Rock

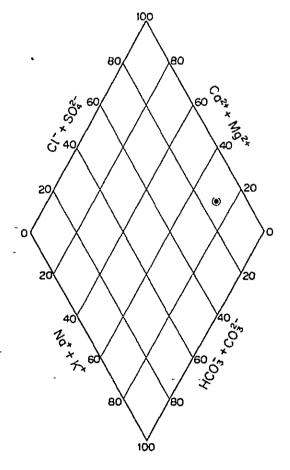
•

Table A-II-1. Chemical Analysis of Thermal Water

•		
>	mg/l	m·ep/l
Na	380.0	16.529
К	21.5	0.550
Ca	69.2	3.453
Mg	35.4	2.913
Cl .	210.0	5.923
SO <sub>4</sub>	610.0	12.701
HCO3	182.4	2.989
CO <sub>3</sub>	1.9	0.063
H <sub>2</sub> CO <sub>3</sub>	5.7	0.092
SiO <sub>2</sub>	50.0	0.832
Na/K	30	. 058
Ca/Na	0.	104
Mg/Ca	0.	844
HCO3+CO3/C1	0.	510
T.S.M.	1,566.1	mg/l
рН	7.	80



Hexadiagram



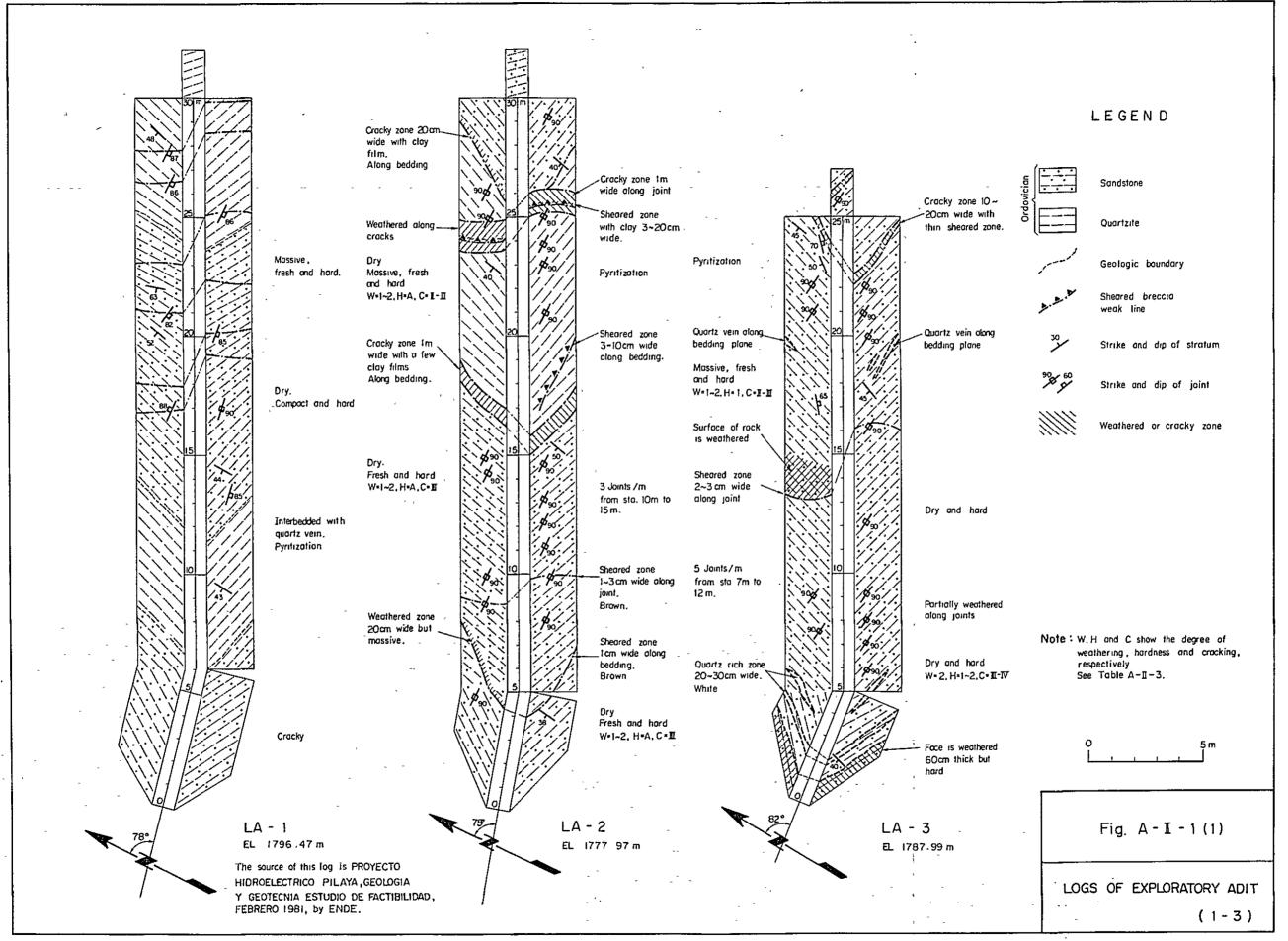
Keydiagram

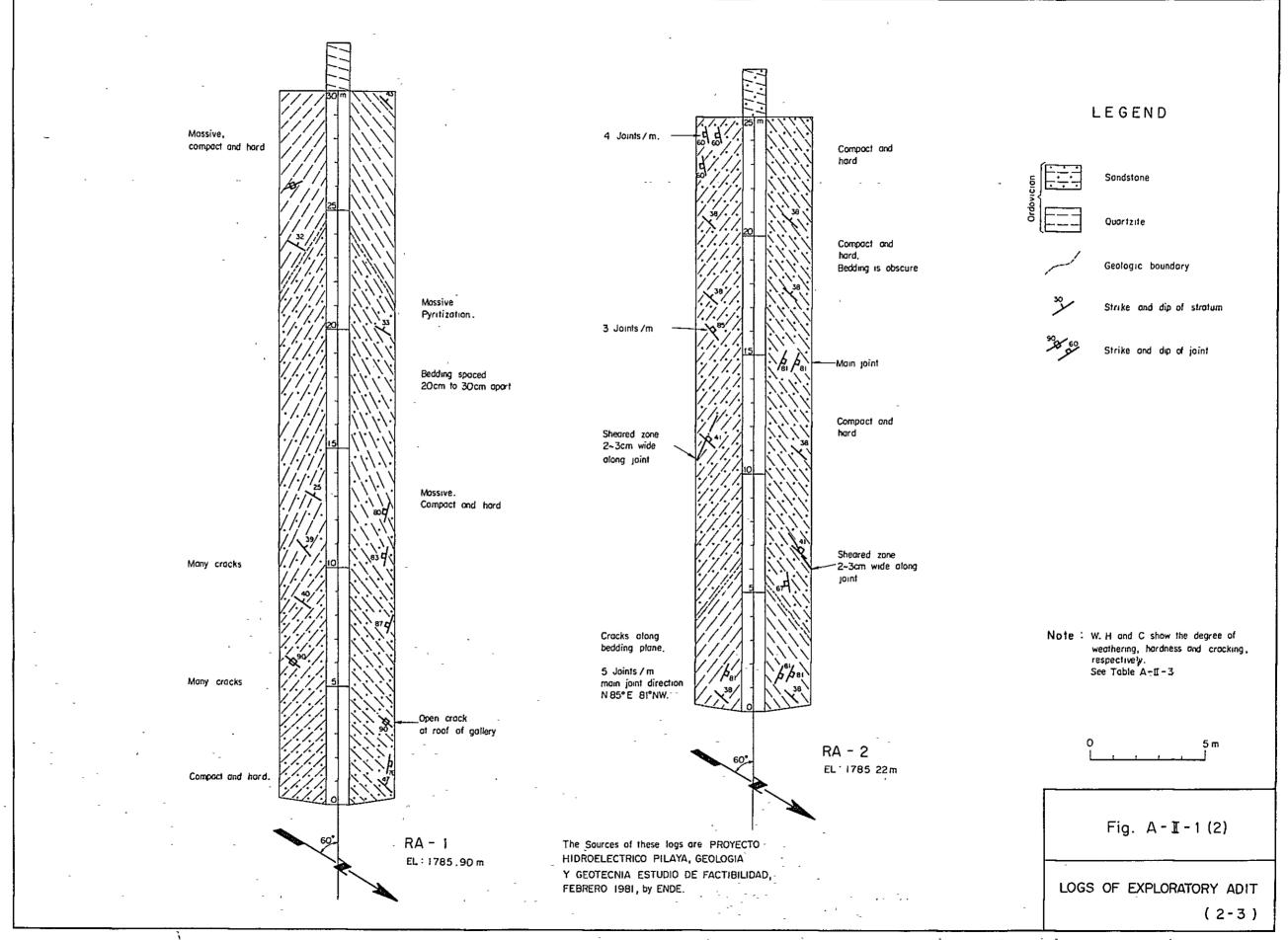
Table A-II-2. Chemical Analysis of River Water

