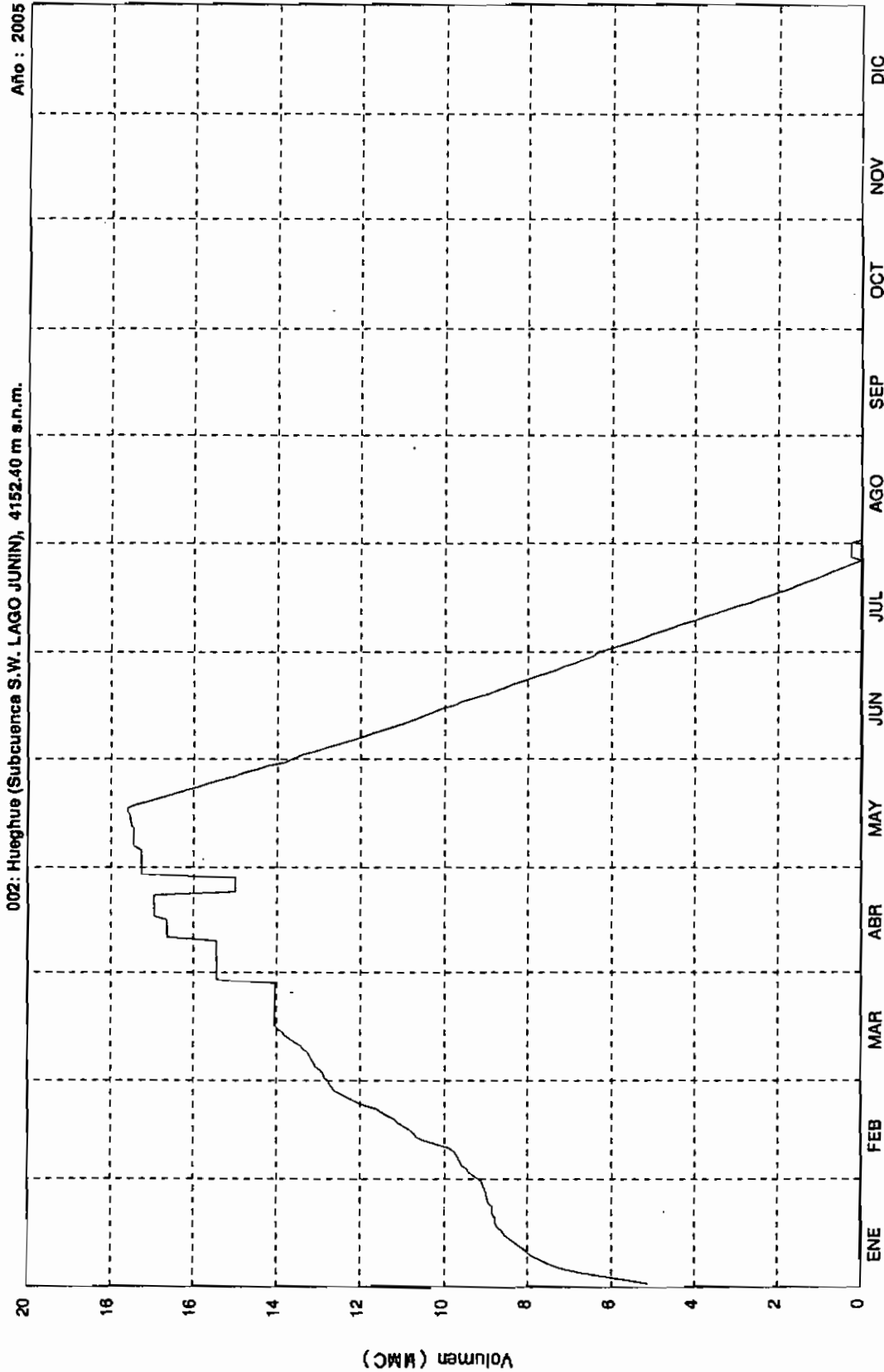


**CURVAS DE OPERACIÓN
SISTEMA DE LAGUNAS**

VOLUMEN UTIL DE LAGUNAS

Datos del Formato
 Código :
 Revisión : / /
 Fecha : / /



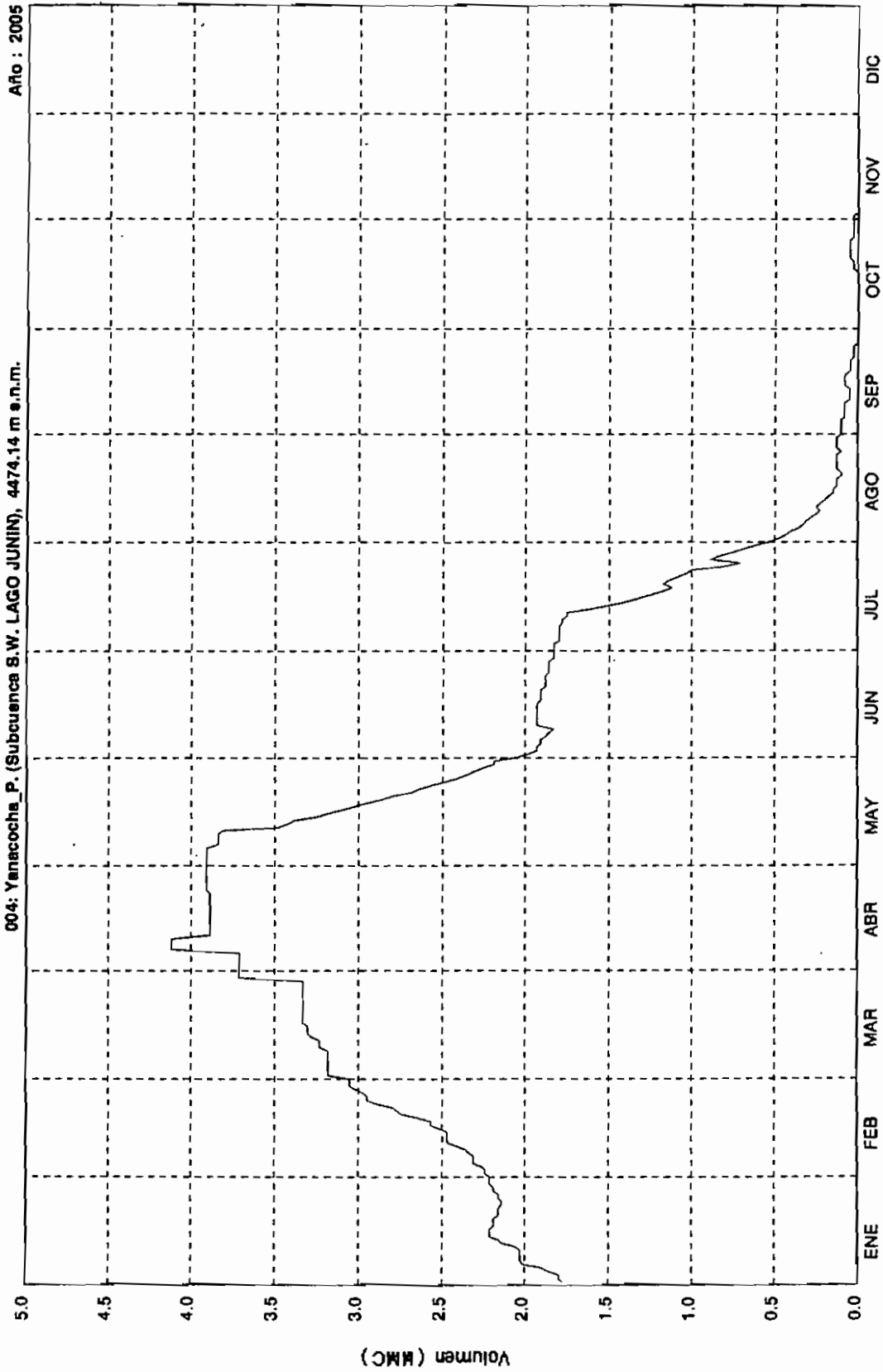
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Revisado por : Jefe Recurso Hídrico

Fecha : 11/04/2006

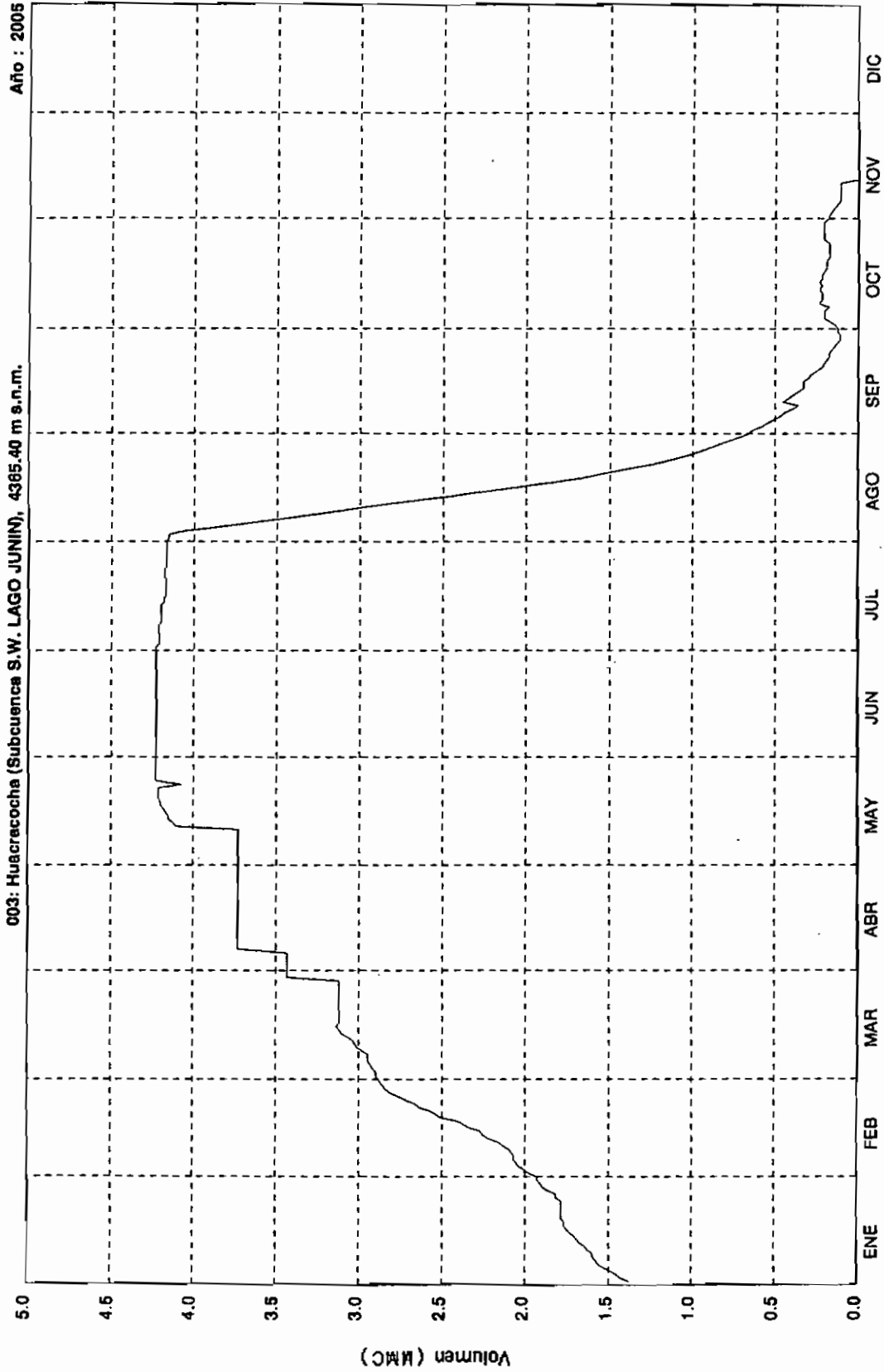
VOLUMEN UTIL DE LAGUNAS

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VOLUMEN UTIL DE LAGUNAS

Datos del Formato
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 Fecha : / /



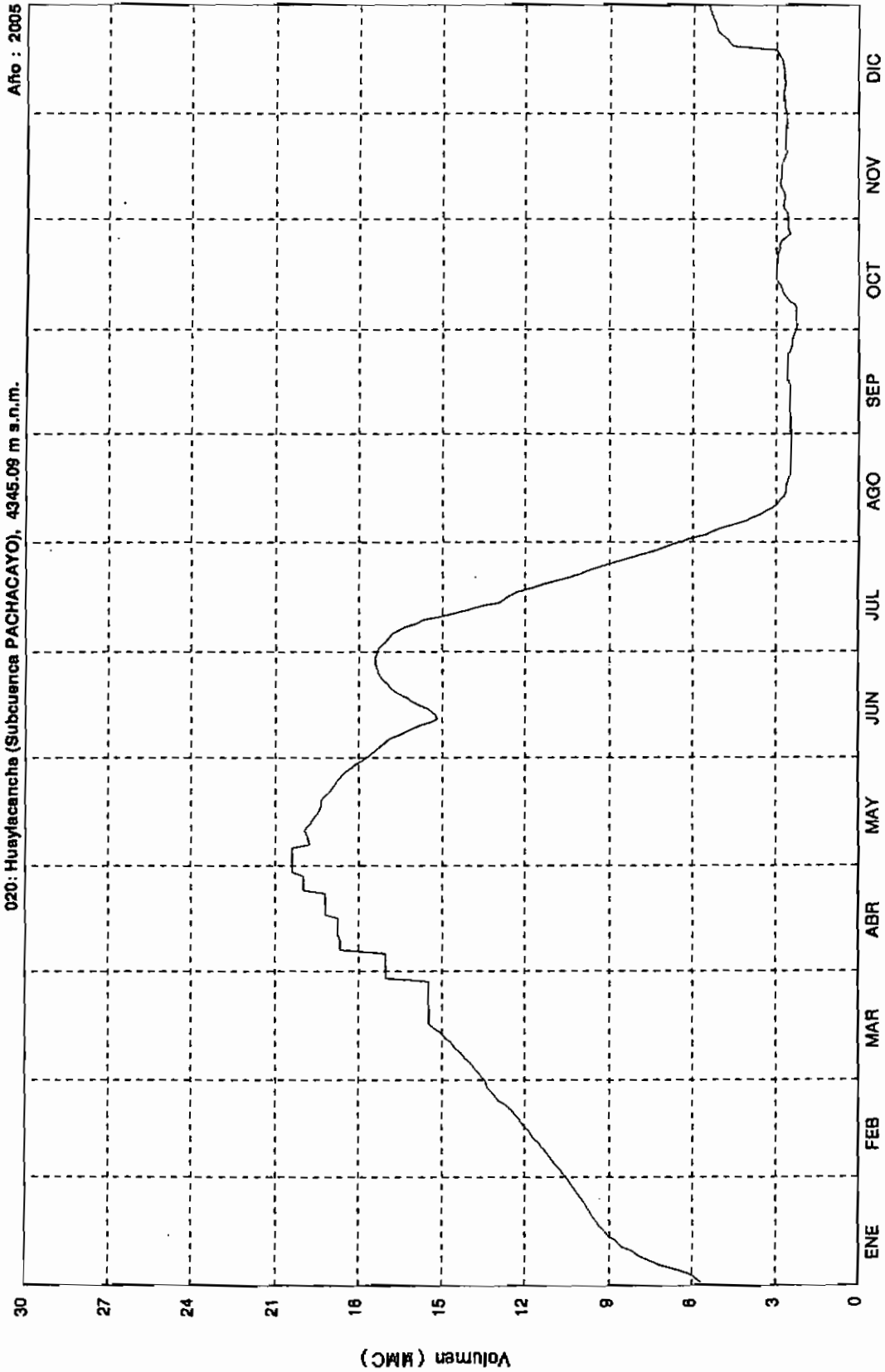
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Revisado por : Jefe Recurso Hídrico

Fecha : 11/04/2006

VOLUMEN UTIL DE LAGUNAS

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 Fecha : / /



Elaborado por : Técnico Hidrometrista

Revisado por : Jefe Recurso Hídrico

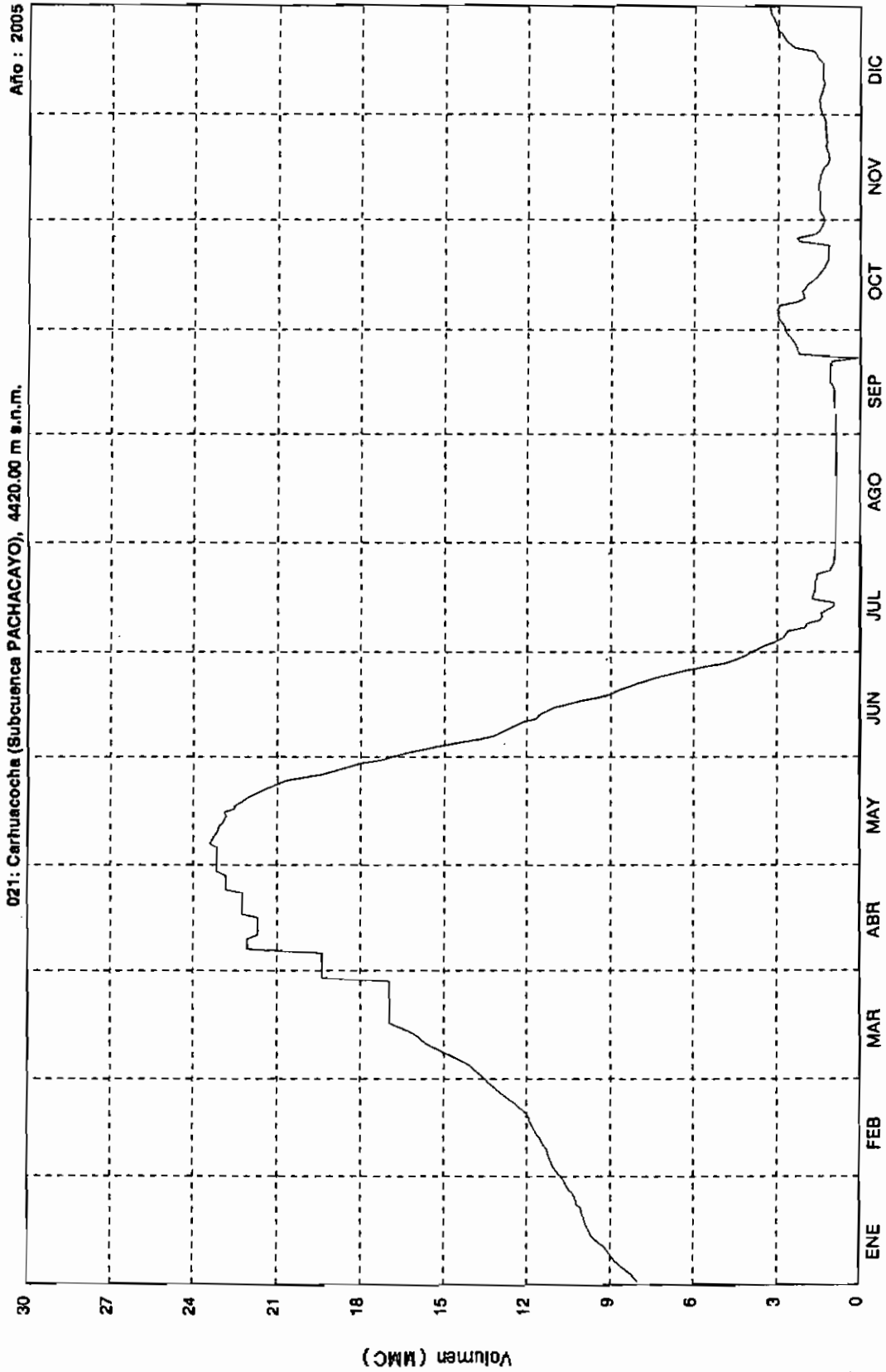
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Lectroperú S.A.
GERENCIA DE PRODUCCIÓN
CENTRO DE PRODUCCIÓN MANTARO
RECURSO HIDRICO

VOLUMEN UTIL DE LAGUNAS

Datos del Formato
Código :
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Fecha : / /