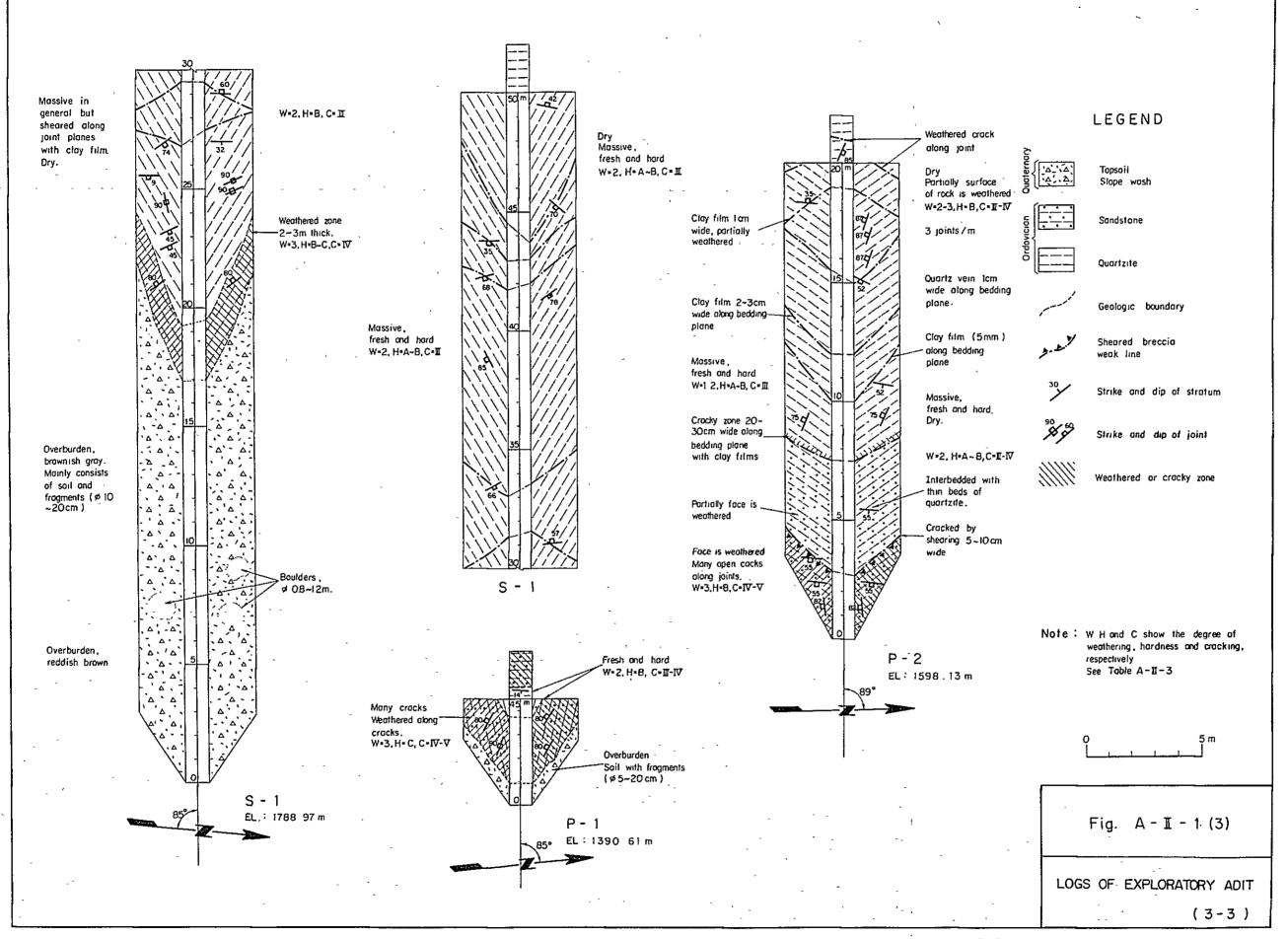
	_ ^	the Rio Pilaya	the Rio Agua Caliente
pH	-	7.52	6.67
Conductivity	(μs/cm)	1,400	135
Total Alkalinity as CaCO3	(ppm)	121.0	49.7
Total Hardness as CaCO3	(ppm)	660	56.7
Calcium Hardness as CaCO3	(ppm)	320	36.0
Magnesium Hardness as CaCO3	(ppm)	340	20.7
$co_3^{2-}$	(ppm)	0.11	. 0.06
HCO3	(ppm)	74.1	35.1
$\mathrm{so}_4^{2-}$	(ppm)	62.0	14.0
Cl	(ppm)	44.0	2.4
Ca <sup>2+</sup>	(ppm)	128.0	14.4
Mg <sup>2+</sup>	(bbm)	82.6	5.0
, Na	(ppm)	70.4	2.8
OH <sup>7</sup>	(ppm)	5.63×10 <sup>-3</sup>	7.97×10 <sup>-3</sup>
Turbidity	(ppm)	17,800	72
Suspended Solid	(ppm)	13,020	80
Particle Size	(μm)	2 ~ 7	2 ~ 5

Table A-II-3. Standard of Rock Evaluation

	Weathering		Hardness	E	Interval of cracks
- <b>-</b>	Very fresh. No weathering of mineral component.	V.	Very hard. Broken into Knife- edged pieces by strong hammer blow	ь	Over 100 cm
64	Fresh. Some minerals are weathered slightly. Usually no brown cracks.	В	Hard. Broken into pieces by strong hammer blow.	ш	40 - 100 cm
က	Fairly fresh. Some minerals are weathered. Cracks are stained and sometimes with weathered material.	ပ	Brittle. Broken into pieces by medium hammer blow.	Ш	20 - 40 cm
4	Weathered. Fresh portions still remain partially.	Q	Very brittle. Easy broken into pieces by medium hammer blow.	IV	5 - 20 cm
က္	Strongly weathered. Most minerals are weathered and altered to second minerals.	臼	Soft. Able to dig with hammer.	Λ	Under 5 cm







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Tablé A-II-4. Classification of Core Character in Drill Hole

		1		1	
	WEATHERING		HARDNESS		CRACK INTERVAL
1	The rock is very fresh, and the rock forming minerals and graines are neither weathered nor deteriorated.	A	The rock is broken by strong blow of hammer into sharp edged pieces or fragments with sharp fractures.	I	Cracks and joints spaced more than 30 cm apart
2	The rock forming minerals and grains are partially sustained with slight weathering and deterioration. Some of cracks are slightly stained but lacked clayey materials.	В	The rock is broken by strong blow of hammer into pieces to fragments with some amount of rock powder.	II	Cracks and joints are spaced 10 to 30 cm apart
3	The rock forming minerals and grains are slightly softend and altered. Most of cracks, sometimes rock itself are stained by limonites etc. and some cracks are filled by clay materials.	С	The rock is broken by blow of hammer into small pieces to fragment with some amount of rock dust and powder.	III	Cracks and joints are spaced 5 to 10 cm apart
4	Almost rock forming minerals and grains excluding quartz are slightly softend and altered. Somewhere, unweathered parts are remained as block or gravelin weathered parts.	D	The rock is easily broken by blow of hammer. Sometimes snapped off by hands or can be whitled with a knife.	IV	Cracks and joints are spaced 1 to 5 cm apart
5	The rock forming minerals and grains are completely deteriorated and discolored, and rock is remarkably weathered and loosened.	E	The rock can be easily excavated with a hammer tip and easily broken with fingers and can be scratched by fingernail.	v	Cracks and joints are spaced less than 1 cm apart

Fig. A-II-2-(1') LOCATION ALOIS DUOS P430 <u>....................................</u> M14 60 Geologic Log of Drill Hole MATER TABLE AND HOLE No R.1 GM.

LEPTH OF HOLE

SELTE COMME
LENGTH OF DOCK BRUING N. 190 COMPLEY

TOTAL LENGTH OF CORE

CORE RECOVERY

CORE RECOVERY Consists of hord quartities fragments ( #3~10 cm.) 5 70 Cracky Zone 50-57m 230 Core length 50 cm 330 at 2,3 - 28 m pt 14.4.04 OBSERVATION OF CONTROL Š Fig. A-II-2-(1) PILAYA PROJECT 88 8 Right Bank Domestie COORDINATE
ANGLE FROM HORIZONTAL
BEARING OF ANGLE HOLE ATM3M32 MORT MORT MIN THAT CAMADA он<del>-1</del> LOCATION 4 4 TOIOT <u>in the land of the land of the land</u> 44430

35.0 %

Geologic Log of Drill Hole

ELECTRIC MINER DEVELOPMENT ON LITE. MATIONALS - M-LOGGED BY 69:m) (2m0/p#0:e:9:0/m) ( 2mg/p# 7 Siz 9 10M ) LENGTH OF ROCK DRILLING 35.02 m TOTAL LENGTH OF CORE Lu : 9 9 Long shick cores core length 10~55cm, Very hard and compact Z 2 Mostly I-Son Ingrams Portsolly then clay fulm Bottom of hole Slightly weathered DEPTH OF HOLE DEPTH OF OVERBURDEN COLOM CO Very hard cores along cracks along cracks Trans Times PILAYA PROJECT
IN Right Bank Damsite
ON 1782.01 m . 860 80 80 Oreen's fi pineish diay ANGLE FROM HORIZONTAL BEARING OF ANGLE HOLE 9803 18302 H سي نيس COGRDINATE Quorizite Ţ 1111111 ATTLC NOTES DESCRIPTION OF THE STATE OF THE Lu : 66.0 (1.04) Lu : 17 4 [ المحد ٢ : ٩ ] 19 (وسرًا) 66:07 Greath gray sondstone Core length 10-70 cm Long slick cores Core length 10-60 cm Mostly 5-10cm cores. -Crocky zone Slightly wanthered Very hard and compact giong cracks, 밁읞 \* (1446 ) (1446) (0.0 pineish Applusu Alox