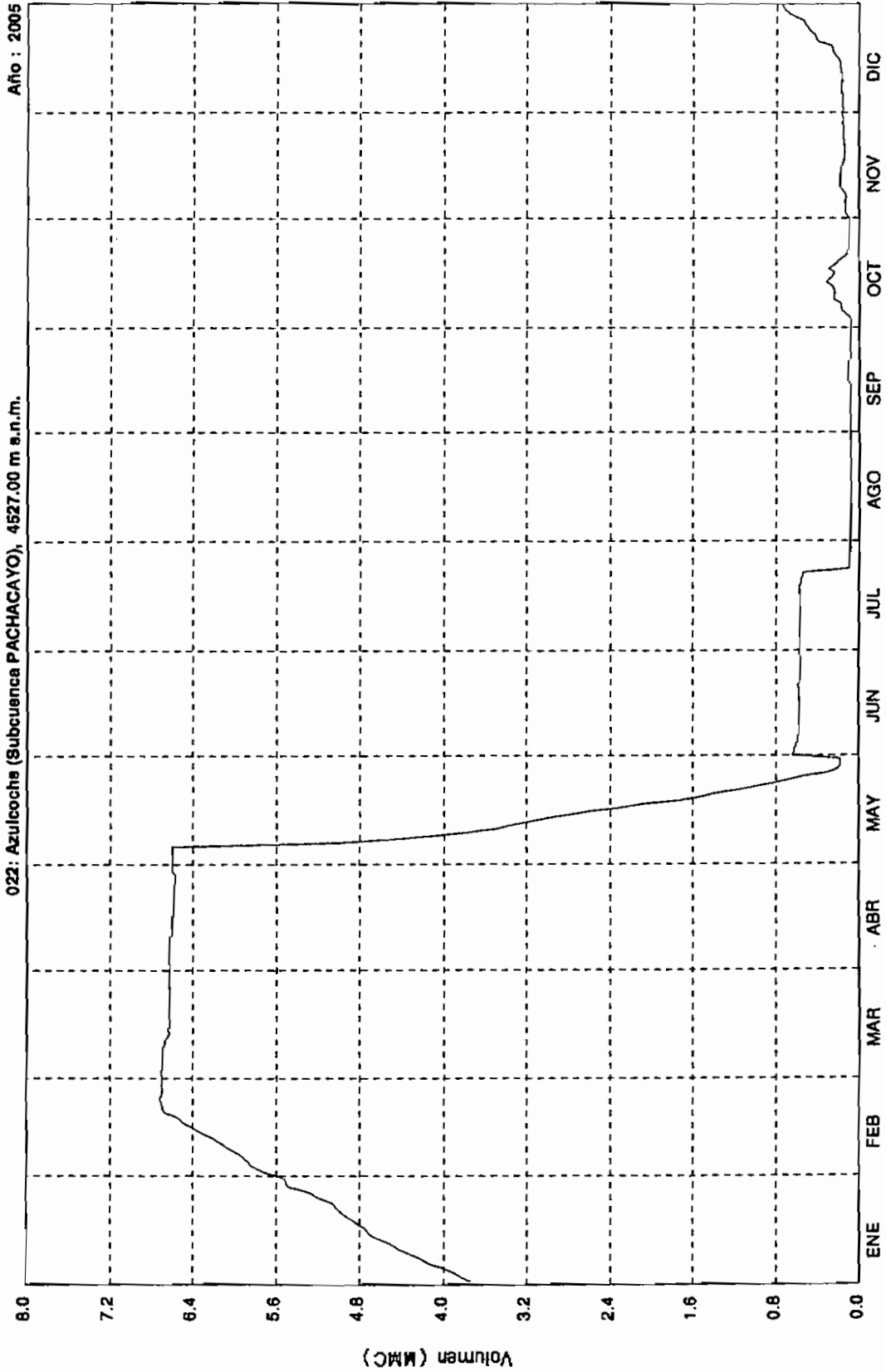
Elaborado por : Técnico Hidrométrista

Revisado por : Jefe Recurso Hídrico

Fecha : 11/04/2008

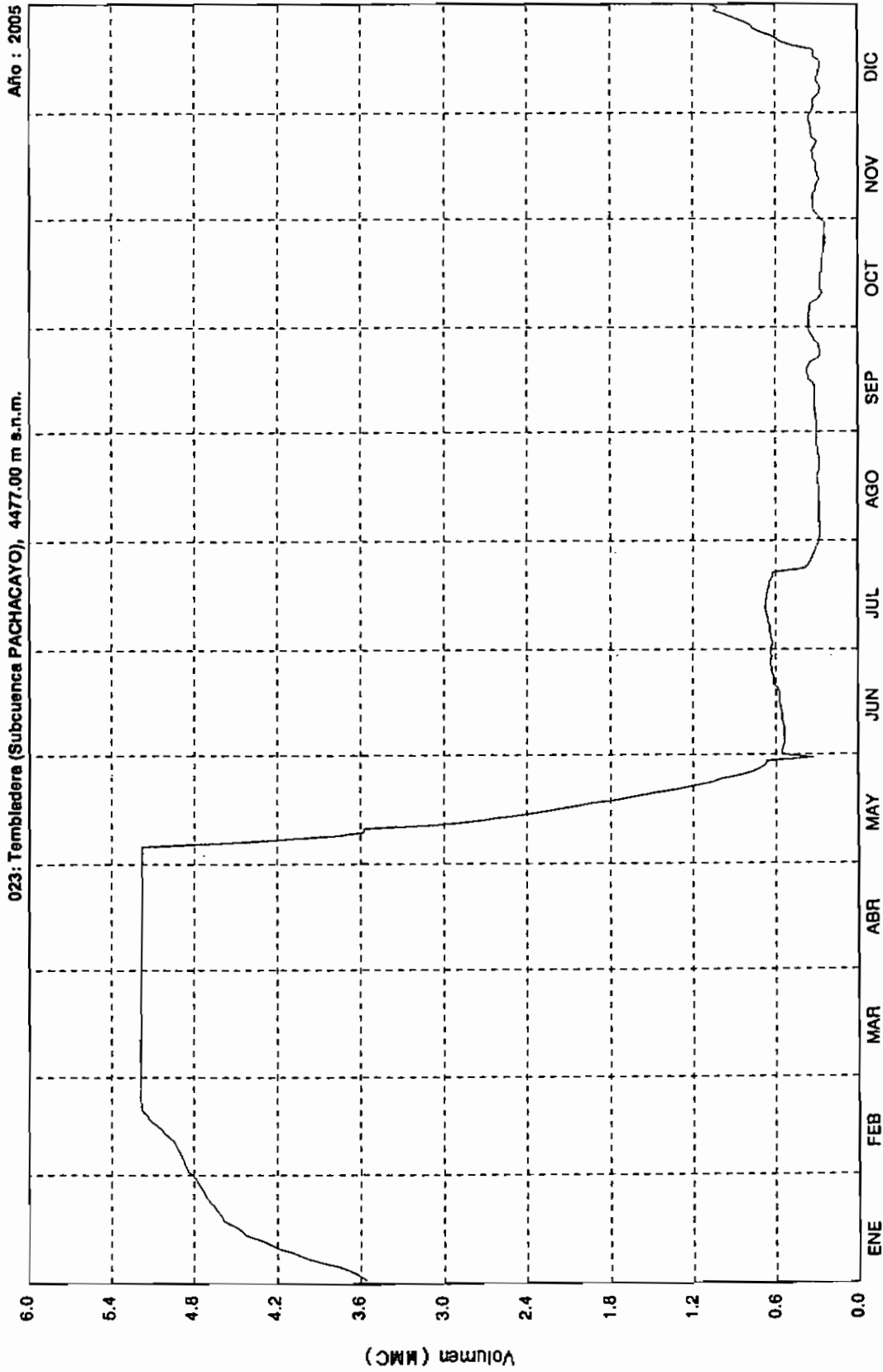
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VOLUMEN UTIL DE LAGUNAS

Datos del Formato
 Código :
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Lectroperú S.A.
GERENCIA DE PRODUCCION
CENTRO PRODUCCION MANTARO
RECURSO HIDRICO

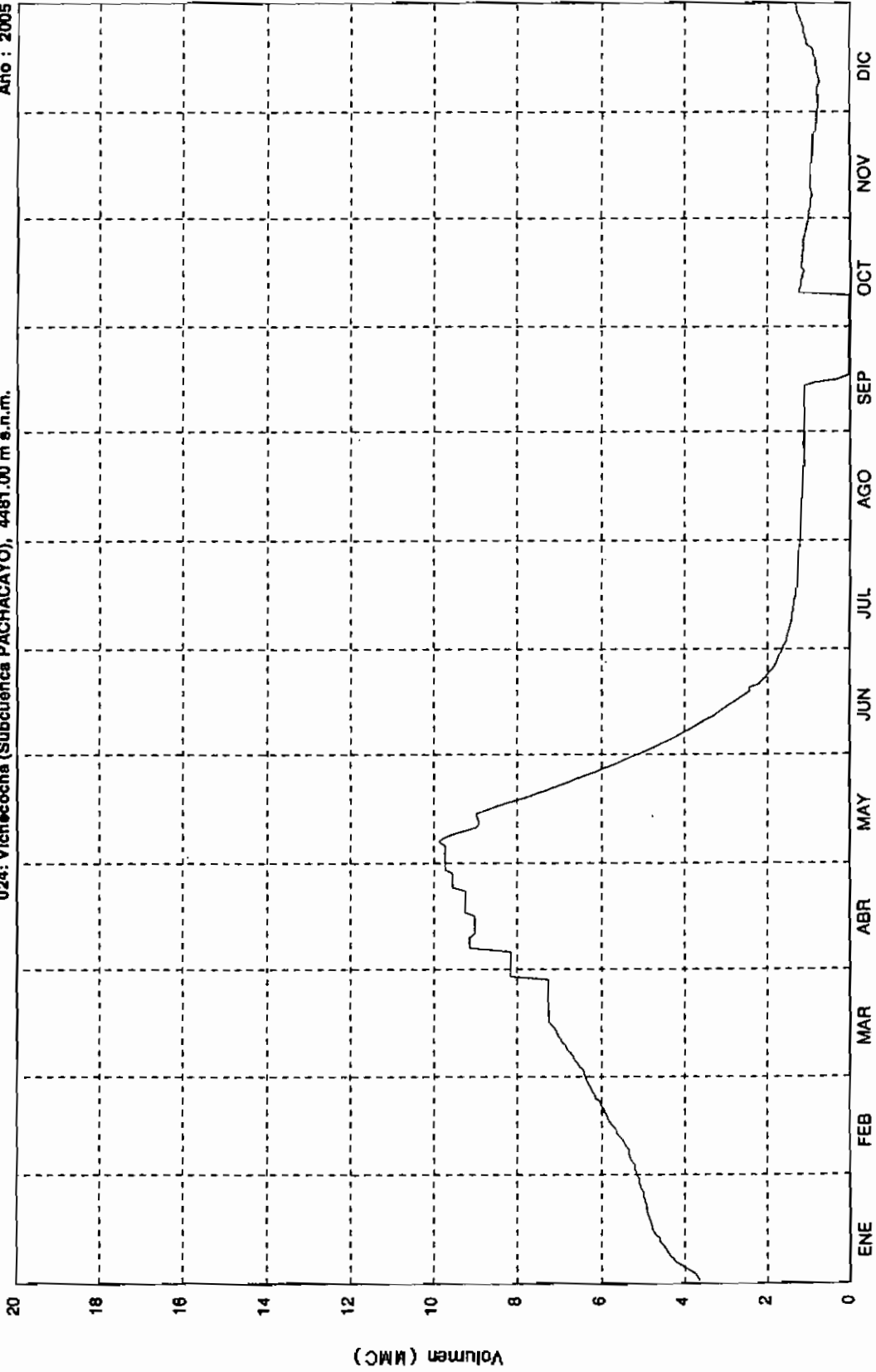
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Datos del Formato

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Revisión :
Fecha : / /

Año : 2005

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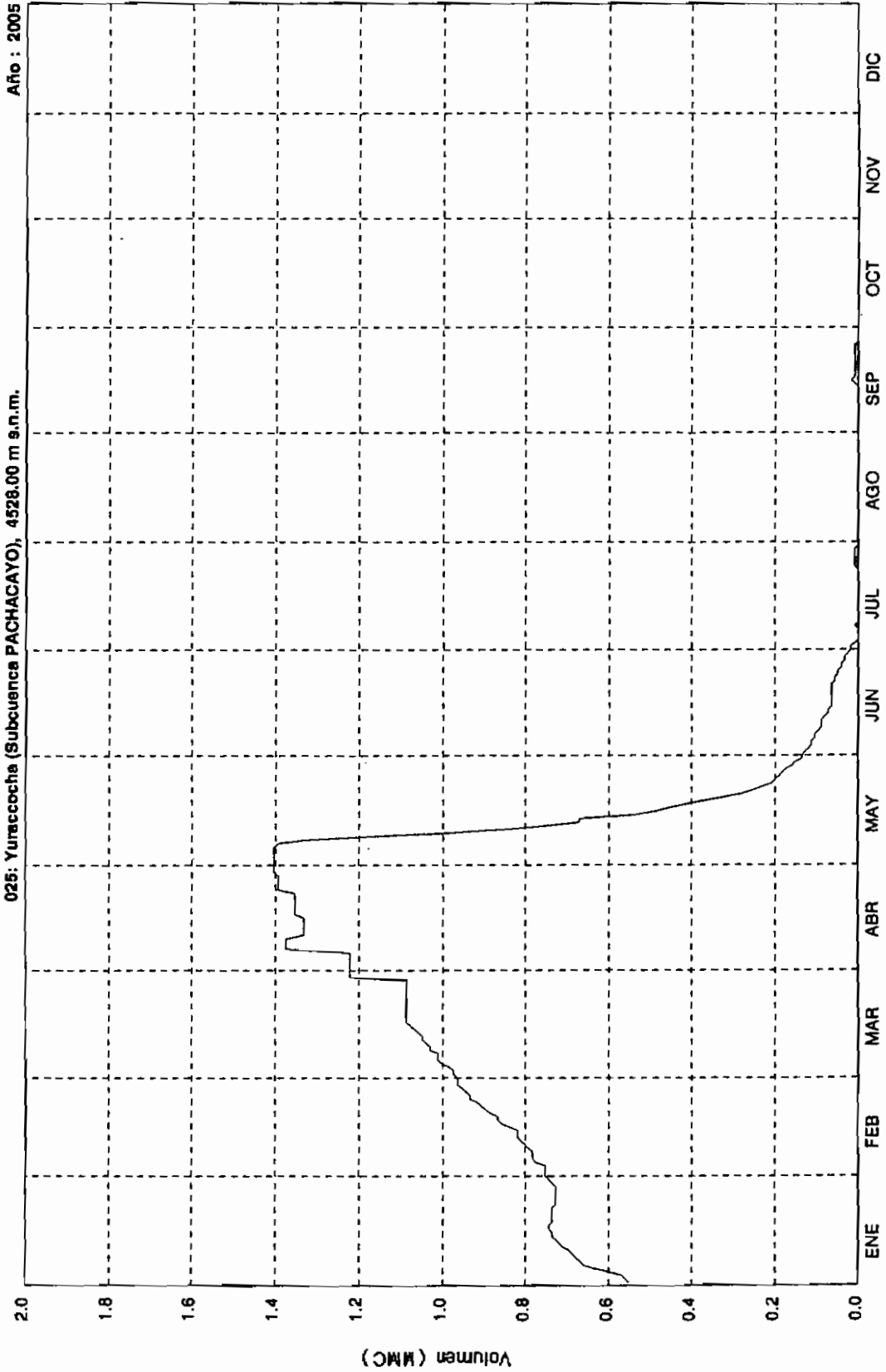
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Revisado por : Jefe Recurso Hídrico

Fecha : 11/04/2006

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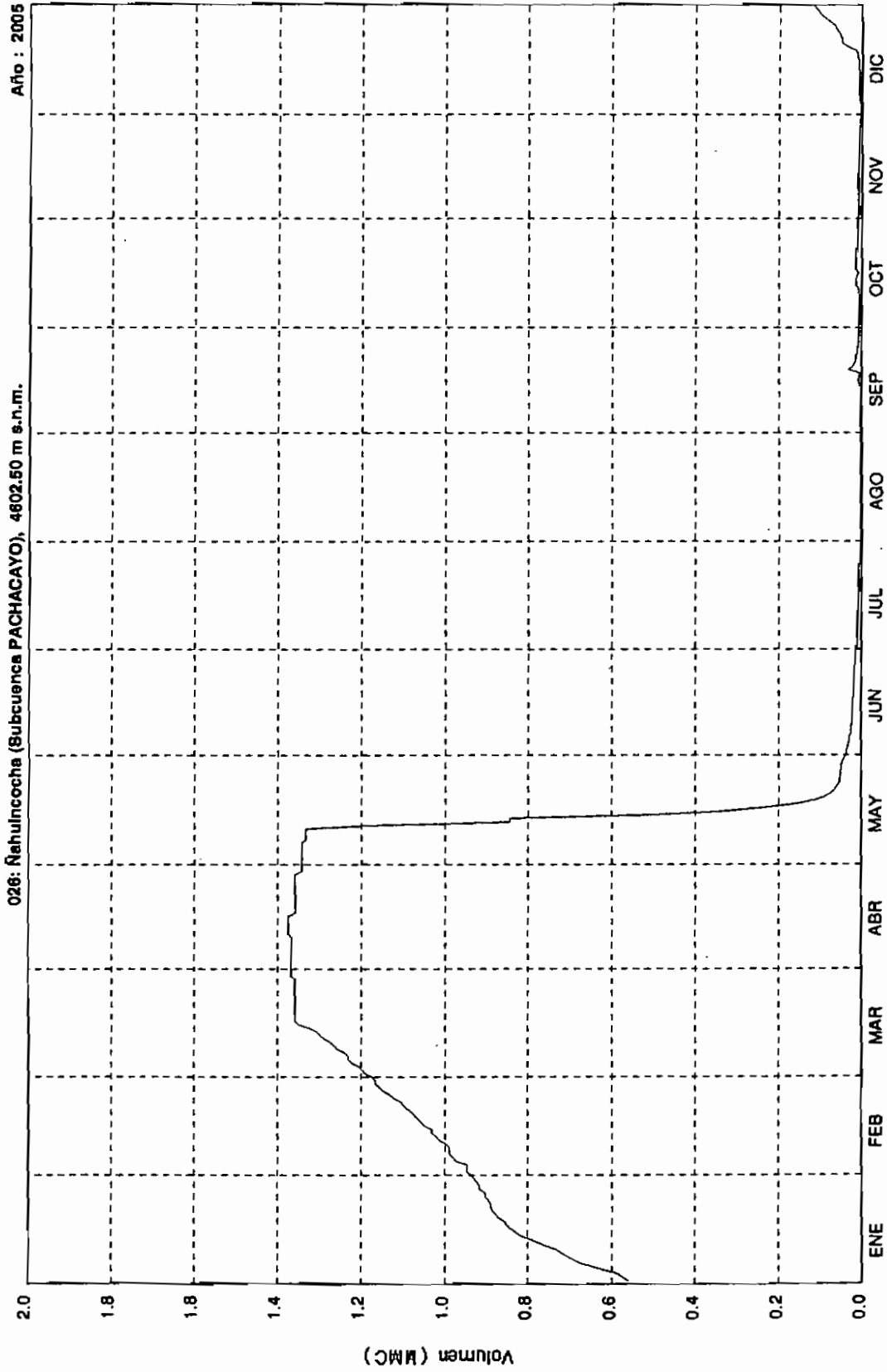