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Fig. A-11-2-(2) Geologic Log of Drill Hole

Fig. A-II-2-(2') Geologic Log of Drill Hole

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Fig. A-II-2-(3") Geologic Log of Drill Hole

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Fig. A-II-2-(4) Geologic Log of Drill Hole

Fig. A-11-2-(4')

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Fig. A-II-2-(5) Geologic Log of Drill Hole

Fig. A-II-2-(5') Geologic Log of Drill Hole

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Fig. A-II-2-(5") Geologic Log of Drill Hole

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Fig. A-II-2-(6) Geologic Log of Drill Hole

Fig. A-II-2-(6')

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Fig. A-II-2-(6") Geologic Log of Drill Hole

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Fig. A-II-2-(7) Geologic Log of Drill Hole

Fig. A-II-2-(7')

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No. 1773 10. DEPTH OF HOLE

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frash and hard -Print of 26 00m Do of bed is 60° Bottom of hole Portiolly weathered a Core box loss 3 20 30 Greenish gray Eg along crocks [permission of [ permission] ] Left Bonk Comsite COORDINATE
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Fig. A-II-2-(8) Geologic Log of Drill Hole

Fig. A-II-2-(8')

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DEPTH OF NOCK B 200 Consists of fragments (#1 - 10cm) or 33 CO Core length 30-70cm Fresh and hard Long such cores Fresh and hard DESCRIPTION 8 mo.co. Sen care Sen care serving serving serving PILAYA PROJECT 8 greenish gray pinersh gray ACM (MS) ACM (MS) TIP DAMES 2 COORDINATE ANGLE FROM HORIZONTAL BEARING OF ANGLE HOLE LOCATION \$112110UD 2

Fig. A-II-2-(9) Geologic Log of Drill Hole

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EELTHE HINTH DEVELOPMENT ON LITE. TOWN LAND 733 03 HOLE No L.-6 AGIT 2 W 3

DEPTH OF HOLE

45.00 m COMMENCED 14.100m. 80

DEPTH OF OVERBURDEN 7867 m COMPLETED 29.400.180

LENGTH OF ROCK DRILLING 15.3 m DRILLED BY EBEYDE

TOTAL LENGTH OF CORE m 106.050 BY 47.5 % 57 2 % Geologic Log of Drill Hole matteriors of the p OI = α τοψί) p OI = α τοψί) LENGTH OF ROCK DELLING 16 33 m LL

LENGTH OF ROCK DORLING 16 3 m LL

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LENGTH OF ROCK DORLING 16 1 m LL Crocks along bedding Crocky at 39 20-42 50 2867 ™ Core length 20-60cm Fresh and hard. Norhally weathered Particity long stick cores ( core length Fresh and hard 3230 along crocks 10-30 cm ), Only gravels Matrix loss Fig. A-II-2-(9') PILAYA PROJECT LOCATION LESS Bank Domine ELEVATION 1773.09 T Diversh gray COORDINATE ANGLE FROM HORIZONTAL BEARING OF ANGLE HOLE AB MODRE 1903 501 Jerry 130 HARR Hiver Deposit SissisonO

Fig. A-II-2-(9'') Geologic Log of Drill Hole

PILAYA PROJECT

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Fig. A-II-2-(10) Geologic Log of Drill Hole

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Fig. A-II-2-(10') Geologic Log of Drill Hole

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ELEVATION 1389 82 m COORDINATE ANGLE FROM HORIZONTAL 90 "	SATH GRAH Pool Pool Pool GC VOO	0N		

Fig. A-II-2-(11) Geologic Log of Drill Hole

Fig. A-II-2-(11') Geologic Log of Drill Hole

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S 1 1941 5	COMPLETED  ORILLED BY LOGGED BY			MINAL DE PRINT																	ALCON TOTAL
HOLE No PH	2	. 1			brown rop soul	fan deposit	length 20cm		brown			-Screwhot weathered		Consists of sub-stick cores (#5-15cm) and	fragments (#1.3cm.). gravets are somewhat	70				ned officements to pro-	
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ELECTRIC PROCESS OF THE LAND SPACE OF LAND SPACE SOURCE STATES. 137 31 HOLE No PH - 2 routs 2 or 2

PEPTH OF HOLE 49,000 COMMENCED 19, 541, 190

PEPTH OF OVERBURDEN 40 000, COMMERTED 10 051, 190

PERTH OF OVERBURDEN 40 00, DRILLED BY EBEYDE PERSON DE SPECIENT -DRILLED BY mateutable form mateuroppi, et feut LENGTH OF ROCK DRILLING OF TOTAL LENGTH OF CORE and fragments Care length max 10 cm Sub-stick cores
core length 10-25 cm
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Drilling one boulder aooom semsems Ballott of hole Gravelf #10cm] of 12.78 32 2 and 32 78 m hard fragments (43 Orly sub-stick cores Moinly consists of Quantz rich gravet Mainly blueish gray gravels Reddish brown \*\*\*\*\* Matrix 1055 softy clay 100 Tiferal State 8 8 ATMINITY