Electroperú S.A.
GERENCIA DE PRODUCCIÓN
CENTRO PRODUCCIÓN MANTARO
RECURSO HIDRICO

VOLUMEN UTIL DE LAGUNAS

Datos del Formato
Código :
Revisión :
Fecha : / /



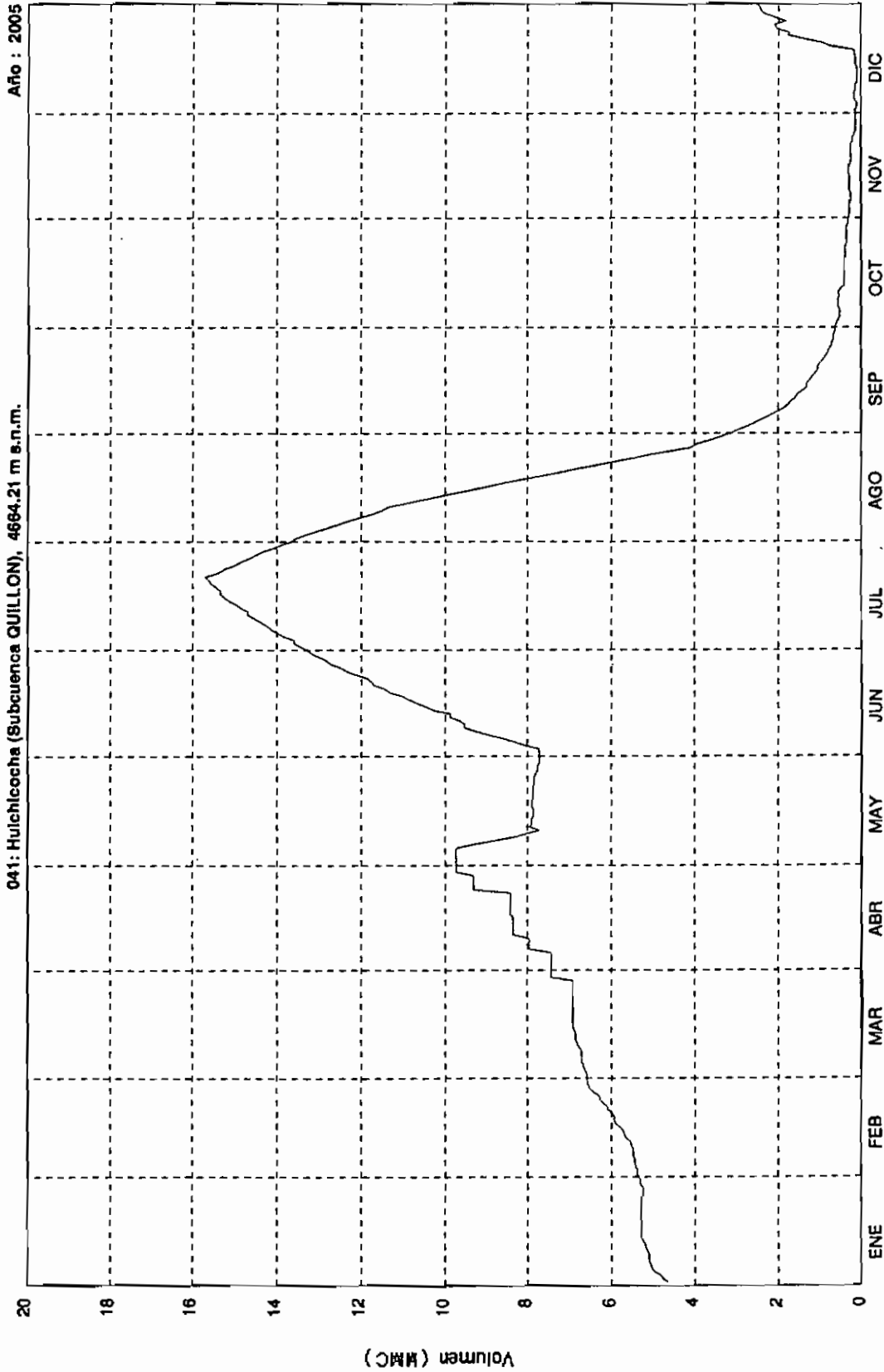
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Revisado por : Jefe Recurso Hídrico

Fecha : 11/04/2006

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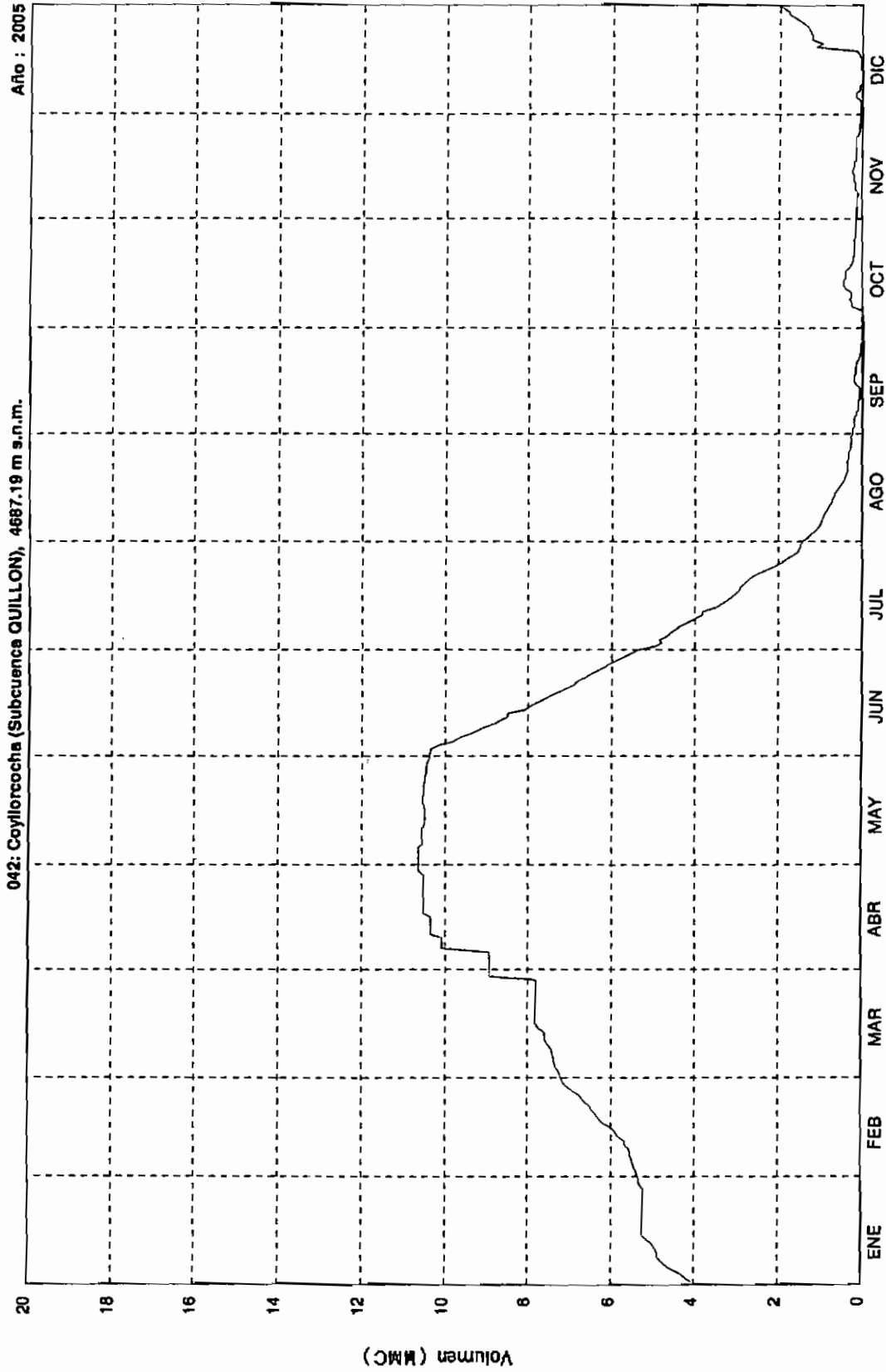
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 Revisión :
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Elaborado por : Técnico Hidrometrista Revisado por : Jefe Recurso Hídrico Fecha : 11/04/2006

VOLUMEN UTIL DE LAGUNAS

Datos del Formato
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 Revisión :
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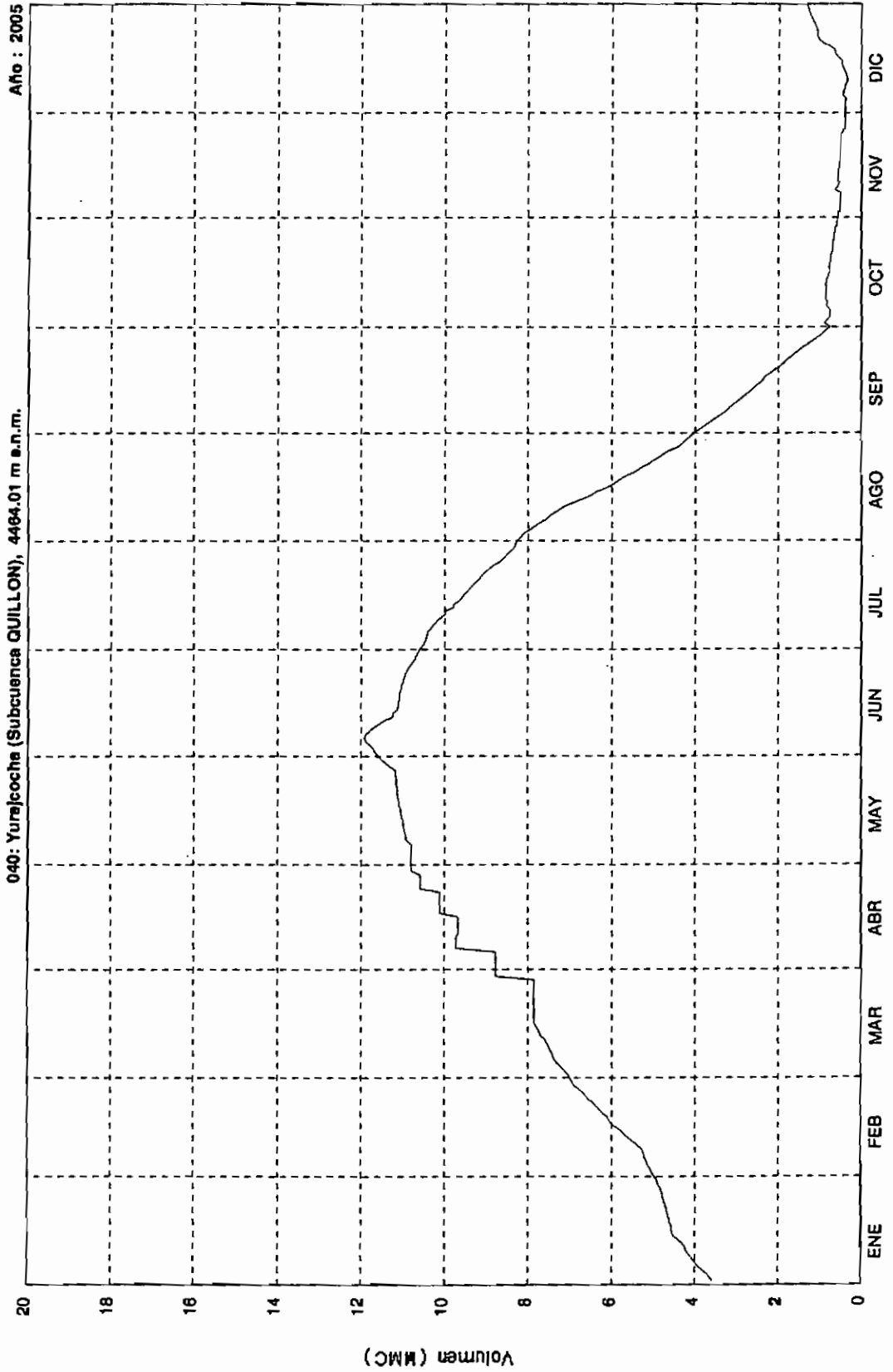
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Revisado por : Jefe Recurso Hídrico

Fecha : 11/04/2006

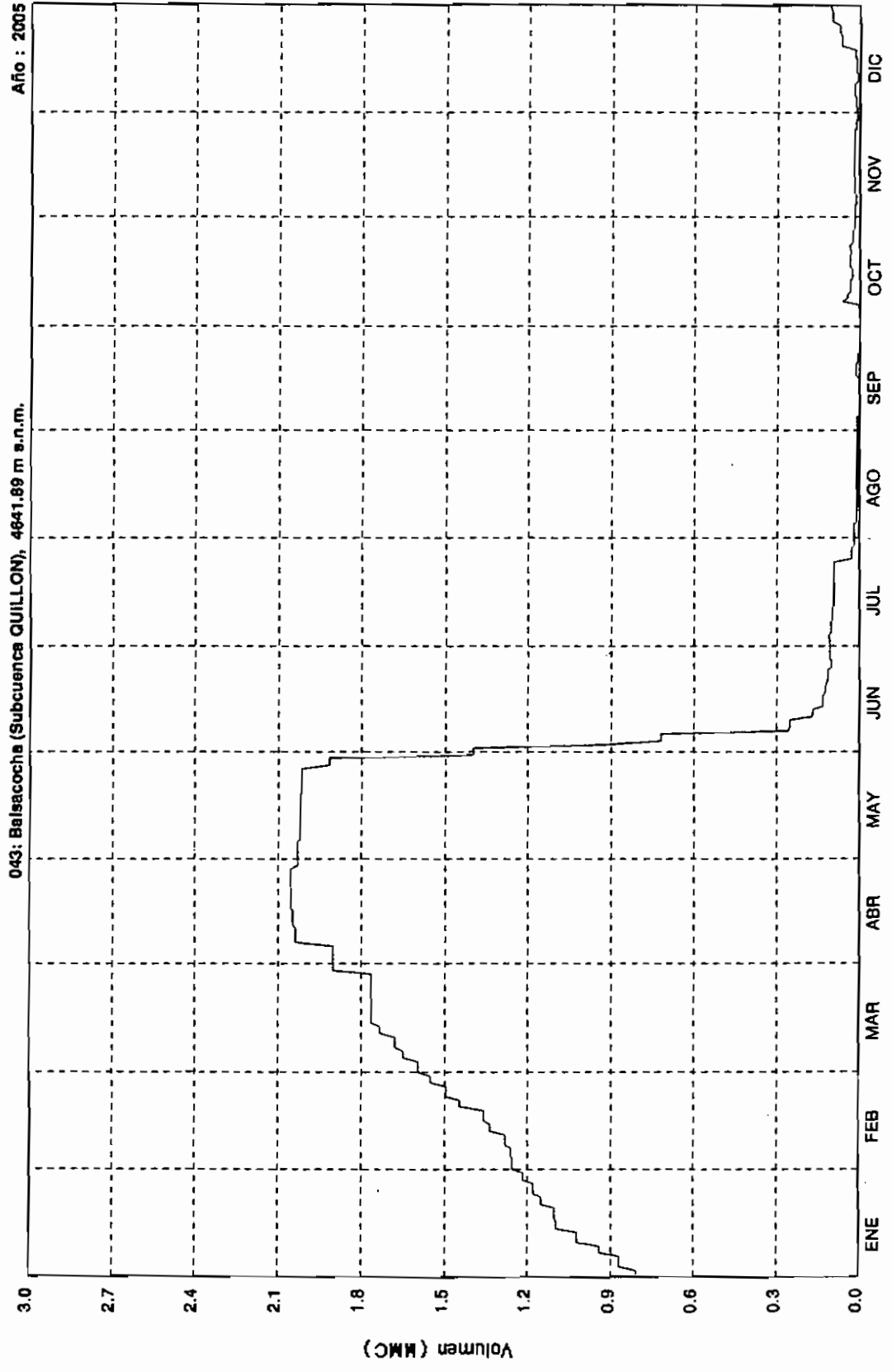
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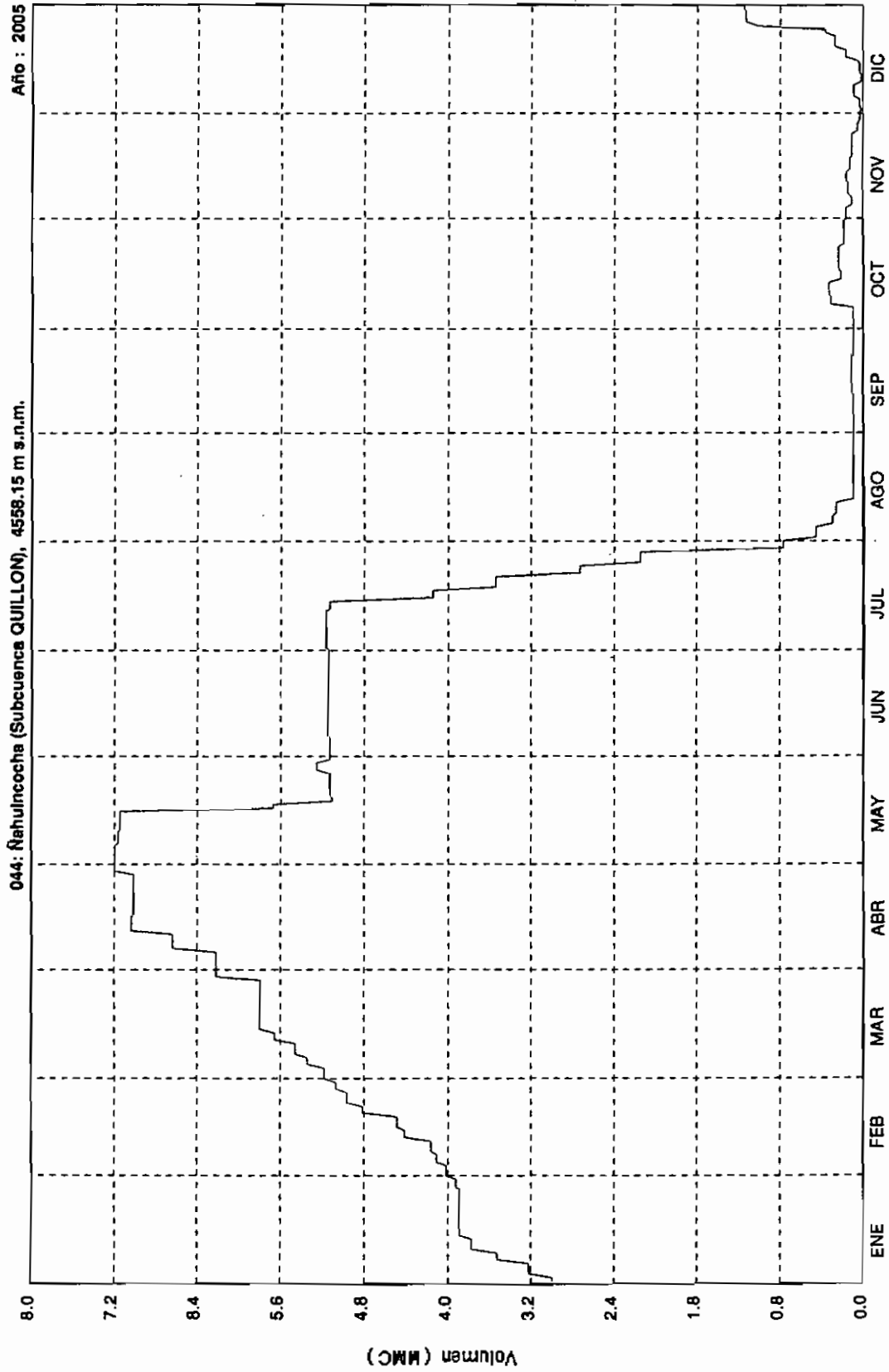
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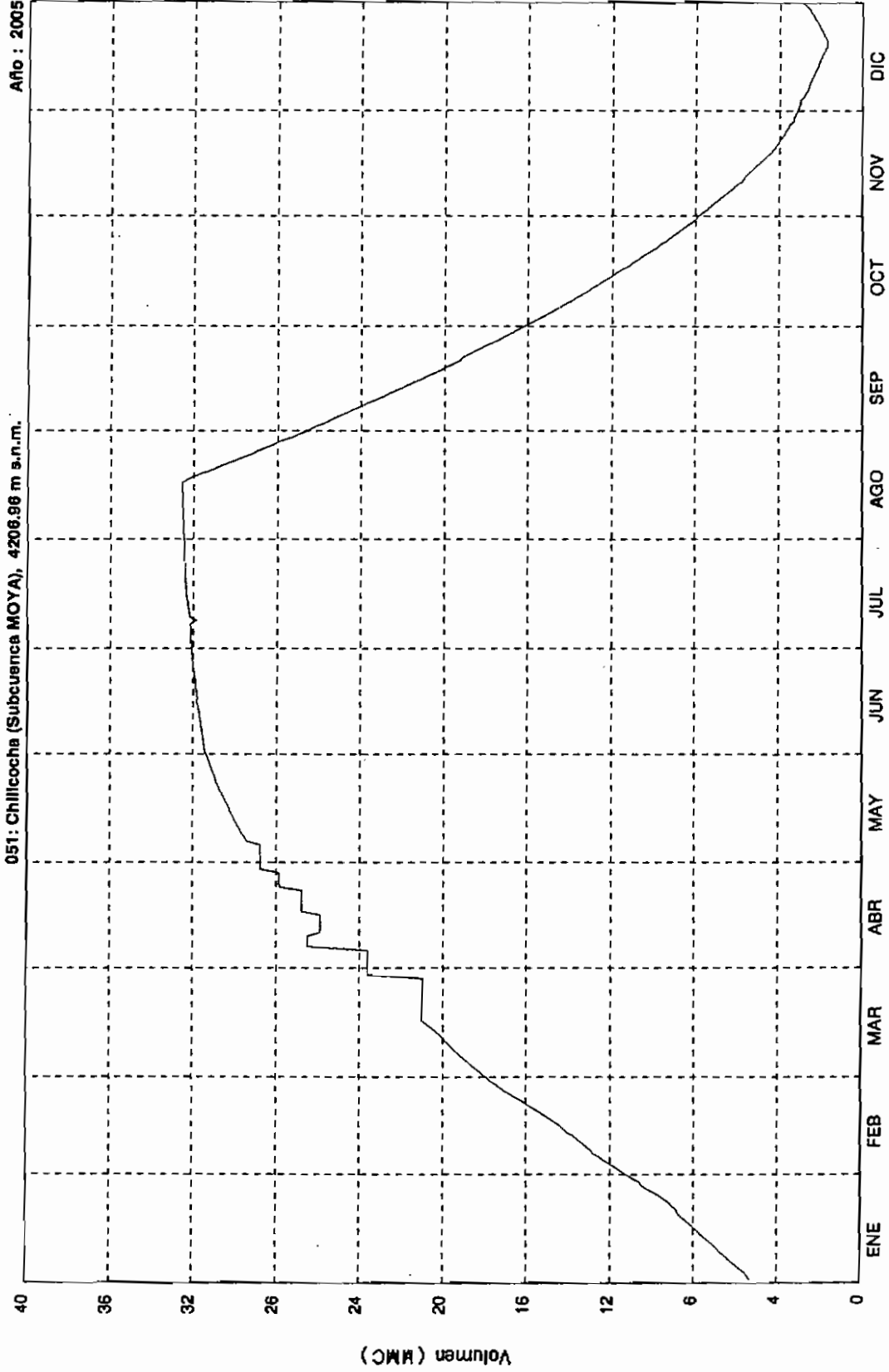
Datos del Formato
 Código :
 Revisión :
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VOLUMEN UTIL DE LAGUNAS

Datos del Formato
 Código :
 Revisión :
 Fecha : / /



CUENCA RÍO MANTARO
DIAGRAMA TOPOLÓGICO

CENTRALES HIDROELÉCTRICAS
COMPLEJO MANTARO
INFORMACIÓN GENERAL

INFORMACION GENERAL CC.HH.
"SANTIAGO ANTUNEZ MAYOLO" Y "RESTITUCION"

CENTRAL HIDROELECTRICA S.A.M.

7 Turbinas Pelton de eje vertical con 4 inyectores:

Potencia	:	114	MW
Velocidad	:	450	RPM
Salto Neto	:	820	m
Caudal	:	16	m ³ /sg

5 Generadores Sincrónicos:

Potencia	:	120	MVA
Tensión	:	13,8	Kv
Cos Ø	:	0,95	
Número de Polos	:	16	

22 Transformadores Monofásicos:

Potencia	:	40	MVA
Tensión	:	13,8/220	Kv
Grupo	:	Yd11	

REPRESA TABLACHACA

Altura	:	77	m
Longitud de Coronación	:	180	m
Compuertas de Regulación	:		
4 Vertederos de 16 x 5,50 m.			
3 Alivios de 4 x 6 m.			
1 Alivio de 4 x 2,70 m.			
Volumen útil del embalse aprox.	:	7	MMC

CENTRAL RESTITUCION

3 Turbinas Pelton de eje vertical con 6 inyectores:

Potencia	:	70	MW
Velocidad	:	200	RPM
Salto Neto	:	250	m
Caudal	:	32	m ³ /sg

3 Generadores Sincrónicos:

Potencia	:	82,5	MVA
Tensión	:	13,8	Kv
Cos Ø	:	0,85	
Número de Polos	:	36	

10 Transformadores Monofásicos:

Potencia	:	27,5	MVA
Tensión	:	13,8/231	Kv
Grupo	:	Yd11	

A N E X O N° VI
CAUDALES NATURALIZADOS

ELECTROPERU S.A.

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m3/seg)

ESTACION : UPAMAYO
 CUENCA : MANTARO
 RIO : MANTARO
 AREA CAPTAC. : 2860 Km2
 CODIGO : QN-801

LATITUD : 10° 55' 19"
 LONGITUD : 76° 16' 34"
 ELEVACION : 4080 m.s.n.m.
 FUENTE : Electroperú S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	PROMEDIO
1965	16.33	46.90	64.29	16.43	8.66	4.89	5.03	4.87	6.65	6.78	6.43	15.15	16.87
1966	38.61	22.71	36.15	8.78	7.21	3.38	3.42	3.18	5.27	8.85	15.88	38.52	16.00
1967	28.41	102.99	107.49	21.17	9.91	7.18	5.69	5.78	6.49	13.41	12.22	27.75	29.04
1968	24.77	37.77	77.40	21.40	7.42	5.24	4.52	5.87	6.02	7.91	13.13	17.63	19.09
1969	11.32	38.51	40.93	36.47	6.02	5.38	5.44	4.54	5.28	6.18	5.75	26.31	16.01
1970	87.20	53.35	56.86	27.49	23.23	9.50	7.66	6.27	11.14	7.98	8.77	24.72	27.01
1971	61.44	66.06	56.97	39.73	8.46	5.46	6.34	6.15	6.09	9.35	7.34	18.17	24.30
1972	61.95	37.08	87.00	84.15	24.25	8.79	7.17	7.13	7.07	6.79	8.01	20.91	30.03
1973	54.86	72.14	80.46	42.32	11.53	6.99	6.85	5.58	7.02	15.02	29.57	33.48	30.49
1974	72.84	119.72	98.10	40.63	10.80	10.57	8.59	10.21	10.39	12.40	11.76	18.90	35.41
1975	41.55	50.80	82.47	25.89	23.71	10.35	7.64	7.03	10.29	17.50	13.85	13.22	25.36
1976	39.08	76.18	62.41	28.40	13.46	10.94	8.16	9.59	11.22	9.64	10.78	11.74	24.30
1977	16.75	25.66	69.91	47.29	34.75	14.75	8.00	7.89	9.59	9.65	36.15	27.26	25.64
1978	43.85	94.67	49.03	33.12	16.20	10.73	8.66	8.01	9.64	9.12	16.74	20.89	26.72
1979	26.85	37.63	71.77	63.17	22.72	11.80	9.18	10.14	11.16	10.93	11.13	12.78	24.94
1980	18.78	28.39	41.16	34.10	10.52	5.59	5.32	4.93	5.65	10.00	23.65	32.09	18.35
1981	24.29	119.71	88.99	18.24	7.78	6.07	5.34	7.03	8.90	9.91	20.98	49.31	30.55
1982	49.90	96.92	59.98	42.91	13.96	6.38	4.81	5.97	5.34	12.98	28.74	37.40	30.44
1983	51.48	24.12	47.49	39.21	14.46	12.06	8.83	8.60	10.50	8.31	8.47	16.10	20.80
1984	17.43	96.52	87.02	53.35	17.06	12.25	9.48	8.18	7.40	10.89	11.68	26.66	29.83
1985	27.49	47.40	51.45	38.49	15.58	12.03	6.63	4.82	10.26	8.13	7.20	13.05	20.21
1986	43.05	71.75	101.48	72.83	49.19	11.11	7.84	8.73	16.85	17.38	15.49	18.29	36.17
1987	68.73	41.33	37.33	16.84	9.25	5.94	5.84	6.41	12.24	11.91	14.44	24.15	21.20
1988	69.85	82.22	44.40	74.22	18.44	9.24	6.53	6.06	7.27	9.33	11.10	18.72	29.78
1989	45.49	65.87	57.48	55.23	26.27	13.95	7.86	7.86	8.76	12.38	13.24	8.05	26.87
1990	23.68	30.15	26.54	20.30	12.56	12.01	10.85	10.33	10.92	16.99	33.99	21.77	19.17
1991	26.24	27.36	56.29	32.90	18.65	12.26	8.82	6.31	7.07	7.78	8.01	7.36	18.25
1992	6.61	4.80	16.23	8.36	3.42	3.37	2.03	4.22	3.64	3.60	2.87	3.26	5.20
1993	5.69	28.57	38.91	26.59	29.95	8.28	4.19	3.82	4.20	7.32	39.30	48.81	20.47
1994	54.04	97.76	75.61	75.74	26.66	13.96	10.70	9.57	17.68	17.12	22.63	23.91	37.12
1995	23.78	24.71	47.60	30.12	9.42	5.69	5.34	6.54	6.07	6.90	7.07	10.63	15.32
1996	16.97	23.13	29.53	35.70	13.17	8.07	5.14	4.77	4.86	7.34	7.21	10.70	13.88
1997	16.23	27.09	34.55	14.72	8.93	5.90	4.42	3.92	3.65	3.94	5.03	9.32	11.48
1998	35.72	69.05	46.69	36.58	10.21	6.01	6.25	5.15	5.12	6.60	10.22	7.41	20.42
1999	15.00	57.32	51.42	26.23	12.12	6.21	5.17	4.11	4.01	6.27	9.53	14.23	17.64
2000	48.19	61.47	45.35	34.59	20.44	8.81	6.97	6.97	6.53	12.34	7.89	24.89	23.70
2001	71.98	73.43	88.07	38.74	16.46	13.33	9.14	8.34	8.67	10.27	17.18	25.96	31.80
2002	18.01	33.70	50.78	31.84	13.18	9.40	9.11	7.33	7.06	10.23	31.63	34.26	21.38
2003	28.80	46.10	46.72	27.74	12.78	8.00	6.10	6.15	6.10	5.65	6.10	14.11	17.86
2004	16.33	36.62	23.96	15.02	10.66	6.54	9.17	9.48	10.86	14.21	21.33	33.90	17.34
2005	31.79	39.81	40.99	25.04	14.51	18.24	20.33	17.77	17.40	14.38	14.10	17.99	22.70
Promedio	36.13	54.57	57.98	35.66	15.71	8.94	7.18	6.97	8.30	10.09	14.79	21.46	23.15
Des. Est.	20.59	29.00	22.42	18.18	8.79	3.42	2.90	2.58	3.50	3.60	9.20	10.79	6.96
Máximo	87.20	119.72	107.49	84.15	49.19	18.24	20.33	17.77	17.68	17.50	39.30	49.31	37.12
Mínimo	5.69	4.80	16.23	8.36	3.42	3.37	2.03	3.18	3.64	3.60	2.87	3.26	5.20

ELECTROPERU S.A.

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m3/seg)

ESTACION : PTE. CHULEC
 CUENCA : MANTARO
 RIO : MANTARO
 AREA CAPTAC. : 6020 Km2

LATITUD : 11° 30' 47"
 LONGITUD : 75° 55' 22"
 ELEVACION : 3710 m.s.n.m.
 FUENTE : Electroperu S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	PROMEDIO
1965	40.44	117.35	145.91	50.20	28.98	14.62	15.75	14.04	19.77	20.36	17.33	37.83	43.55
1966	96.79	65.79	92.71	41.65	30.09	18.54	13.48	13.97	17.64	31.75	44.82	89.31	46.38
1967	69.10	211.61	205.74	66.31	34.33	25.05	23.23	20.88	24.40	48.24	34.99	62.74	68.89
1968	70.50	77.59	145.39	50.97	29.42	22.77	24.08	20.44	22.26	30.38	50.49	43.67	49.00
1969	33.79	83.86	83.06	94.79	27.67	22.66	15.05	16.95	16.44	20.60	20.71	62.17	41.48
1970	178.29	133.52	114.80	87.09	59.10	30.31	19.54	17.30	33.93	29.26	23.41	59.74	65.52
1971	108.69	156.99	144.19	87.28	30.23	20.80	21.42	20.75	20.72	36.48	32.19	47.62	60.61
1972	127.20	78.82	204.55	130.44	71.52	33.64	30.09	24.26	26.95	33.36	34.04	56.50	70.95
1973	146.99	192.08	250.78	82.99	52.76	29.18	30.45	27.04	35.48	59.16	74.82	78.93	88.39
1974	187.15	270.21	287.07	109.79	34.92	27.46	32.91	21.87	32.14	34.47	39.20	46.29	93.62
1975	76.93	97.78	207.19	67.34	77.12	47.74	30.34	21.97	35.14	43.14	35.91	36.38	64.75
1976	128.51	250.74	207.03	85.86	42.65	31.90	27.12	29.99	39.36	44.66	37.23	33.40	79.87
1977	43.89	83.52	133.71	86.44	43.26	35.01	26.40	21.75	30.76	26.81	79.34	77.17	57.34
1978	90.53	238.63	166.31	71.25	46.00	39.41	35.69	22.78	33.34	29.39	40.60	48.63	71.88
1979	55.74	117.64	247.68	172.52	57.19	40.07	36.68	34.89	32.29	34.68	30.71	41.50	75.13
1980	52.15	76.38	87.90	71.71	35.62	26.35	20.51	17.34	22.83	28.18	51.56	66.03	46.38
1981	56.13	219.87	187.30	67.40	26.57	44.96	28.59	37.55	37.36	28.13	63.91	104.42	75.18
1982	187.01	200.75	131.37	88.09	35.39	45.18	23.84	28.51	25.82	37.70	74.65	92.32	80.89
1983	126.88	52.26	96.58	85.10	37.24	29.03	25.67	29.77	22.21	22.09	20.94	37.50	48.77
1984	48.06	211.27	190.05	119.17	54.30	39.27	40.78	33.18	26.36	22.96	34.22	65.81	73.79
1985	66.27	110.05	128.43	128.10	57.64	44.65	28.41	34.02	27.75	39.37	24.87	47.78	61.45
1986	109.21	151.16	241.63	196.30	128.11	42.29	35.99	57.69	49.75	38.05	35.47	42.52	94.01
1987	145.59	131.66	93.24	43.24	26.25	18.60	17.67	21.35	30.88	26.69	33.22	58.60	53.92
1988	156.09	175.17	120.84	146.86	53.76	29.75	20.93	23.10	22.10	22.90	26.29	35.31	69.43
1989	110.84	155.93	157.74	119.55	59.15	42.44	30.68	31.67	27.30	44.23	45.66	45.01	72.52
1990	75.99	76.33	68.65	40.40	29.85	31.87	25.54	24.51	23.93	44.64	82.38	51.93	48.00
1991	66.67	65.60	148.17	68.56	51.14	36.81	32.64	36.67	37.81	24.74	25.85	21.74	51.37
1992	26.70	20.15	63.36	21.51	15.21	15.77	12.04	16.38	14.74	19.36	16.04	16.60	21.49
1993	33.86	124.53	116.27	78.40	66.30	26.28	18.94	19.00	21.47	43.41	109.15	135.46	66.09
1994	141.34	230.19	193.63	202.98	93.83	51.15	37.69	23.20	30.10	32.71	39.08	44.72	93.39
1995	44.94	48.79	110.26	80.30	28.28	18.86	21.30	16.88	19.32	20.02	22.05	28.19	38.27
1996	48.97	79.31	81.38	95.97	37.54	24.13	21.89	20.52	15.90	19.30	20.59	30.94	41.37
1997	53.48	124.37	102.85	36.84	25.80	19.33	18.43	17.64	13.04	14.32	24.24	46.51	41.40
1998	95.73	163.84	120.22	89.52	34.59	23.50	22.52	18.49	14.89	25.91	29.96	23.04	55.18
1999	38.58	165.40	145.04	98.74	50.86	31.09	24.39	18.57	22.25	31.04	24.81	43.48	57.85
2000	122.18	173.59	172.06	116.58	66.91	39.15	31.48	34.35	28.36	40.73	27.55	60.87	76.15
2001	170.22	165.04	198.44	102.35	43.57	35.11	27.42	20.98	17.20	23.05	41.64	60.58	75.47
2002	42.27	70.95	123.37	83.02	37.01	31.80	23.15	17.14	15.19	29.10	70.74	88.71	52.70
2003	74.75	107.78	141.51	82.87	45.83	36.90	29.08	27.57	22.75	27.54	27.57	48.67	56.07
2004	47.29	76.69	58.95	39.72	27.30	24.86	28.38	29.44	31.22	37.81	47.36	70.54	43.30
2005	73.53	86.85	81.12	51.27	30.14	29.35	31.66	27.48	24.70	24.51	23.34	29.49	42.79
Promedio	89.49	132.68	146.26	88.77	45.45	31.16	25.90	24.68	26.00	31.49	39.97	54.11	61.33
Des. Est.	46.88	62.62	56.22	40.33	21.14	9.36	6.85	8.34	8.02	9.55	20.81	23.90	17.04
Máximo	187.15	270.21	287.07	202.98	128.11	51.15	40.78	57.69	49.75	59.16	109.15	135.46	94.01
Mínimo	26.70	20.15	58.95	21.51	15.21	14.62	12.04	13.97	13.04	14.32	16.04	16.60	21.49

ELECTROPERU S.A.

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m3/seg)