ACT OF THE PROPERTY PILAYA PROJECT

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ANGLE ROOM HORICONTAL 190 L

REARING OF ANGLE HOLE 100 C Dineszy droż DIREITY GLOS 222 222 1003 1003 HM M

Fig. A-II-2-(12) Geologic Log of Drill Hole

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Consists of hard fragments (# 3cm)

Fig. A-II-2-(12") Geologic Log of Drill Hole

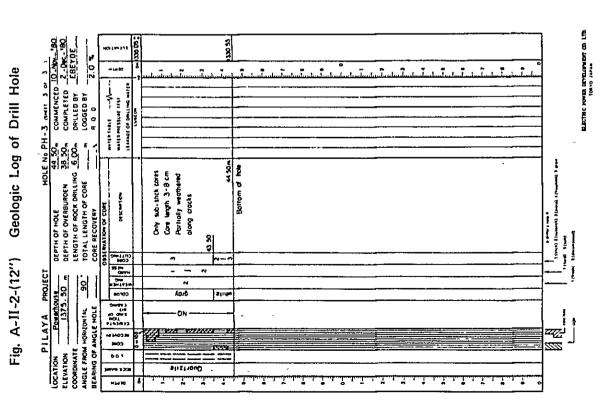


Fig. A-II-2-(13) Geologic Log of Drill Hole

Fig. A-II-2-(13') Geologic Log of Drill Hole

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DEPTH OF HOLE

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DEPTH OF HOLE

TOTAL LENGTH OF GORE

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TOTAL LENGTH OF CORE

TOTAL L SLECTRE RIVERS DEVELOPMENT ON LTD. TONTO LANSIN 745 K 340.65 . î. i. î (manufacture) | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 months | 1 mont 29 25 ~ 32 20 m Core length 20-40 cm Orilling one boulder grovet? Core length 5~10cm Consists of hard fragments # 2~5cm Portiolly sub-stick cores long stich cores at Sub - shek cores er 36 00 - 36 80 m Moinly consists of Descenda Silty clay 30 00 3 LOCATION POWERPOYS
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Fig. A-II-2-(13")

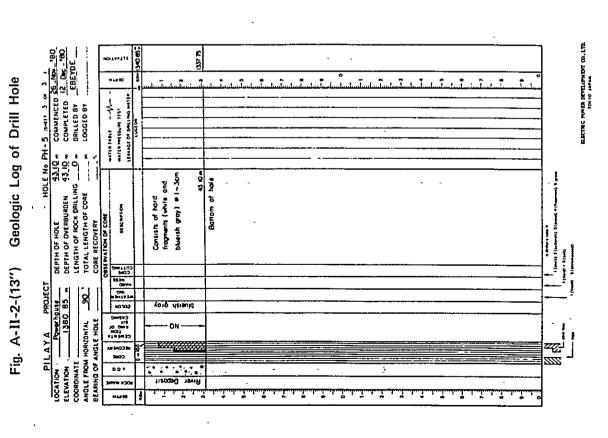


Table A-II-5-(1) Water Pressure Test in Drill Hole

WATER PRESSURE TEST IN DRILL HOLE HOLE NO R-1 Sheet NO. 2 of 6	Feblure Project Prings County Lacation Dam site Coordinalis Reporter Date of less 21 × 7 × 1980 From name (	Bore Pale (1992) 1782.01 m Dumerer (e) 73.7 mm 512 NO Unichworse filting Pales gard		Langth [L] 8 14 m	£1 Z [24)	Manager Tow Baring MAS-3C   12   1789   Selection   January 18   Select	20 14/cm 30 16/cm 30	pressure (suggrant) to Par 1/10 (hys-ha) na - hea pressure (suggrant) to Par 1/10 (hys-ha) na - hea pean value ((hwa/m/10/4g/am²) Lu 1 (0 0/P L		I couge   Couge   Efficience   Walte Dumpado: n   Luggon   Remotas   Especial Patents   Patents	00 5 2.45 3.32 300 60 2	15   4 90   5 7*   355   71	:   5   2 45   3 32   306   61     2 2 5	5 4 90 5 77 410 82							
WATER PRESSURE TEST IN DRILL HOLE HOLE NO R-1 Sheet NO. 1 of 6	Festive Continue Project Public Country Lacation Dam sits Continues Page of test 17+7 +1940 Furn name 1	Bare hate Cap 1785 Cl m Commart fel 73.7 mm Star NG Uniquinised trictio	Stock NO   1   George   Stock NO   1   George   Stock NO   1   George   Stock NO   1	- 1 20 m	89	Seturated 1	30 44/cm 28/29 5 Mm 0035 4/cm 7	posture (square) Ps Ps + 1/10 (sq. sq. ns - hear notes (tul to be calculated by following squaran geon value (filmurin/10 a/cm²) tu + 10 0/Pt.	Tree forces Effective Monte American	לורים (בישים במשפח במשפ	8 00 1 1 12 78 78 65	12:00 1 2 25 116 118 59	1 3 35 1846 1846 660	2.5 164.9	0 68 99 0						