ESTACION : COCHAS TUNEL
 CUENCA : PACHACAYO
 RIO : PACHACAYO
 AREA CAPTAC. : 490 Km2
 CODIGO : QN-815

LATTITUD : 11° 51' 18"
 LONGITUD : 75° 44' 24"
 ELEVACION : 3750 m.s.n.m.
 FUENTE : Electroperú S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	PROMEDIO
1965	0.90	3.37	4.17	1.86	1.56	1.04	0.87	0.87	0.93	1.04	1.39	1.15	1.60
1966	2.12	2.05	1.83	0.80	1.04	0.81	0.75	0.75	0.99	1.45	2.09	4.39	1.59
1967	2.47	6.25	6.54	4.84	3.13	1.85	1.33	1.04	1.16	1.56	1.91	1.15	2.77
1968	2.89	1.99	3.78	1.67	1.33	1.04	0.87	0.81	0.81	0.93	1.91	1.60	1.64
1969	1.48	2.37	3.69	3.46	2.03	1.33	1.10	0.87	1.16	1.74	1.91	3.17	2.03
1970	7.47	5.71	3.75	3.59	3.71	1.68	1.27	0.93	1.39	1.91	1.91	2.37	2.97
1971	3.62	5.74	9.30	4.91	2.32	1.33	1.10	0.99	0.93	1.22	1.22	1.41	2.84
1972	3.69	4.20	8.75	5.90	2.90	1.62	1.27	1.04	1.16	1.62	1.97	1.96	3.01
1973	2.92	8.02	6.48	3.59	3.54	2.43	1.68	1.33	1.51	2.49	2.84	2.57	3.28
1974	4.33	5.87	4.55	2.99	2.55	1.85	1.27	1.00	1.22	1.16	1.62	1.12	2.46
1975	2.24	1.96	5.52	2.37	3.42	1.97	1.04	0.75	0.87	1.16	1.97	1.89	2.10
1976	4.33	5.26	4.75	3.05	2.26	1.80	1.33	0.81	1.45	1.27	1.91	1.35	2.46
1977	1.73	3.05	4.46	1.96	2.72	1.68	1.04	0.87	1.10	1.45	3.07	1.54	2.06
1978	1.92	3.46	1.44	2.31	2.09	0.73	0.56	0.87	1.04	1.51	3.02	2.08	1.75
1979	1.64	3.05	5.58	1.69	2.38	0.90	0.73	0.99	1.10	1.33	1.97	0.58	1.83
1980	1.70	2.41	3.14	1.60	0.84	0.59	1.10	0.93	0.87	2.72	2.72	1.67	1.69
1981	1.57	5.90	4.43	1.67	1.74	0.70	0.87	0.99	0.93	1.10	1.80	1.51	1.93
1982	2.36	4.49	2.73	2.66	2.03	0.76	1.04	0.62	0.99	1.51	3.54	2.24	2.08
1983	1.27	1.86	2.79	2.12	2.20	1.45	0.66	0.66	1.27	1.51	1.68	1.38	1.57
1984	1.80	5.77	6.96	4.52	3.02	1.68	0.73	0.81	0.81	1.57	2.67	2.57	2.74
1985	2.85	4.75	7.06	3.88	3.82	2.43	1.27	0.99	1.10	1.22	1.39	1.92	2.72
1986	6.70	10.29	9.46	7.38	2.59	1.67	1.68	1.27	1.45	1.51	1.85	1.38	3.94
1987	4.17	6.35	3.43	1.99	2.26	1.45	1.16	1.10	1.22	1.62	3.01	2.41	2.51
1988	5.07	5.96	4.78	4.75	4.29	2.14	1.45	1.10	1.27	1.68	2.03	1.41	2.99
1989	4.94	9.27	10.17	6.83	4.35	2.67	1.97	1.33	0.99	2.03	2.55	0.65	3.98
1990	1.99	1.99	2.24	1.28	1.62	1.39	0.99	0.75	0.75	1.45	3.01	2.12	1.63
1991	2.21	2.57	6.99	2.66	2.61	1.57	1.25	0.70	0.93	1.56	1.91	1.09	2.17
1992	1.28	0.93	1.92	1.28	1.45	0.99	0.70	0.64	1.22	1.56	1.91	0.77	1.22
1993	1.48	3.62	6.73	3.56	3.02	2.03	2.43	0.93	0.73	0.66	2.72	3.01	2.58
1994	4.20	6.99	6.06	4.75	5.04	3.02	1.39	0.75	0.75	0.64	0.65	0.71	2.91
1995	1.57	1.51	2.92	1.51	1.10	0.75	2.72	3.01	2.78	1.27	1.80	0.96	1.83
1996	0.90	2.69	1.92	1.70	1.74	1.74	0.87	1.74	3.82	3.25	2.72	0.71	1.98
1997	1.26	2.75	3.00	0.66	0.52	2.05	2.10	8.18	3.28	1.32	0.53	2.29	2.33
1998	1.55	3.41	5.12	1.75	1.58	1.16	0.83	7.45	6.26	1.98	1.64	1.81	2.86
1999	0.74	6.47	6.06	8.26	2.81	1.26	0.66	0.05	0.47	0.78	1.23	1.35	2.51
2000	4.30	7.71	9.88	5.58	7.12	3.82	0.60	0.87	0.62	2.25	1.83	1.69	3.86
2001	5.22	4.89	8.83	8.91	1.61	0.57	0.27	0.42	0.42	0.61	1.63	1.34	2.89
2002	3.46	4.49	3.35	3.41	1.87	1.11	0.66	0.67	0.91	0.80	0.74	3.22	2.06
2003	3.87	6.48	11.16	2.16	1.10	1.13	1.16	0.47	0.49	0.96	4.64	3.60	3.10
2004	6.21	2.66	2.54	2.91	1.44	1.38	2.15	1.22	0.55	1.16	1.86	2.12	2.18
2005	3.02	2.21	2.63	1.91	2.13	1.11	0.82	0.59	0.69	0.98	1.03	0.98	1.51
Promedio	2.91	4.41	5.14	3.28	2.46	1.53	1.16	1.27	1.28	1.45	2.04	1.79	2.39
Des. Est.	1.67	2.24	2.61	2.01	1.25	0.68	0.53	1.56	1.05	0.55	0.80	0.85	0.68
Máximo	7.47	10.29	11.16	8.91	7.12	3.82	2.72	8.18	6.26	3.25	4.64	4.39	3.98
Mínimo	0.74	0.93	1.44	0.66	0.52	0.57	0.27	0.05	0.42	0.61	0.53	0.58	1.22

ELECTROPERU S.A.

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m3/seg)

ESTACION : PIÑAS COCHA
 CUENCA : PACHACAYO
 RIO : PACHACAYO
 AREA CAPTAC. : 195 Km2
 CODIGO : QN-814

LATITUD : 11° 51' 18"
 LONGITUD : 75° 44' 00"
 ELEVACION : 3750 m.s.n.m.
 FUENTE : Electoperú S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	PROMEDIO
1965	0.081	0.386	0.447	0.325	0.183	0.102	0.061	0.041	0.041	0.041	0.061	0.081	0.154
1966	0.264	0.325	0.468	0.203	0.142	0.061	0.041	0.020	0.061	0.102	0.203	0.752	0.220
1967	0.447	0.935	0.976	0.813	0.285	0.163	0.102	0.081	0.081	0.102	0.081	0.163	0.352
1968	0.346	0.447	0.732	0.366	0.163	0.081	0.081	0.081	0.061	0.081	0.102	0.325	0.239
1969	0.285	0.427	0.610	0.630	0.264	0.061	0.102	0.081	0.102	0.102	0.102	0.447	0.268
1970	1.322	1.078	0.671	0.630	0.386	0.183	0.122	0.081	0.102	0.102	0.081	0.305	0.422
1971	0.366	1.017	1.565	0.854	0.244	0.163	0.122	0.081	0.061	0.081	0.061	0.122	0.395
1972	0.305	0.407	1.931	0.976	0.325	0.163	0.122	0.081	0.061	0.102	0.122	0.203	0.400
1973	0.569	1.017	0.956	0.691	0.325	0.244	0.183	0.142	0.142	0.203	0.244	0.407	0.427
1974	0.752	1.017	0.691	0.447	0.285	0.224	0.183	0.138	0.183	0.163	0.163	0.163	0.367
1975	0.407	0.834	1.647	0.610	0.427	0.244	0.122	0.081	0.061	0.061	0.081	0.366	0.412
1976	0.874	1.098	1.322	1.037	0.407	0.224	0.142	0.081	0.122	0.061	0.041	0.081	0.458
1977	0.163	0.549	0.793	0.325	0.244	0.122	0.081	0.061	0.061	0.041	0.285	0.447	0.264
1978	0.488	0.712	0.305	0.386	0.203	0.073	0.037	0.061	0.061	0.102	0.142	0.264	0.236
1979	0.285	0.773	1.525	0.390	0.346	0.110	0.073	0.102	0.061	0.061	0.081	0.073	0.323
1980	0.244	0.569	0.651	0.386	0.110	0.073	0.102	0.061	0.061	0.203	0.163	0.386	0.251
1981	0.386	1.484	1.098	0.407	0.244	0.085	0.081	0.061	0.061	0.102	0.020	0.366	0.366
1982	0.813	1.281	0.691	0.651	0.264	0.073	0.081	0.037	0.041	0.081	0.366	0.569	0.412
1983	0.293	0.325	0.488	0.468	0.285	0.122	0.037	0.024	0.041	0.041	0.020	0.061	0.184
1984	0.183	1.179	1.301	0.915	0.386	0.183	0.073	0.081	0.061	0.081	0.142	0.427	0.418
1985	0.427	0.732	0.996	0.549	0.325	0.224	0.122	0.081	0.081	0.081	0.102	0.163	0.324
1986	1.200	1.809	1.139	0.671	0.308	0.244	0.111	0.163	0.142	0.142	0.142	0.163	0.520
1987	0.468	0.874	0.488	0.264	0.183	0.142	0.122	0.102	0.102	0.102	0.122	0.163	0.261
1988	0.569	0.895	0.752	0.712	0.366	0.142	0.142	0.102	0.081	0.102	0.081	0.102	0.337
1989	0.407	0.935	1.159	0.732	0.285	0.203	0.122	0.081	0.081	0.102	0.102	0.049	0.355
1990	0.183	0.224	0.285	0.122	0.081	0.081	0.081	0.061	0.081	0.122	0.386	0.386	0.174
1991	0.407	0.447	1.017	0.285	0.102	0.081	0.081	0.041	0.041	0.041	0.061	0.061	0.222
1992	0.081	0.061	0.183	0.081	0.041	0.041	0.041	0.041	0.183	0.081	0.061	0.041	0.078
1993	0.122	0.549	0.488	0.325	0.468	0.264	0.102	0.041	0.018	0.011	0.163	0.447	0.250
1994	0.346	0.691	0.671	0.468	0.325	0.081	0.041	0.020	0.061	0.061	0.061	0.041	0.239
1995	0.305	0.183	0.386	0.203	0.102	0.081	0.122	0.203	0.264	0.061	0.142	0.081	0.178
1996	0.142	0.407	0.508	0.488	0.183	0.081	0.041	0.468	0.285	0.081	0.061	0.081	0.236
1997	0.475	0.532	0.464	0.144	0.387	0.150	0.386	0.443	0.085	0.069	0.035	0.197	0.281
1998	0.408	0.380	0.445	0.135	0.121	0.231	0.113	0.753	0.319	0.124	0.092	0.128	0.271
1999	0.133	1.294	1.016	1.251	0.298	0.327	0.089	0.013	0.096	0.085	0.138	0.233	0.414
2000	0.434	0.880	0.848	0.778	0.260	0.150	0.201	0.827	0.309	0.526	0.367	0.365	0.495
2001	0.686	0.543	1.128	0.521	0.335	0.152	0.085	0.214	0.237	0.146	0.354	0.278	0.390
2002	0.600	0.600	0.540	0.510	0.330	0.220	0.140	0.180	0.230	0.130	0.010	0.570	0.338
2003	0.560	0.762	1.514	0.286	0.118	0.158	0.210	0.287	0.255	0.180	0.164	0.282	0.398
2004	0.799	0.358	0.346	0.433	0.090	0.141	0.295	0.223	0.096	0.190	0.206	0.293	0.289
2005	0.750	0.440	0.570	0.410	0.070	0.130	0.000	0.010	0.000	0.180	0.110	0.130	0.233
Promedio	0.448	0.718	0.825	0.509	0.251	0.148	0.112	0.142	0.112	0.110	0.135	0.250	0.313
Des. Est.	0.278	0.376	0.422	0.267	0.111	0.069	0.070	0.179	0.083	0.081	0.098	0.171	0.100
Máximo	1.322	1.809	1.931	1.251	0.468	0.327	0.386	0.827	0.319	0.526	0.386	0.752	0.520
Mínimo	0.081	0.061	0.183	0.081	0.041	0.041	0.000	0.010	0.000	0.011	0.010	0.041	0.078

ELECTROPERU S.A.

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m3/seg)

ESTACION : QUILLON
 CUENCA : MANTARO
 RIO : QUILLON
 AREA CAPTAC. : 1325 Km2
 CODIGO : QN-811

LATITUD : 12° 23' 33"
 LONGITUD : 75° 08' 50"
 ELEVACION : 3190 m.s.n.m.
 FUENTE : Electroperú S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	PROMEDIO
1965	1.411	4.791	4.170	1.671	0.795	0.643	0.609	0.569	0.584	0.622	0.710	1.011	1.466
1966	1.971	1.684	2.266	0.751	0.638	0.589	0.564	0.520	0.466	0.663	1.113	3.206	1.203
1967	2.342	6.053	6.370	2.231	1.047	0.707	0.662	0.620	0.696	1.178	0.744	1.114	1.980
1968	2.521	1.849	3.479	1.257	0.714	0.708	0.649	0.652	0.620	0.647	1.075	1.311	1.290
1969	1.079	2.186	2.031	1.836	0.803	0.728	0.718	0.720	0.746	0.739	0.702	1.683	1.164
1970	5.748	3.082	1.701	2.207	1.513	0.765	0.694	0.741	0.850	0.750	0.768	1.470	1.691
1971	2.917	4.480	5.767	2.908	0.811	0.620	0.607	0.599	0.553	0.551	0.513	2.106	1.869
1972	4.037	5.718	6.939	4.633	1.343	0.917	0.712	0.620	0.660	0.753	0.725	1.148	2.350
1973	5.195	7.589	7.733	3.805	1.670	1.096	0.914	0.901	0.995	1.166	1.915	3.396	3.031
1974	5.842	7.376	5.061	1.893	1.040	0.889	0.819	0.808	0.871	0.725	0.664	0.674	2.222
1975	1.079	2.430	5.581	1.538	1.314	0.716	0.603	0.605	0.592	0.620	0.650	1.105	1.403
1976	3.186	4.340	3.897	1.654	0.803	0.637	0.630	0.602	0.671	0.598	0.619	0.682	1.527
1977	0.824	2.440	3.970	1.802	1.664	0.637	0.500	0.491	0.546	0.500	2.545	1.473	1.449
1978	2.591	4.151	1.778	1.544	0.763	0.379	0.321	0.573	0.545	0.600	0.773	1.291	1.276
1979	1.557	4.082	3.360	1.098	0.913	0.359	0.350	0.568	0.717	0.596	0.651	0.382	1.219
1980	1.484	1.763	2.474	1.559	0.763	0.284	0.556	0.404	0.450	0.762	1.168	1.152	1.068
1981	1.031	4.392	2.539	1.780	1.122	0.389	0.611	0.597	0.541	0.929	1.231	1.957	1.427
1982	3.967	7.625	2.735	2.345	1.316	0.418	0.971	0.341	0.740	1.188	1.610	2.025	2.107
1983	1.203	1.407	3.053	2.409	0.891	0.585	0.272	0.253	0.468	0.638	0.506	0.768	1.038
1984	2.950	6.453	7.240	2.710	1.314	0.996	0.457	0.827	0.770	1.029	1.488	3.391	2.469
1985	1.900	2.601	3.064	2.530	1.405	1.043	0.803	0.671	0.811	0.794	0.719	1.492	1.486
1986	2.887	3.435	5.074	2.726	1.272	0.697	0.713	0.603	0.639	0.677	0.788	1.012	1.710
1987	4.000	2.092	2.358	1.296	0.855	0.737	0.623	0.442	0.408	0.428	0.574	1.130	1.245
1988	2.343	2.765	3.156	3.021	1.733	0.892	0.547	0.586	0.544	0.539	0.638	0.868	1.469
1989	3.119	5.028	6.456	2.237	1.262	0.884	0.677	0.597	0.562	0.567	0.482	0.256	1.844
1990	1.296	1.513	1.842	0.861	0.632	0.710	0.598	0.476	0.434	0.552	1.092	1.252	0.938
1991	1.735	1.693	3.095	1.319	1.007	0.666	0.532	0.488	0.464	0.470	0.477	0.634	1.048
1992	0.835	2.115	3.690	0.840	1.272	0.217	0.199	0.226	0.169	0.412	0.416	0.504	0.908
1993	2.227	2.637	2.740	2.452	1.429	0.562	0.397	0.318	0.288	0.300	1.932	3.432	1.560
1994	3.435	4.949	4.848	3.368	1.730	0.882	0.620	0.516	0.579	0.550	0.596	0.408	1.873
1995	1.267	2.241	4.440	2.352	0.761	0.544	0.494	0.447	0.357	0.355	0.476	0.973	1.226
1996	2.835	4.029	3.195	2.557	0.986	0.632	0.777	0.670	0.472	0.510	0.621	0.988	1.523
1997	1.819	2.685	0.925	0.374	0.817	0.205	0.020	0.568	0.244	0.266	1.020	0.701	0.804
1998	2.000	3.816	3.288	0.930	2.616	0.418	0.611	0.575	0.212	0.211	0.282	0.867	1.319
1999	0.850	4.077	3.102	1.793	4.152	0.517	0.950	0.257	0.555	0.657	0.200	0.868	1.498
2000	3.068	3.963	3.182	2.650	2.124	1.208	0.291	0.598	0.135	0.345	0.589	0.734	1.574
2001	2.474	1.984	2.669	0.918	0.612	0.353	0.301	0.255	0.186	0.223	0.351	0.336	0.889
2002	0.540	1.550	2.450	2.760	0.830	1.290	0.240	0.100	0.190	0.330	0.710	1.710	1.058
2003	0.994	3.423	3.826	1.831	0.900	1.109	0.770	0.531	0.206	0.987	0.792	0.638	1.334
2004	0.805	2.329	0.871	1.129	0.349	0.438	0.273	0.310	0.224	0.263	0.615	1.367	0.748
2005	1.120	1.400	2.070	1.490	0.310	0.470	0.060	0.100	0.060	0.110	0.140	0.230	0.630
Promedio	2.304	3.517	3.622	1.977	1.178	0.672	0.554	0.521	0.508	0.605	0.821	1.262	1.462
Des. Est.	1.342	1.761	1.686	0.878	0.663	0.264	0.226	0.184	0.225	0.263	0.489	0.837	0.495
Máximo	5.842	7.625	7.733	4.633	4.152	1.290	0.971	0.901	0.995	1.188	2.545	3.432	3.031
Mínimo	0.540	1.400	0.871	0.374	0.310	0.205	0.020	0.100	0.060	0.110	0.140	0.230	0.630

ELECTROPERU S.A.

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m3/seg)

ESTACION : MOYA
 CUENCA : MANTARO
 RIO : MOYA
 AREA CAPTAC. : 1730 Km2
 CODIGO : QN-812

LATTUD : 12° 23' 38"
 LONGITUD : 75° 08' 38"
 ELEVACION : 3180 m.s.n.m.
 FUENTE : Electroperú S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	PROMEDIO
1965	1.140	4.172	3.229	1.533	0.976	0.740	0.675	0.603	0.570	0.583	0.563	0.812	1.300
1966	1.579	1.670	2.495	1.127	0.865	0.681	0.753	0.583	0.531	0.806	1.323	2.640	1.254
1967	2.024	5.240	5.698	2.017	1.402	1.087	0.878	0.740	0.766	1.146	0.779	1.041	1.902
1968	1.945	2.653	3.648	1.526	1.035	0.832	0.714	0.662	0.662	0.766	1.159	1.480	1.424
1969	1.526	1.821	1.991	1.696	1.081	0.786	0.707	0.655	0.622	0.642	0.668	1.729	1.160
1970	4.801	3.105	3.635	1.814	1.467	0.891	0.773	0.694	0.707	0.721	0.727	1.637	1.748
1971	3.294	4.231	4.297	2.260	1.205	0.897	0.753	0.688	0.629	0.616	0.603	1.317	1.733
1972	3.294	4.231	4.297	2.260	1.205	0.897	0.753	0.688	0.629	0.616	0.603	1.317	1.733
1973	2.705	3.471	6.720	4.244	1.624	1.100	0.878	0.760	0.734	0.727	0.727	1.375	2.089
1974	3.609	5.115	9.248	4.794	3.452	1.310	1.081	0.937	0.943	1.100	1.146	2.797	2.961
1975	6.052	5.548	2.777	3.013	1.631	1.454	1.179	1.146	0.626	1.028	1.028	1.041	2.210
1976	1.592	2.581	4.657	2.417	1.886	1.035	0.838	0.766	0.727	0.694	0.707	1.186	1.591
1977	3.851	5.161	4.441	2.096	1.238	1.068	0.865	0.616	0.563	0.812	0.642	0.570	1.827
1978	0.550	2.587	1.650	2.469	1.899	0.644	0.664	0.681	0.629	0.603	1.624	1.113	1.259
1979	2.273	3.524	2.044	0.833	1.035	0.507	0.436	0.635	0.570	0.760	0.891	0.813	1.193
1980	1.199	3.556	2.888	1.159	0.523	0.483	0.681	0.616	0.570	0.563	0.550	0.622	1.118
1981	0.976	1.480	2.024	1.526	0.779	0.580	0.531	0.686	0.491	0.550	0.694	1.415	0.978
1982	2.823	6.910	3.714	1.952	0.930	0.580	0.524	0.412	0.557	0.793	1.945	1.290	1.869
1983	0.986	5.973	2.155	1.631	1.055	0.825	0.436	0.424	0.662	0.825	1.434	2.037	1.537
1984	2.823	6.910	3.714	1.952	0.930	0.642	0.314	0.686	0.557	0.793	1.945	1.290	1.880
1985	1.303	0.891	1.749	1.644	0.858	0.727	0.669	0.655	0.517	0.681	0.537	0.891	0.927
1986	2.928	7.506	5.502	4.408	1.749	0.967	0.943	0.753	0.675	0.740	1.153	2.902	2.519
1987	1.821	2.260	3.288	3.904	1.441	1.009	0.786	0.668	0.707	0.668	0.596	1.081	1.519
1988	3.622	6.988	6.864	3.471	2.391	1.362	1.113	1.015	1.068	0.976	0.963	1.395	2.602
1989	4.827	3.098	1.827	1.251	0.969	0.845	0.635	0.662	0.714	0.675	0.596	0.456	1.380
1990	2.044	3.386	3.170	2.928	1.087	0.891	0.786	0.707	0.688	0.734	0.688	0.760	1.489
1991	2.993	3.792	4.827	2.823	1.389	1.022	0.825	0.707	0.681	0.740	0.629	0.622	1.754
1992	1.146	1.362	1.696	1.035	0.838	0.714	0.629	0.576	0.570	0.662	0.956	1.323	0.959
1993	1.788	1.696	2.705	1.559	1.081	0.878	0.747	0.648	0.578	0.386	0.635	0.793	1.125
1994	1.788	1.696	2.705	1.559	1.081	0.878	0.747	0.648	0.642	0.714	0.635	0.793	1.157
1995	0.806	0.773	1.775	1.061	0.812	0.648	0.511	0.485	0.504	0.544	0.531	0.622	0.756
1996	1.513	3.000	3.157	1.068	1.231	0.930	0.753	0.603	0.609	0.668	2.247	3.432	1.601
1997	1.927	2.877	1.756	0.865	0.890	0.914	0.075	0.686	0.279	0.724	0.767	1.400	1.097
1998	5.345	3.192	6.533	4.086	1.478	0.914	0.754	0.686	0.429	0.260	0.777	0.479	2.078
1999	1.048	2.209	3.290	1.632	1.470	2.264	0.875	0.280	0.530	0.444	0.334	0.609	1.249
2000	4.722	4.884	5.549	1.816	1.478	0.952	0.527	0.686	0.554	0.364	1.630	1.523	2.057
2001	5.930	3.426	3.849	2.307	0.719	0.489	0.430	0.400	0.391	0.628	0.435	0.613	1.635
2002	0.930	3.280	4.740	3.120	1.470	1.290	0.260	0.120	0.180	0.330	1.060	2.020	1.567
2003	2.141	7.180	4.852	1.757	0.342	1.164	0.388	0.129	0.158	0.432	0.239	0.661	1.620
2004	1.652	2.040	1.888	7.691	0.427	0.188	0.391	0.540	0.768	0.371	0.322	2.001	1.523
2005	2.420	2.750	3.140	2.420	0.140	0.080	0.030	0.010	0.510	0.140	0.200	0.760	1.050
Promedio	2.481	3.615	3.663	2.310	1.209	0.882	0.666	0.618	0.597	0.659	0.870	1.284	1.571
Des. Est.	1.450	1.814	1.717	1.331	0.569	0.359	0.249	0.213	0.166	0.210	0.473	0.702	0.479
Máximo	6.052	7.506	9.248	7.691	3.452	2.264	1.179	1.146	1.068	1.146	2.247	3.432	2.961
Mínimo	0.550	0.773	1.650	0.833	0.140	0.080	0.030	0.010	0.158	0.140	0.200	0.456	0.756

ELECTROPERU S.A.

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m3/seg)

ESTACION : MEJORADA
 FUENTE : Electroperú S.A.
 CODIGO : QN-803

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	PROMEDIO
1965	91.25	282.10	275.01	122.75	70.11	52.88	47.08	41.66	43.84	45.19	41.58	63.75	98.10
1966	121.46	128.33	173.24	68.32	62.31	45.29	35.66	40.56	38.22	62.85	90.37	196.17	88.57
1967	149.20	425.17	351.64	219.72	106.71	85.43	88.58	57.00	57.50	91.96	58.33	81.52	147.73
1968	156.69	188.23	293.32	107.57	63.08	52.08	47.27	50.25	42.52	48.04	78.99	113.46	103.46
1969	90.43	145.26	151.46	154.65	60.28	48.70	42.66	45.33	38.70	50.26	48.09	134.46	84.19
1970	431.47	308.84	187.82	170.79	110.40	57.22	48.01	42.00	51.91	45.90	46.61	119.96	135.08
1971	212.67	289.63	340.94	193.57	73.13	49.89	42.45	40.29	31.56	39.34	36.80	73.08	118.61
1972	203.38	221.85	476.21	387.77	119.22	64.94	49.40	46.22	40.86	52.91	48.08	98.43	150.77
1973	339.77	305.93	481.34	379.50	121.42	77.93	56.27	48.81	66.81	58.77	145.05	146.41	185.67
1974	302.87	473.47	248.87	198.74	110.31	77.83	61.65	62.70	47.69	45.82	45.88	49.22	143.75
1975	105.09	188.56	440.21	136.27	98.55	57.28	45.32	42.06	39.53	39.35	56.77	84.03	111.09
1976	267.53	333.86	291.96	150.24	76.35	64.08	46.54	44.48	60.29	42.28	40.22	44.31	121.85
1977	88.78	227.83	283.79	103.61	80.76	47.89	44.51	34.50	33.03	29.62	97.38	67.20	94.91
1978	195.13	327.39	144.65	102.29	54.28	37.85	36.93	40.65	36.06	37.66	66.74	80.45	96.67
1979	82.60	228.86	288.76	130.49	61.28	40.62	35.93	32.81	34.02	29.03	35.38	33.52	86.11
1980	66.22	100.39	185.91	91.63	34.21	32.61	28.61	29.58	27.44	61.29	55.30	75.88	65.76
1981	150.52	562.22	303.34	115.11	60.45	47.16	44.26	46.10	41.38	65.12	120.98	113.18	139.15
1982	215.90	392.62	231.39	137.44	65.83	43.46	37.38	26.00	31.00	56.21	121.45	81.67	120.03
1983	92.66	63.83	123.76	91.77	41.68	35.81	26.53	36.12	26.93	35.09	25.82	43.04	53.59
1984	134.96	506.86	410.01	231.13	81.02	51.30	42.05	39.22	46.34	56.53	73.16	154.76	152.28
1985	143.16	198.79	234.09	223.22	95.41	75.16	58.22	50.91	61.84	56.19	59.72	88.36	112.09
1986	257.76	509.94	479.54	295.28	195.38	91.19	77.18	62.87	68.04	57.28	61.19	88.20	186.99
1987	379.18	254.88	152.17	82.45	70.95	58.54	48.36	44.23	32.11	33.96	47.68	93.97	108.21
1988	246.86	290.59	209.64	208.98	88.63	57.05	51.33	44.68	34.58	47.58	41.20	66.19	115.61
1989	205.74	264.38	368.09	232.24	87.33	70.10	47.38	42.60	46.51	49.41	56.91	48.15	126.57
1990	127.88	78.80	89.39	56.73	49.37	52.41	39.41	34.08	38.87	52.23	121.95	122.81	71.99
1991	119.42	107.11	220.08	115.60	78.20	49.30	41.52	37.19	43.14	41.06	43.83	38.87	77.94
1992	58.33	47.82	93.63	49.20	29.83	28.82	25.15	25.00	25.32	28.41	26.83	26.63	38.75
1993	81.06	197.82	204.34	145.31	89.22	42.39	35.39	30.78	26.62	40.92	106.18	227.88	102.33
1994	202.33	442.17	300.98	238.69	97.55	56.37	53.76	48.55	50.79	49.90	50.83	43.33	136.27
1995	108.69	126.79	233.96	137.30	57.92	46.77	40.25	40.13	35.19	38.70	49.66	52.18	80.63
1996	141.72	243.58	196.39	167.02	64.80	42.98	40.43	37.69	36.26	36.88	37.85	61.84	92.29
1997	135.73	252.11	169.17	67.52	50.09	42.42	37.66	29.30	38.80	40.10	67.84	86.29	84.75
1998	185.76	227.44	204.52	139.12	53.79	40.75	36.66	26.97	35.21	43.98	46.11	65.34	92.14
1999	104.02	288.57	271.98	184.20	89.67	51.91	51.16	44.32	45.52	50.87	37.47	83.71	108.62
2000	197.66	381.80	363.65	181.66	87.92	55.09	50.59	42.75	46.28	69.14	45.00	77.02	133.21
2001	309.96	259.19	357.61	162.24	84.73	65.83	59.63	51.43	54.29	54.62	65.05	88.35	134.41
2002	72.08	234.54	266.62	148.05	76.02	58.10	56.31	46.75	48.58	57.27	91.64	140.76	108.06
2003	158.41	265.55	328.41	218.84	87.06	60.35	50.93	51.02	46.53	43.79	48.47	95.48	121.24
2004	81.48	201.29	151.51	92.16	57.54	48.63	47.61	43.27	49.37	52.40	63.72	128.07	84.75
2005	144.35	141.45	177.31	118.18	55.78	44.16	43.82	39.77	38.37	47.85	39.77	62.85	79.47
Promedio	169.76	261.36	262.36	159.94	78.01	53.87	46.34	41.97	42.39	48.43	62.00	88.80	109.60
Des. Est.	88.93	125.01	103.87	76.11	28.96	13.84	11.93	8.81	10.62	12.08	28.42	42.67	31.80
Máximo	431.47	562.22	481.34	387.77	195.38	91.19	88.58	62.87	68.04	91.96	145.05	227.88	186.99
Mínimo	58.33	47.82	89.39	49.20	29.83	28.82	25.15	25.00	25.32	28.41	25.82	26.63	38.75

ELECTROPERU S.A.

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m3/seg)

ESTACION : AFLUENTE A MEJORADA
 CUENCA : MANTARO
 RIO : MANTARO
 AREA CAPTAC. : 18775 Km2

LATITUD : 12° 31' 41"
 LONGITUD : 74° 55' 16"
 ELEVACION : 2799 m.s.n.m.
 FUENTE : Electroperú S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	PROMEDIO
1965	135.22	412.17	432.94	178.34	102.60	70.02	65.04	57.78	65.73	67.84	61.63	104.63	146.16
1966	224.18	199.85	273.01	112.85	95.08	65.97	51.25	56.40	57.91	97.62	139.92	296.47	139.21
1967	225.59	655.26	576.97	295.93	146.91	114.28	114.78	80.36	84.60	144.18	96.83	147.73	223.62
1968	234.90	272.76	450.35	163.36	95.74	77.51	73.66	72.89	66.93	80.84	133.72	161.85	157.04
1969	128.60	235.93	242.84	257.06	92.12	74.26	60.34	64.61	57.77	74.08	72.18	203.66	130.29
1970	629.10	455.34	312.38	266.12	176.58	91.05	70.41	61.75	88.89	78.64	73.51	185.49	207.44
1971	331.56	462.09	506.06	291.78	107.94	73.70	66.45	63.40	54.45	78.29	71.39	125.65	186.06
1972	341.91	315.23	702.68	531.98	196.52	102.17	82.35	72.91	70.32	89.36	85.54	159.56	229.21
1973	498.15	518.11	754.01	474.82	181.34	111.98	90.37	78.98	105.67	122.51	225.59	233.09	282.89
1974	504.55	763.06	555.49	318.66	152.56	109.56	97.91	87.46	83.04	83.44	88.67	100.26	245.39
1975	191.80	297.11	662.93	211.14	182.47	109.40	78.60	66.61	76.82	85.36	96.41	124.82	181.96
1976	406.02	597.88	513.61	244.26	124.36	99.67	76.60	76.73	102.62	89.56	80.73	81.01	207.75
1977	139.24	322.55	431.16	196.24	129.88	86.41	73.40	58.29	66.06	59.23	183.27	148.40	157.84
1978	291.21	576.93	316.14	180.25	105.23	79.08	74.21	65.61	71.67	69.86	112.90	133.82	173.08
1979	144.10	357.93	548.95	307.02	123.15	82.57	74.20	69.99	68.76	66.46	69.68	76.87	165.81
1980	122.99	185.07	282.96	168.05	72.07	60.39	51.56	48.93	52.22	93.72	111.46	145.74	116.26
1981	210.62	795.34	500.73	187.90	90.90	93.87	74.94	85.98	80.76	95.93	188.64	222.85	219.04
1982	412.87	613.68	372.63	233.14	105.76	90.47	63.84	55.92	59.15	97.48	203.57	180.12	207.39
1983	223.29	125.66	228.83	183.50	83.36	67.82	53.61	67.25	51.58	60.19	50.40	84.79	106.69
1984	190.77	738.44	619.27	360.40	140.97	94.07	84.40	74.80	74.90	82.96	113.62	228.25	233.57
1985	215.91	317.81	375.39	359.92	159.46	124.23	89.49	87.33	92.10	98.34	87.34	140.60	178.99
1986	380.69	684.14	742.35	506.76	329.41	137.05	116.62	123.35	120.69	98.40	100.59	136.17	289.69
1987	535.23	398.11	254.98	133.14	101.94	80.48	68.72	67.89	65.43	63.47	85.20	157.35	167.66
1988	414.56	482.37	346.03	367.79	151.17	91.33	75.51	70.58	59.64	73.78	71.20	105.27	192.44
1989	329.88	438.65	545.44	362.84	153.35	117.14	81.46	76.94	76.16	97.01	106.30	94.57	206.65
1990	209.38	162.24	165.58	102.32	82.64	87.35	67.40	60.58	64.75	99.73	209.51	179.26	124.23
1991	193.44	181.21	384.18	191.25	134.45	89.45	76.85	75.80	83.07	68.61	72.76	63.02	134.51
1992	88.37	72.44	164.48	73.95	48.64	46.55	38.76	42.86	42.20	50.48	46.21	45.87	63.40
1993	120.54	330.85	333.28	231.61	161.52	72.40	58.00	51.72	49.71	85.69	220.78	371.03	173.93
1994	353.44	686.69	508.89	451.82	199.56	112.38	94.25	73.68	82.92	84.57	91.85	90.00	235.84
1995	157.58	180.28	353.75	222.72	88.97	67.65	65.40	61.15	58.41	60.95	74.66	83.01	122.88
1996	196.08	333.02	286.55	268.81	106.48	70.49	64.76	61.69	57.35	60.69	64.09	97.99	139.00
1997	194.70	385.32	278.16	106.40	78.51	65.07	58.68	56.81	55.73	56.80	94.44	137.39	130.67
1998	290.80	402.08	340.13	235.55	94.17	66.97	61.29	54.92	57.32	72.46	78.86	91.67	153.85
1999	145.37	468.02	430.49	295.88	149.26	87.37	78.13	63.49	69.43	83.88	64.18	130.25	172.15
2000	332.36	572.83	555.17	309.07	165.81	100.37	83.69	80.08	76.26	113.36	76.97	142.21	217.35
2001	494.49	435.07	572.53	277.25	131.58	102.50	88.14	73.70	72.73	79.28	109.46	151.50	215.69
2002	119.88	315.41	401.07	240.87	117.53	93.81	80.76	64.96	65.28	87.96	164.90	236.99	165.79
2003	240.73	391.17	491.27	307.75	135.35	100.81	82.54	80.01	70.39	73.89	81.87	149.33	183.76
2004	135.18	284.11	214.23	143.51	84.08	70.58	70.33	66.48	73.81	85.86	109.59	201.17	128.24
2005	225.19	235.10	266.84	175.68	88.57	75.30	76.39	67.96	64.33	73.77	64.59	94.44	125.68
Promedio	267.33	406.28	421.82	256.77	128.49	88.13	74.51	68.99	70.67	82.60	105.73	147.42	176.56
Des. Est.	134.13	184.70	155.66	108.70	48.78	19.44	15.56	13.55	15.93	18.43	48.16	64.58	48.22
Máximo	629.10	795.34	754.01	531.98	329.41	137.05	116.62	123.35	120.69	144.18	225.59	371.03	289.69
Mínimo	88.37	72.44	164.48	73.95	48.64	46.55	38.76	42.86	42.20	50.48	46.21	45.87	63.40

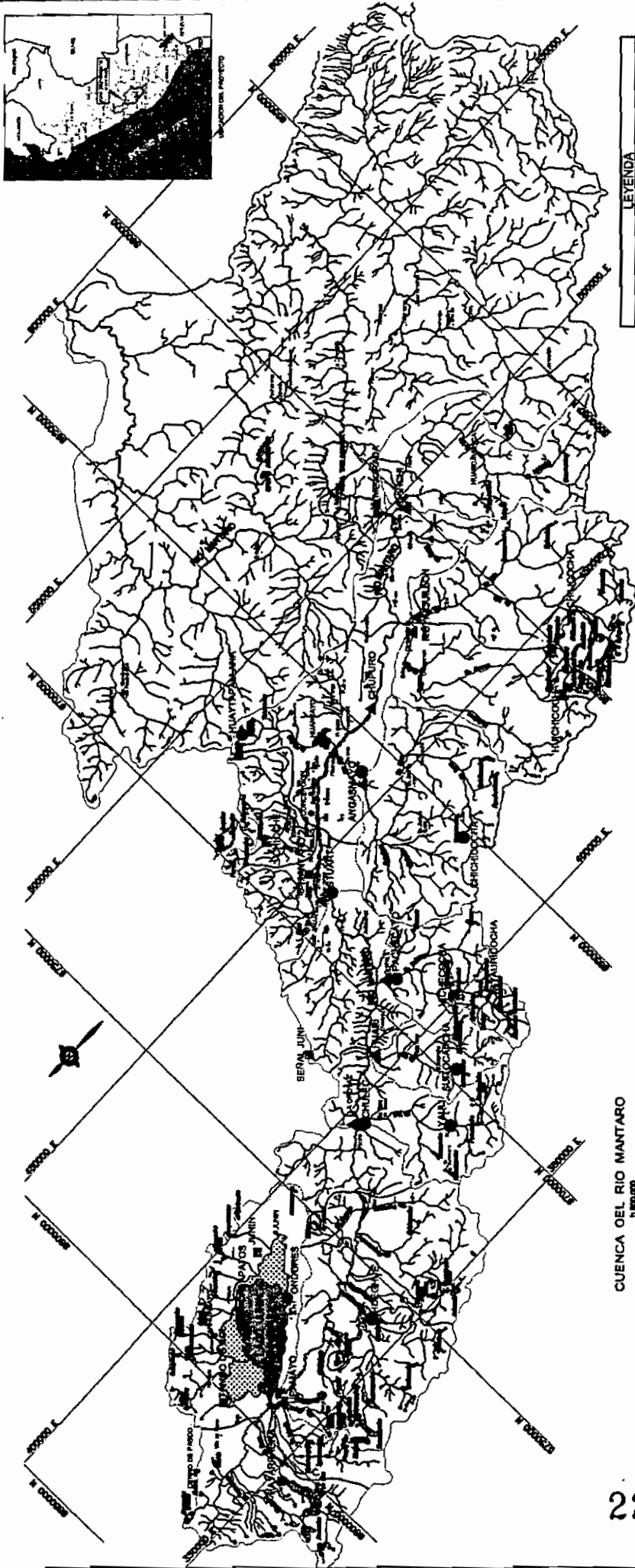
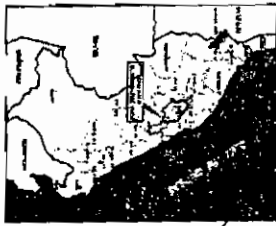
ELECTROPERU S.A.