Table A-II-5-(1') Water Pressure Test in Drill Hole

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Table A-II.-5-(2) Water Pressure Test in Drill Hole

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Table A-II-5-(2') Water Pressure Test in Drill Hole

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Table A-II-5-(3) Water Pressure Test in Drill Hole

Table A- II-5-(3') Water Pressure Test in Drill Hole

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Table A- II-5-(4) Water Pressure Test in Drill Hole

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Table A-II-5-(4') Water Pressure Test in Drill Hole

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Table A-II-5-(6) Water Pressure Test in Drill Hole

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Table A-II-5-(6') Water Pressure Test in Drill Hole

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Table A-II-5-(7) Water Pressure Test in Drill Hole

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Table A-II-5-(8) Water Pressure Test in Drill Hole

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Table A-II-5-(9) Water Pressure Test in Drill Hole

Table A-II-5-(9') Water Pressure Test in Drill Hole

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ELECTRIC POWER DEVELOPMENT CO Tolys JAPAN

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Table A-II-5-(11) Water Pressure Test in Drill Hole

Sheet NO. 1 of 3

HOLE NO R - 7

WATER PRESSURE TEST IN DRILL HOLE

Table A-II-5-(11') Water Pressure Test in Drill Hole

WATER PRESSURE TEST IN DRILL HOLE HOLE NO R-7 Sheet NO 2 of 3

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Removal

ELECTRIC POWER DEVELOPMENT CO TORPO JAPAN

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Table A-II-5-(13) Water Pressure Test in Drill Hole

Table A-II-5-(13') Water Pressure Test in Drill Hole

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of pocker Si	Single	Para G	E 643 - 1461	Š	#40 / CLLS		2.	Amount in	Single		tg/cm c	100	30	#4/Cug	) 	
a Effective pressure (ag/cm²): P. Po + 1/10 (hy -ha)	more thatch	4 P. P. P.	1/10 [hs - hal	1 84	- head lass	†		• Effective	- present	• 1 mg/cmg)	8.4	· Effective pressure (mg/cm²) Pr.Po · 1/10 (hy-hu)	2	74 - NedB 1968	  -	
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ELECTRIC POWER DEVELOPMENT CD Tokyo JAPAN

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Table A-II-5-(14) Water Pressure Test in Drill Hole

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Table A-II-5-(15) Water Pressure Test in Drill Hole

Table A-II-5-(15') Water Pressure Test in Drill Hole

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Table A-II-5-(16) Water Pressure Test in Drill Hole

Table A-II-5-(16') Water Pressure Test in Drill Hole

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Table A-II-5-(17) Water Pressure Test in Drill Hole

Table A-II-5-(17') Water Pressure Test in Drill Hole

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Table A-II-5-(18) Water Pressure Test in Drill Hole

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Table A-II-5-(18') Water Pressure Test in Drill Hole

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Fig. A-II-3-(1) Photomicrograph and Petrographic Description of Rock (Plate 1 of 6)

Dam site

Left bank

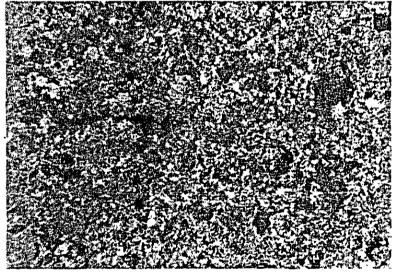
#### Rock name:

Greenish grey

medium-grained sandstone

0 0.5mm

(open nicols)



(crossed nicols)

#### Rock forming mineral:

Quartz > Sericite > Feldspar > Chlorite > Magnetite, Leucoxene.

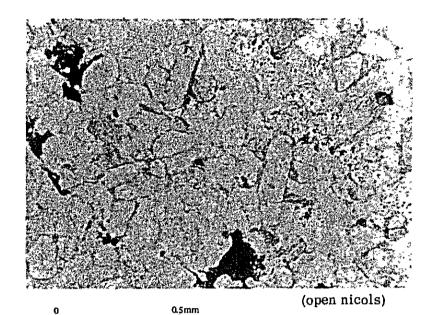
Description:

Massive and weakly re-crystallized sandstone in which quartz grains are predominated. Sericite is major mineral to fill the interstitial between clastic grains. Microscopic observation indicate no presence of swelling clay like montmorillonite.