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m3/seg)

ESTACION : RESIDUAL MEJORADA - PTE. CHULEC
 FUENTE : Electroperú S.A.
 CODIGO : C213257b

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	PROMEDIO
1965	94.78	294.82	287.03	128.14	73.62	55.40	49.29	43.74	45.96	47.48	44.30	66.80	102.61
1966	127.39	134.06	180.30	71.20	64.99	47.43	37.77	42.43	40.27	65.87	95.10	207.16	92.83
1967	156.49	443.65	371.23	229.62	112.58	89.23	91.55	59.48	60.20	95.94	61.84	84.99	154.73
1968	164.40	195.17	304.96	112.39	66.32	54.74	49.58	52.45	44.67	50.46	83.23	118.18	108.05
1969	94.81	152.07	159.78	162.27	64.45	51.60	45.29	47.66	41.33	53.48	51.47	141.49	88.81
1970	450.81	321.82	197.58	179.03	117.48	60.74	50.87	44.45	54.96	49.38	50.10	125.75	141.91
1971	222.87	305.10	361.87	204.50	77.71	52.90	45.03	42.65	33.73	41.81	39.20	78.03	125.45
1972	214.71	236.41	498.13	401.54	125.00	68.53	52.26	48.65	43.37	56.00	51.50	103.06	158.26
1973	351.16	326.03	503.23	391.83	128.58	82.80	59.92	51.94	70.19	63.35	150.77	154.16	194.50
1974	317.40	492.85	268.42	208.87	117.64	82.10	65.00	65.59	50.90	48.97	49.47	53.97	151.77
1975	114.87	199.33	455.74	143.80	105.35	61.66	48.26	44.64	41.68	42.22	60.50	88.44	117.21
1976	277.51	347.14	306.58	158.40	81.71	67.77	49.48	46.74	63.26	44.90	43.50	47.61	127.88
1977	95.35	239.03	297.45	109.80	86.62	51.40	47.00	36.54	35.30	32.42	103.93	71.23	100.51
1978	200.68	338.30	149.83	109.00	59.23	39.67	38.52	42.83	38.33	40.47	72.30	85.19	101.20
1979	88.36	240.29	301.27	134.50	65.96	42.50	37.52	35.10	36.47	31.78	38.97	35.37	90.67
1980	70.84	108.69	195.06	96.34	36.45	34.04	31.05	31.59	29.39	65.54	59.90	79.71	69.88
1981	154.49	575.47	313.43	120.50	64.33	48.91	46.35	48.43	43.40	67.80	124.73	118.43	143.86
1982	225.86	412.93	241.26	145.05	70.37	45.29	40.00	27.41	33.33	59.78	128.92	87.80	126.50
1983	96.41	73.40	132.25	98.40	46.12	38.79	27.94	37.48	29.37	38.10	29.46	47.29	57.92
1984	142.71	527.17	429.22	241.23	86.67	54.80	43.62	41.62	48.54	60.00	79.40	162.44	159.79
1985	149.64	207.76	246.96	231.82	101.82	79.58	61.08	53.31	64.35	58.97	62.47	92.82	117.55
1986	271.48	532.98	500.72	310.46	201.30	94.76	80.63	65.66	70.94	60.35	65.12	93.65	195.67
1987	389.64	266.45	161.74	89.90	75.69	61.88	51.05	46.54	34.55	36.78	51.98	98.75	113.75
1988	258.47	307.20	225.19	220.93	97.41	61.58	54.58	47.48	37.54	50.88	44.91	69.96	123.01
1989	219.04	282.72	387.70	243.29	94.20	74.70	50.78	45.27	48.86	52.78	60.64	49.56	134.13
1990	133.39	85.91	96.93	61.92	52.79	55.48	41.86	36.07	40.82	55.09	127.13	127.33	76.23
1991	126.77	115.61	236.01	122.69	83.31	52.64	44.21	39.13	45.26	43.87	46.91	41.28	83.14
1992	61.67	52.29	101.12	52.44	33.43	30.78	26.72	26.48	27.46	31.12	30.17	29.27	41.91
1993	86.68	206.32	217.01	153.21	95.22	46.12	39.06	32.72	28.24	42.28	111.63	235.57	107.84
1994	212.10	456.50	315.26	248.84	105.73	61.23	56.56	50.48	52.82	51.86	52.77	45.28	142.45
1995	112.64	131.49	243.49	142.42	60.69	48.79	44.10	44.27	39.09	40.93	52.61	54.82	84.61
1996	147.11	253.71	205.17	172.84	68.94	46.36	42.87	41.17	41.45	41.39	43.50	67.05	97.63
1997	141.22	260.95	175.31	69.56	52.71	45.74	40.25	39.17	42.69	42.48	70.20	90.88	89.26
1998	195.07	238.24	219.91	146.03	59.58	43.47	38.77	36.43	42.43	46.55	48.90	68.63	98.67
1999	106.79	302.62	285.45	197.14	98.40	56.28	53.74	44.92	47.18	52.84	39.37	86.77	114.29
2000	210.18	399.24	383.11	192.49	98.90	61.22	52.21	45.73	47.90	72.63	49.42	81.34	141.20
2001	324.27	270.03	374.09	174.90	88.01	67.39	60.72	52.72	55.53	56.23	67.82	90.92	140.22
2002	77.61	244.46	277.70	157.85	80.52	62.01	57.61	47.82	50.09	58.86	94.16	148.28	113.08
2003	165.98	283.39	349.76	224.88	89.52	63.91	53.46	52.44	47.64	46.35	54.30	100.66	127.69
2004	94.81	211.32	158.61	106.58	59.01	49.05	48.17	44.84	50.92	54.69	67.19	135.48	90.06
2005	151.66	148.25	185.72	124.41	58.43	45.95	44.73	40.48	39.63	49.26	41.25	64.93	82.89
Promedio	178.00	273.69	275.65	168.07	83.09	57.05	48.77	44.50	44.88	51.27	65.88	93.42	115.36
Des. Est.	91.94	128.84	108.10	78.45	30.11	14.48	12.17	8.54	10.65	12.31	29.17	44.36	33.04
Máximo	450.81	575.47	503.23	401.54	201.30	94.76	91.55	65.66	70.94	95.94	150.77	235.57	195.67
Mínimo	61.67	52.29	96.93	52.44	33.43	30.78	26.72	26.48	27.46	31.12	29.46	29.27	41.91

A N E X O N º V I I
P L A N O S



CUENCA DEL RIO MANTARO
1:100000
Escala gráfica

2225

LEYENDA

	MODELO	DESCRIPCION
	LIMITES DE SUBCUENCAS	
	LIMITES DE LA CUENCA DEL MANTARO	
	CIUDADES	
	LAGUNAS	
ESTACIONES HIDROMETEOROLOGICAS		
MODELO TIPO DE ESTACION		
	P	PRECIPITACION
	R	HIPOMETRICA
	M1	METEOROLOGICA TIPO 1
	M2	METEOROLOGICA TIPO 2
	P+R	HIPOMETRICA + PRECIPITACION
	M+R	METEOROLOGICA + HIPOMETRICA
	P+R+M	HIPOMETRICA + HIPOMETRICA
	N	NIVEL DEL LAJO JARIN

Metropar S.A.

PROYECTO: MODERNIZACION DEL SISTEMA HIDROMETEOROLOGICO Y DEL SISTEMA DE CONTROL DE LAS LAGUNAS REGULADORAS DEL COMPLEJO HIDROELECTRICO MANTARO

TITULO: MODERNAS ESTACIONES HIPOMETEOROLOGICAS CUENCA RIO MANTARO

FECHA: 1997

PROYECTO: EA-JIBI-01

FECHA: NOY 2003

REVISOR: GARCIA

PLANO PERIMETRICO Y DE UBICACION

RED HIDROMETEOROLOGICA BASICA

N° ESTACIONES	UBICACION	Coord. UTM (E)	Coord. UTM (N)	Alt. m. s.n.m.	ESTAC.	AREA mm
1	UPAMAYO	672618.8	380760.8	4113.0	M+R	847
2	HUACAPALE	678707.8	380706.8	4184.0	P	3+4
3	BERAL JARIN (*)	671804.8	434804.8	4384.0	M1	847
4	HAYABALBA (*)	660218.4	347381.8	4394.0	M1	847
5	CAMPASITEN (*)	674481.4	385894.0	4104.0	N	302
6	PUNTE OVALLE	672714.4	389381.8	3710.0	P+R	4+4
7	HUAR	671570.8	408804.0	3877.8	R	4+4
8	PACHACAYO	669207.8	430804.0	3484.0	P+R	847
9	PUNTE STUART	666088.8	380077.4	4481.0	P+R	3+0
10	YALUPICOCHA (*)	670434.8	377414.4	4384.0	P	3+4
11	YALU (*)	669178.0	457414.4	4344.0	M1	847
12	MANTARO	661650.8	507474.8	3830.0	M1	847
13	MEJORADA	661387.8	507824.0	3850.0	R	4+4
14	MEJORADA	661387.8	507824.0	3850.0	R	4+4
15	NOTA-GALLON	662887.8	484077.0	3880.0	R+R	4+4

**ESTUDIO HIDROLÓGICO DEL SISTEMA
HÍDRICO DE LA CUENCA ASOCIADA A LA
C.H. YUNCAN**

MAYO 2006

2226

CONTENIDO

	Página
1.0 PRESENTACIÓN	1
2.0 ANTECEDENTES	1
3.0 OBJETIVOS	1
4.0 METODOLOGÍA DE CÁLCULO PARA CAUDALES NATURALIZADOS	2
5.0 ACTUALIZACIÓN DE VOLÚMENES DE LOS EMBALSES DE REGULACIÓN.....	9
6.0 ACTUALIZACIÓN DE LA PRECIPITACIÓN	9
7.0 ACTUALIZACIÓN DE LOS CAUDALES REGULADOS	9
8.0 CÁLCULO DE LA PRECIPITACIÓN AREAL EN LAS CUENCAS.....	10
9.0 ANÁLISIS DE CONSISTENCIA DE LAS PRECIPITACIONES	10
10.0 ANÁLISIS DE CONSISTENCIA DE LOS CAUDALES NATURALIZADOS	10
11.0 CONCLUSIONES Y RECOMENDACIONES	10

ANEXOS

INFORMACIÓN HIDROLOGICA PARA EL PERIODO 1965 – 2005

A.- DIAGRAMAS TOPOLÓGICOS

Diagrama Topológico de la Cuenca del Río Paucartambo

B.- CAUDALES NATURALIZADOS EN CADA SUB-SISTEMA HÍDRICO

Caudales Naturales del Sub-sistema Yuncán-Yaupi

- QN-901: Caudal de Ingreso al Embalse Jaico + Canal Colector
- QN-902: Caudal de Ingreso al Embalse Altos Machay + Laguna Lechecochoa
- QN-903: Caudal de Ingreso al Embalse Matacocha
- QN-904: Caudal Incremental entre los embalses Matacocha y Huangush Alto, Incluyendo Canal Ushapata
- QN-905: Caudal Incremental entre Huangush Alto y Bajo
- QN-906: Caudal Incremental entre las Tomas Huallamayo, Uchuhuerta y Yuncán
- QN-907: Caudal de Ingreso a la Toma Manto
- QN-908: Caudal Incremental entre Lagunas y Toma Uchuhuerta

- QN-909: Caudal Incremental entre Victoria I y Huallamayo
- QN-910: Caudal de Ingreso al Embalse Victoria I
- QN-911: Caudal de Ingreso al Embalse Pacchapata

C.- VOLÚMENES DE LOS EMBALSES DE REGULACIÓN

Sub-sistema Yuncán-Yaupi

- Embalse Jaico
- Embalse Altos Machay
- Embalse Matacocha
- Embalse Huangush Alto
- Embalse Huangush Bajo
- Embalse Victoria I
- Embalse Pacchapata

D.- CAUDALES REGULADOS

Sub-sistema Yuncán-Yaupi

- Yuncán
- Huangush Bajo
- Jaico
- Altos Machay
- Victoria II
- Pacchapata

F.- VOLÚMENES MÁXIMOS, MÍNIMOS Y ÚTILES

F.1.- Volúmenes Máximos, Mínimos y Útiles de Embalses

Sub-sistema Yuncán-Yaupi

F.2.- Volúmenes Máximos, Mínimos y Útiles de Otros Embalses de Regulación

Sub-sistema Yaupi

G.- CUADROS Y CURVAS DE ALTURA – ÁREA – VOLUMEN DE LOS EMBALSES

Sub-sistema Yuncán-Yaupi

H.- PRECIPITACIÓN MENSUAL

Precipitación Mensual del Sub-sistema Yuncán-Yaupi

I.- PRECIPITACIÓN AREAL

Precipitación Areal del Sub-sistema Yuncán-Yaupi

J.- GRÁFICOS DE DOBLE MASA DE PRECIPITACIONES

Estaciones Pluviométricas del Sub-sistema Yuncán-Yaupi

K.- GRÁFICOS DE DOBLE MASA Y CUADROS DE CONSISTENCIA EN LA MEDIA
DE LOS CAUDALES NATURALIZADOS

Sub-sistema Yuncán-Yaupi

L.- CARACTERÍSTICAS DE LOS ELEMENTOS HIDRÁULICOS DE LAS CC.HH.

C.H. Yuncán

M.- ESQUEMA HIDRÁULICO Y TIEMPO DE DESPLAZAMIENTO DEL AGUA DESDE
LOS EMBALSES HASTA LAS CC.HH.

Sub-sistema Yuncán-Yaupi

N. PLANOS

Nº PGU-01: Plano General de Ubicación

Nº 170-29: Polígonos de Thiessen (Sistema Yuncán-Yaupi)

Nº 170-32: Ubicación de Estaciones Hidrológicas (Sistema Yuncán-Yaupi)

Nº 1 : Mapa Hidrológico.

ESTUDIO HIDROLÓGICO DEL SISTEMA HÍDRICO DE LA CUENCA ASOCIADA A LA C.H. YUNCAN

1965-2005

1.0 PRESENTACIÓN

El propósito del presente documento es presentar al Comité de Operación Económica del Sistema Interconectado Nacional (COES-SINAC) el Estudio Hidrológico del Sistema Hídrico de las Centrales Hidroeléctricas Yuncán y Yaupi para el período 1965-2005 (en adelante "Estudio Hidrológico"), cumpliendo con lo estipulado en el Procedimiento Técnico del COES N° 26 "Cálculo de la Potencia Firme" (en adelante "Procedimiento 26") aprobado mediante Resolución Ministerial N° 344-2004-MEM/DM del 09 de setiembre de 2004.

El Sistema Hídrico en mención abarca las cuencas de los ríos Huachón y Paucartambo y son aprovechadas con fines hidroenergéticos en las centrales hidroeléctricas de Yuncán a cargo de ENERSUR y Yaupi a cargo de ELECTROANDES.

En los numerales 4.0 al 11.0, del presente Estudio Hidrológico, se presenta la metodología seguida para el cálculo de caudales naturalizados, actualización de los volúmenes, precipitación, caudales regulados, cálculo de la precipitación areal y los análisis de consistencia de las precipitaciones y de las series de caudales naturalizados.

En los Anexos adjuntos, se presentan los diagramas topológicos, caudales naturalizados (1965-2005), datos actualizados hasta el 2005 de volúmenes mensuales de los embalses, caudales regulados y precipitación. Asimismo, se presentan los volúmenes máximos, mínimos y útiles de los embalses, precipitación areal, gráficos de doble masa de precipitaciones y caudales naturalizados, cuadros de consistencia en la media de los caudales naturalizados, características de los elementos hidráulicos de las CC.HH., esquemas hidráulicos y tiempo de desplazamiento del agua desde los embalses hasta las CC.HH.

También se incluyen los planos de polígonos de Thiessen, ubicación de las estaciones hidrológicas y estructuras hidráulicas.

De acuerdo a lo establecido en el Numeral 7.3.1 del Procedimiento 26, el Estudio Hidrológico ha sido elaborado por ELECTROANDES en coordinación con ENERSUR.

2.0 ANTECEDENTES

La C.H. Yuncán inició su operación comercial a partir del 24 de agosto del 2005.

El COES-SINAC, por ley, debe presentar a la Gerencia Adjunta de Regulación de Tarifas del OSINERG (OSINERG-GART) los estudios económicos, información técnica, entre otra información necesaria para que ésta determine los precios en barra de potencia y energía del sistema interconectado.

Para el cálculo de costos marginales del sistema interconectado, la GART necesita la información hidrológica de las cuencas que aprovechan las empresas generadoras.

3.0 OBJETIVOS

Los objetivos del presente documento son:

- a) Actualizar las series de los recursos hídricos, almacenamientos y de los elementos hidráulicos debidamente sustentados del sistema hídrico de la C.H. Yuncán para el período 1965-2005.
- b) Presentar el balance hídrico en cada embalse y la metodología seguida para calcular la serie de caudales naturalizados en los diferentes embalses y estructuras de toma que conforman el Sistema Hídrico de la C.H. Yuncán.

4.0 METODOLOGÍA DE CÁLCULO DE CAUDALES NATURALIZADOS

4.1 PREMISAS

Para calcular la serie de caudales naturalizados, se consideran las siguientes premisas:

- a) Existen subcuencas en cuyas salidas se miden descargas naturales o reguladas. Para tales subcuencas se han calculado sus aportes naturales;
- b) Las Descargas específicas o Módulos Anuales de caudales ($l/s/km^2$), son calculadas, para lo cual previamente se determina las áreas de drenaje para cada subcuenca;
- c) La cuencas del sistema hídrico tiene el área siguiente:

CUENCA	AREA ² (Km ²)	PUNTO DE CONTROL
YUNCAN - YAUPI (*)	1 583,50	TOMA YUNCAN

(*) ADICIONALMENTE PARA LA C.H. YAUPI SE CAPTAN LAS AGUAS DEL RIO MANTO, CUYA AREA DE DRENAJE ES 134,50 Km².

- d) Subcuencas con características topográficas, geológicas y climatológicas similares tienen caudales específicos iguales o similares.

Se describe el procedimiento seguido para el cálculo de caudal natural.

4.2 SISTEMA YUNCAN-YAUPI

El Sistema Yuncán-Yaupi comprende la cuenca alta de los ríos Huachón y Paucartambo. En la cabecera de estas cuencas se ubican los principales embalses de regulación.

En la Toma Yuncán, se cuenta con una estación hidrométrica. Por otra parte, dentro del sistema, la Quebrada Huangush-Matacocha constituye una subcuenca que también cuenta con una estación hidrométrica en su salida. Estas disponibilidades de datos, han permitido calcular caudales naturales en las respectivas estaciones hidrométricas, tal como se describe a seguir:

4.2.1 CAUDAL NATURAL EN LA TOMA YUNCÁN

a).- Consideraciones:

- Se dispone de datos de caudal regulado en la Estación Yuncán (Q_{RY});
- Se conocen las fechas de inicio de operación de todos los embalses del sistema;
- Las pérdidas en los embalses tales como evaporación, infiltración, etc., son despreciables;
- En el cálculo se considera el aporte del Río Santa Isabel;

- En el cálculo no se considera el aporte de la subcuenca del Río Manto.

b).- Ecuaciones de Naturalización:

- PERIODO 1965 A 1967(JUN):

En este período no había regulación en el sistema, por lo tanto:

$$Q_{N-YUNCAN} = Q_{RY} , \quad (7)$$

donde,

$Q_{N-YUNCAN}$: Caudal natural que ingresa a la Toma Yuncán.

- DESDE 1967(JUL):

$$Q_{N-YUNCAN} = Q_{RY} + \sum \left(\frac{\Delta V}{\Delta t} \right)_E , \quad (8)$$

donde,

$\sum \left(\frac{\Delta V}{\Delta t} \right)_E$: Variación de volumen de todos los embalses del sistema

Yuncán-Yaupi, es decir, Jaico, Altos Machay, Huangush Alto, Huangush Bajo, Pacchapata, Matacocha y Victoria I, según sus fechas de inicio de operación.

Conociendo el caudal natural para todo el período, se calculó el caudal específico del área de drenaje del sistema, cuya extensión es 1 583,5 km².

4.2.2 CAUDAL NATURAL EN LA QUEBRADA HUANGUSH-MATACOCHA

a).- Consideraciones:

- Se dispone de datos de caudal regulado en el vertedero Huangush Bajo (Q_{RVHB});
- Se conocen las fechas de inicio de operación de los embalses Huangush Alto, Huangush Bajo y Matacocha;
- Las pérdidas en los embalses, tales como evaporación, infiltración, etc., se consideran despreciables.

b).- Ecuaciones de Naturalización:

- PERIODO 1965 A 1967(JUN):

En este período no había regulación en la quebrada, por lo tanto:

$$Q_{N-qhm} = Q_{RVHB} , \quad (9)$$

donde,

Q_{N-qhm} : Caudal natural aportado por la Quebrada Huangush-Matacocha;

Q_{RVHB} : Caudal registrado por el vertedero Huangush Bajo.

- PERIODO 1967(JUL-AGO):

$$Q_{N-qhm} = Q_{RVHB} + \left(\frac{\Delta V}{\Delta t}\right)_{HA}, \quad (10)$$

donde,

$\left(\frac{\Delta V}{\Delta t}\right)_{HA}$: Variación de volumen del Embalse Huangush Alto.

- PERIODO 1967(SET) A 1980(SET):

$$Q_{N-qhm} = Q_{RVHB} + \left(\frac{\Delta V}{\Delta t}\right)_{HA} + \left(\frac{\Delta V}{\Delta t}\right)_{HB}, \quad (11)$$

donde,

$\left(\frac{\Delta V}{\Delta t}\right)_{HB}$: Variación de volumen del Embalse Huangush Bajo.

- DESDE 1980(OCT):

$$Q_{N-qhm} = Q_{RVHB} + \left(\frac{\Delta V}{\Delta t}\right)_{HA} + \left(\frac{\Delta V}{\Delta t}\right)_{HB} + \left(\frac{\Delta V}{\Delta t}\right)_{MAT}, \quad (12)$$

donde,

$\left(\frac{\Delta V}{\Delta t}\right)_{MAT}$: Variación de volumen del Embalse Matacocha.

Similarmente, con datos de Q_{N-qhm} , para todo el período, se calculó el caudal específico del área de drenaje de la Quebrada Huangush-Matacocha, cuya extensión es 25,1 km².