Fig. A-II-3-(2) Photomicrograph and Petrographic Description of Rock (Plate 2 of 6)

Dam site

Adit LA-2; T.D. 17 m



## Rock name:

Greenish grey

Coarse-grained quartzite

(crossed nicols)

# Rock forming mineral:

Quartz  $\gg$  Feldspar  $\gg$  Sericite > Chlorite > Leucoxene > Biotite.

Description:

Completely re-crystallized siliceous sediment chiefly composed of coarse-grained quartz. Strong wavy extinction of quartz is observed. Some of feldspar grains have been albitized. Biotite is a clastic grain.

Fig. A-II-3-(3) Photomicrograph and Petrographic Description of Rock (Plate 3 of 6)

Penstock

Adit P-2; T.D. 15 m

#### Rock name:

Grey gneissose coarse-grained quartzite



0.5mm

(open nicols)



(crossed nicols)

# Rock forming mineral:

 $Quartz \gg Feldspar \gg Sericite > Chlorite > Leucoxene, Zircon.$ 

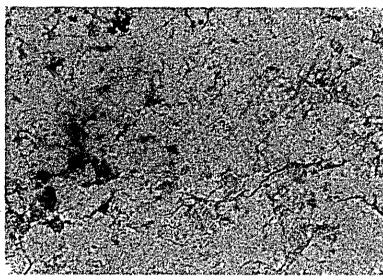
# Description:

Completely re-crystallized siliceous sediment under deformation process. Lenticular form of quartz and feldspar, mortar texture and strong wavy extinction of quartz indicate that this specimen is a kind of siliceous gneiss. Metamorphic grade is of the chlorite zone.

Fig. A-II-3-(4) Photomicrograph and Petrographic Description of Rock (Plate 4 of 6)

Penstock

Adit P-2; T.D. 10 m

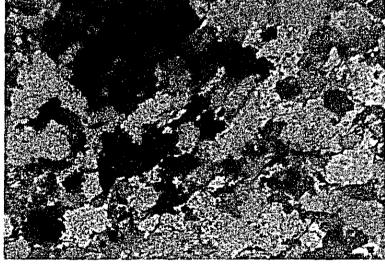


#### Rock name:

Grey calcareous

coarse-grained quartzite





(crossed nicols)

# Rock forming mineral:

 $\label{eq:Quartz} \ensuremath{\gg} \ensuremath{\text{Feldspar}} > \ensuremath{\text{Calcite}} > \ensuremath{\text{Sericite}} > \ensuremath{\text{Chlorite}} \gg \ensuremath{\text{Leucoxene}}.$ 

Description:

Well re-crystallized coarse-grained granular quartzite. Wavy extinction of quartz is common, but

foliation is weak.

Fig. A-II-3-(5) Photomicrograph and Petrographic Description of Rock (Plate 5 of 6)

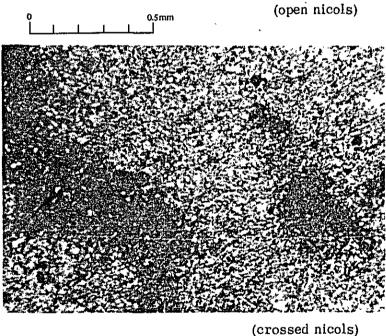
7 km downstream from powerhouse (Hot spring)



#### Rock name:

Dark reddish

fine-grained sandy slate



Rock forming mineral:

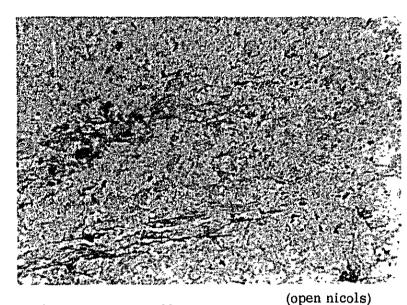
Quartz ≫ Feldspar, Sericite > Biotite, Hematite, chlorite > Lizardite.

Description:

Deformed slaty rock in which  $S_2$  foliation perpendicularly cutting the bedding plane is well developed. X-ray diffraction of clay fraction indicate sericite is a major clay mineral with small amount of chlorite and lizardite. No swelling clay is observed.

Fig. A-II-3-(6) Photomicrograph and Petrographic Description of Rock (Plate 6 of 6)

7km downstream from powerhouse (Hot spring)



0 5mm

#### Rock name:

Reddish grey
medium-grained sandstone

(crossed nicols)

#### Rock forming mineral:

Quartz > Feldspar > Sericite > Chlorite, Lizardite > Hematite ≫ Tourmaline.

#### Description:

L

Weakly deformed and re-crystallized sandstone. Thin (0.08 mm) veins compased of chlorite, sericite and hematite are formed along sheared planes. X-ray diffraction date indicates the presence of sericite, lizardite and chlorite. No swelling of these two clay mineral are observed.