4.2.3 SUBCUENCA DEL EMBALSE JAICO

Al embalse Jaico aportan el área de captación de la propia laguna y un área adicional contigua a la laguna por medio del Canal Colector. Sin embargo, en este trabajo los caudales naturales se han calculado por separado para la Laguna y para el Canal Colector, tal como se describe a continuación:

4.2.3.1 LAGUNA JAICO

- PERIODO 1965 A 1973:

No había regulación en la subcuenca, por lo tanto:

$$Q_{N-lagJ} = Q_{RVJ}, \quad (13)$$

donde,

Q_{N-lagJ} : Caudal natural que aporta el área de drenaje de la Laguna Jaico;

Q_{RVJ} : Caudal registrado por el vertedero Jaico.

- PERIODO 1974 A 1983(OCT):

Se extendió el caudal registrado por el vertedero Jaico mediante una correlación lineal con la precipitación mensual promedio sobre la subcuenca.

- PERIODO 1983(NOV) A 1986(DIC):

$$Q_{N-lagnJ} = Q_{RCJ} + \left(\frac{\Delta V}{\Delta t}\right)_J, \quad (14)$$

donde,

Q_{RCJ} : Caudal regulado, estimado a partir de la abertura de la compuerta;

$\left(\frac{\Delta V}{\Delta t}\right)_J$: Variación de volumen del Embalse Jaico.

- DESDE 1987:

$$Q_{N-lagnJ} = Q_{RCJ} + \left(\frac{\Delta V}{\Delta t}\right)_J - Q_{N-canalJ}, \quad (15)$$

donde,

$Q_{N-canalJ}$: Caudal natural aportado por el Canal Colector, medido en el canal.

Obtenido el caudal natural para el período 1965-1986(DIC), se calculó el caudal específico para el área de drenaje de la Laguna Jaico cuya extensión es 7,2 km².

4.2.3.2 CANAL COLECTOR JAICO

- PERIODO 1965 A 1986(DIC):

En vista de que la subcuenca de la laguna y la del Canal Colector, de área 2,71 km², tienen características similares, el aporte del canal Colector Jaico ($Q_{N-canalJ}$), para este período, se calculó a partir del caudal específico del área de drenaje de la laguna.

- DESDE 1987:

A partir de esta fecha, $Q_{N-canalJ}$ es un dato medido antes de la entrega al embalse.

4.2.3.3 CAUDAL DE INGRESO AL EMBALSE JAICO + COLECTOR JAICO

Para todo el período de análisis, el caudal de ingreso al embalse Jaico, incluyendo el aporte del Canal Colector Jaico Q_{N-901} , se calculó con la siguiente fórmula:

$$Q_{N-901} = Q_{N-lagnJ} + Q_{N-canalJ} \quad (16)$$

o, sustituyendo (15) en (16), con su equivalente

$$Q_{N-901} = Q_{RCJ} + \left(\frac{\Delta V}{\Delta t}\right)_j \quad (16-a)$$

4.2.4 SUBCUENCA DEL EMBALSE ALTOS MACHAY Y DE LA LAGUNA LECHECOCHA

Las subcuencas del Embalse Altos Machay y de la Laguna Lechecochoa están interconectadas por el sifón invertido. Sin embargo, los caudales naturales se han calculado por separado para cada subcuenca y luego se han sumado, tal como se describe a continuación:

4.2.4.1 SUBCUENCA DEL EMBALSE ALTOS MACHAY

- PERIODO 1965 A 1971(OCT):

Para este período, el caudal de ingreso a la Laguna Altos Machay ($Q_{N-AMACHAY}$) se calculó a partir del caudal específico de la Quebrada Huangush-Matacocha.

- PERIODO 1971(NOV) A 1978(ENE):

Hay regulación en el Embalse Altos Machay. El caudal $Q_{N-AMACHAY}$ se calculó con la siguiente fórmula:

$$Q_{N-AMACHAY} = Q_{RAM} + \left(\frac{\Delta V}{\Delta t}\right)_{AM} \quad (17)$$

donde,

Q_{RAM} : Caudal regulado, estimado a partir de la abertura de las compuertas;

$\left(\frac{\Delta V}{\Delta t}\right)_{AM}$: Variación de volumen del Embalse Altos Machay.

- DESDE 1978(FEB):

$$Q_{N-AMACHAY} = Q_{RAM} + \left(\frac{\Delta V}{\Delta t}\right)_{AM} - Q_{SIFON} \quad (18)$$

donde,

Q_{SIFON} : Caudal natural aportado por la Laguna Lechecochoa a través del sifón invertido, medido antes de la entrega al embalse.

4.2.4.2 SUBCUENCA DE LA LAGUNA LECHECOCHA

En esta subcuenca no existe regulación. En consecuencia, el caudal natural de ingreso a la Laguna Lechecochoa ($Q_{N-LECHEC}$), para todo el

período, se estimó a partir del caudal específico de la Quebrada Huangush-Matacocha.

4.2.4.3 CAUDAL DE INGRESO AL EMBALSE ALTOS MACHAY Y LA LAGUNA LECHECOCHA

El caudal de ingreso al Embalse Altos Machay + Laguna Lechecocho (Q_{N-902}), para todo el período, se ha calculado así:

$$Q_{N-902} = Q_{N-AMACHAY} + Q_{N-LECHEC} \quad (19)$$

4.2.5 SUBCUENCA DEL EMBALSE MATACOCHA

El caudal de ingreso al Embalse Matacocha (Q_{N-903}), para todo el período, se estimó a partir del caudal específico de la Quebrada Huangush-Matacocha.

4.2.6 SUBCUENCA DEL EMBALSE HUANGUSH ALTO

El caudal incremental entre los embalses Matacocha y Huangush Alto, incluyendo el Canal Ushapata (Q_{N-904}), para todo el período, se estimó a partir del caudal específico de la Quebrada Huangush-Matacocha.

4.2.7 SUBCUENCA DEL EMBALSE HUANGUSH BAJO

El caudal incremental entre los embalses Huangush Alto y Huangush Bajo (Q_{N-905}), para todo el período, se estimó a partir del caudal específico de la Quebrada Huangush-Matacocha.

4.2.8 SUBCUENCA ENTRE LAS TOMAS HUALLAMAYO, UCHUHUERTA Y YUNCAN

Para esta subcuenca de 272,7 km² de extensión, que incluye la cuenca del Río Santa Isabel, el caudal natural Q_{N-906} , para todo el período, se estimó a partir del caudal específico del área de drenaje de la Estación Yuncán.

4.2.9 SUBCUENCA ENTRE LOS EMBALSES Y LAGUNAS DE LA CUENCA ALTA DEL RÍO HUACHÓN Y LA TOMA UCHUHUERTA

Para la subcuenca del Río Huachón, aguas arriba de la Toma Uchuhuerta, el caudal natural Q_{N-UCHU} se estimó a partir del caudal específico del área de drenaje de la Estación Yuncán. De este modo, el caudal incremental entre los embalses y lagunas de la zona alta del Río Huachón y la Toma Uchuhuerta (Q_{N-908}), para todo el período, se calculó así:

$$Q_{N-908} = Q_{N-UCHU} - \sum Q_{NI} \quad (20)$$

donde,

$\sum Q_{NI}$: Aporte de los embalses y lagunas ubicados en la cabecera de la cuenca alta del Río Huachón, es decir, Matacocha, Huangush Alto, Huangush Bajo, Altos Machay + Lechecocho, Jaico y Pacchapata.

4.2.10 SUBCUENCA ENTRE LA LAGUNA VICTORIA I DE LA CUENCA ALTA DEL RIO PAUCARTAMBO Y LA TOMA HUALLAMAYO

Para la subcuenca alta del Río Paucartambo, aguas arriba de la Toma Huallamayo, el caudal natural Q_{N-HLLM} se estimó a partir del caudal específico del área de drenaje de la Estación Yuncán. Por tanto, el caudal incremental entre el Embalse Victoria I y la Toma Huallamayo (Q_{N-909}), para todo el período, se determinó así:

$$Q_{N-909} = Q_{N-HLLM} - Q_{N-910} \quad (21)$$

donde,

Q_{N-910} : Caudal natural de ingreso al Embalse Victoria I.

4.2.11 SUBCUENCA DEL EMBALSE VICTORIA I

– PERIODO 1965 A 1997(MAR):

Para este período no había regulación; entonces, el caudal de ingreso a la Laguna Victoria I (Q_{N-910}) se estimó a partir del caudal específico de la Quebrada Huangush-Matacocha.

– DESDE 1997(ABR):

Se inicia la regulación del Embalse Victoria I, y el caudal $Q_{N-VIC II}$ se calculó con la siguiente fórmula:

$$Q_{N-VIC II} = Q_{RVII} + \left(\frac{\Delta V}{\Delta t}\right)_{VI} \quad (22)$$

donde,

Q_{RVII} : Caudal regulado, medido en el vertedero ubicado aguas abajo de la Laguna Victoria II;

$\left(\frac{\Delta V}{\Delta t}\right)_{VI}$: Variación de volumen del Embalse Victoria I.

El caudal de ingreso al Embalse Victoria I (Q_{N-910}), se estimó a partir del caudal específico del área de drenaje de la Estación Victoria II.

4.2.12 SUBCUENCA DEL EMBALSE PACCHAPATA

La subcuenca del Embalse Pacchapata está interconectada con la Laguna Patococha por medio de una tubería. En consecuencia, para los cálculos se ha considerado un área de drenaje de 1,73 km². El caudal se calculó de la siguiente manera:

– PERIODO 1965 A 1993(OCT):

Para este período no había regulación, por lo que el caudal de ingreso a la Laguna Pacchapata (Q_{N-911}) se estimó a partir del caudal específico de la Quebrada Huangush-Matacocha.

– DESDE 1993(NOV):

Se inicia la regulación del Embalse Pacchapata, y el caudal Q_{N-911} se calculó así:

$$Q_{N-911} = Q_{RPCH} + \left(\frac{\Delta V}{\Delta t}\right)_{PCH} , \quad (23)$$

donde,

Q_{RPCH} : Caudal regulado, estimado a partir de la abertura de compuerta;

$\left(\frac{\Delta V}{\Delta t}\right)_{PCH}$: Variación de volumen del Embalse Pacchapata.

5.0 ACTUALIZACIÓN DE VOLÚMENES DE LOS EMBALSES DE REGULACIÓN

En todos los embalses de regulación, a partir de la información de niveles se obtienen las variaciones de volúmenes de almacenamiento.

Las mediciones de niveles se realizan diariamente, a excepción del embalse Pacchapata que se mide semanalmente y cada fin de mes.

Para el año 2005, en ningún embalse se han tenido dificultades para la medición de niveles, siendo éstas consistentes y completas, lo cual se refleja en los volúmenes obtenidos cada fin de mes para cada uno de los embalses del sistema hídrico.

6.0 ACTUALIZACIÓN DE LA PRECIPITACIÓN

Las precipitaciones mensuales son calculadas a partir de las mediciones diarias en las estaciones pluviométricas operativas ubicadas en las cuencas del sistema hídrico.

Se ha efectuado el diagnóstico de los registros de las precipitaciones mediante histogramas y correlaciones para grupos de estaciones con características fisiográficas similares. En los casos que se han detectado datos inconsistentes, se ha procedido a corregirlos mediante correlaciones con estaciones cercanas y en los casos de registros incompletos se ha procedido a extender los registros, considerando también correlaciones con estaciones cercanas.

La estación pluviométrica de Puagmaray, correspondiente a la cuenca del río Paucartambo, ha sido puesta en operación desde diciembre de 1997. Debido a su ubicación estratégica y la consistencia de su data histórica, se ha visto por conveniente incluirla en el presente estudio, para lo cual se ha extendido su registro de precipitaciones desde enero de 1965 hasta noviembre de 1997, mediante Regresión Simple tomando como base la estación de Huangush Bajo.

7.0 ACTUALIZACIÓN DE LOS CAUDALES REGULADOS

Cabe indicar que, la data de todas las estaciones no se tienen completamente procesadas, razón por la cual para el cálculo de los caudales naturalizados, cuya metodología se muestra en el numeral 4.0 del presente estudio, solamente se utilizan las siguientes estaciones hidrométricas sometidas a regímenes de regulación: Yuncán, Huangush Bajo, Jaico, Altos Machay, Victoria II y Pacchapata.

8.0 CÁLCULO DE LA PRECIPITACIÓN AREAL EN LAS CUENCAS

Con los datos de precipitación para el período 1965-2005, se calcularon las precipitaciones medias para las cuencas del sistema hídrico empleando el método de **Polígonos de Thiessen**. En este plano también se muestran los factores de influencia de cada estación pluviométrica.

9.0 ANÁLISIS DE CONSISTENCIA DE LAS PRECIPITACIONES

Las precipitaciones corregidas y extendidas de cada estación, fueron sometidas a análisis de consistencia por el método de doble masa, tomando como estación modelo el promedio de todas las estaciones del sistema. En ningún caso se ha detectado quiebres significativos, tal como se muestra en los gráficos del Anexo J.

10.0 ANÁLISIS DE CONSISTENCIA DE CAUDALES NATURALIZADOS

Los caudales naturalizados calculados para el Sistema Hídrico, fueron sometidos a análisis de consistencia por el método de doble masa. La serie de caudales naturales, expresado como lámina escurrida, se correlacionó con la precipitación areal de la cuenca calculada por el método de Polígonos de Thiessen. De manera similar que para el caso de las precipitaciones, en ningún caso se ha detectado quiebres significativos, tal como se muestra en los gráficos del Anexo K.

Adicionalmente, para los caudales naturalizados en la estación hidrométrica de Yuncán, se ha efectuado el análisis de consistencia estadística en la media, cuyos resultados no muestran ningún salto, tal como se puede apreciar en los cuadros del Anexo K.

11.0 CONCLUSIONES Y RECOMENDACIONES

- 1.- El contenido y estructura del presente Estudio, para el periodo 1965-2005, está elaborado de acuerdo a lo establecido en el Procedimiento 26 aprobado mediante R.M. N° 344-2004-MEM/DM.
- 2.- Se ha actualizado para el período 1965 – 2005, los volúmenes en los embalses, las series de precipitaciones y naturalización de caudales.
- 3.- Las series de precipitación mensual en el presente documento, son las medidas en la Red de Estaciones Pluviométricas Operativas de ELECTROANDES S.A.
- 4.- Debido a su ubicación estratégica y la consistencia de su data histórica, se ha visto por conveniente incluir en el presente estudio la estación pluviométrica de Puagmaray, correspondiente a la cuenca del río Paucartambo, la misma que ha sido puesta en operación desde diciembre de 1997.
- 5.- Los gráficos de doble masa de las precipitaciones de las estaciones operativas no presentan quiebres, por lo tanto se consideran estaciones con información consistente.
- 6.- Los gráficos de doble masa de las series de caudales naturalizados para Yuncán-Yaupi, no presentan quiebres. Adicionalmente, del análisis de consistencia estadística en la media para la estación hidrométrica de Yuncán no presenta saltos. Por lo tanto los caudales naturalizados también se consideran series consistentes.
- 7.- Aún cuando los resultados obtenidos en el presente estudio y en los estudios hidrológicos anteriores son satisfactorios, cabe indicar que a la fecha se continúa con el procesamiento de la data de campo, depuración de la base de datos y

reactivación de estaciones hidrométricas y pluviométricas, las cuales proporcionarán datos que servirán para corroborar y de ser el caso reajustar y/o recalculer los caudales naturalizados presentados.

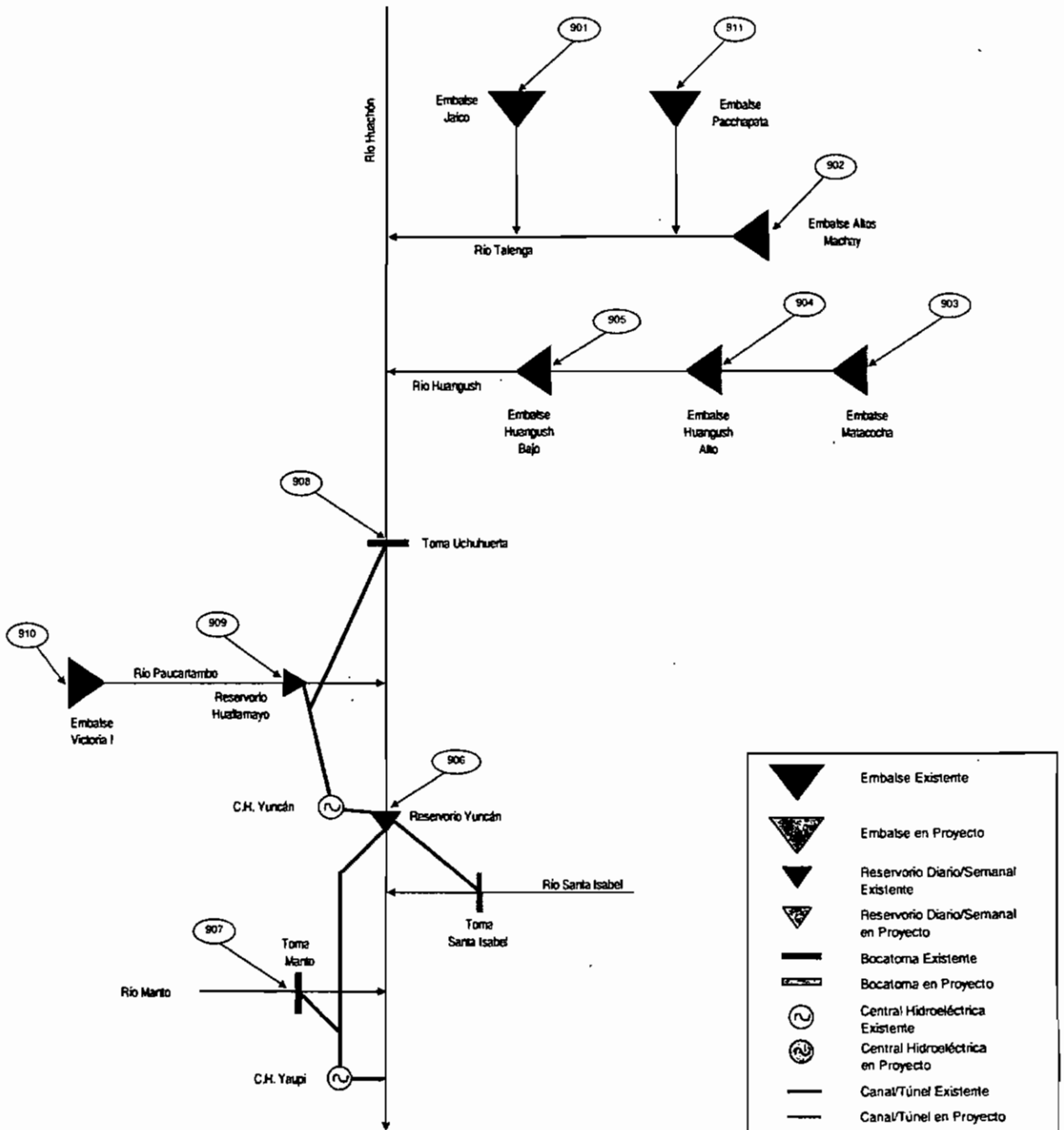
INFORMACIÓN HIDROLOGICA PARA EL PERIODO 1965 – 2005

A.- DIAGRAMAS TOPOLOGICOS

DIAGRAMA TOPOLOGICO

CUENCA DE LOS RIOS HUACHON Y PAUCARTAMBO

900



B.- CAUDALES NATURALIZADOS DEL SISTEMA YAUPI

QN-901

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m³/s)
Caudal de ingreso al Embalse Jaico + Canal Colector Jaico

Cuenca: RIO PAUCARTAMBO
 Fuente: ELECTROANDES S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	0.527	0.651	1.580	0.649	0.260	0.177	0.125	0.163	0.337	0.525	0.646	0.590	0.519
1966	0.671	0.870	0.638	0.522	0.454	0.236	0.191	0.157	0.248	0.598	0.572	0.772	0.494
1967	0.928	1.413	1.874	0.795	0.305	0.142	0.119	0.109	0.186	0.510	0.443	0.591	0.618
1968	0.927	1.153	0.831	0.459	0.290	0.170	0.102	0.141	0.212	0.464	0.496	0.506	0.479
1969	0.538	0.702	0.572	0.494	0.293	0.266	0.170	0.132	0.263	0.415	0.589	0.603	0.420
1970	0.690	0.671	0.623	0.471	0.352	0.181	0.144	0.107	0.223	0.301	0.469	0.525	0.396
1971	0.623	0.579	0.720	0.625	0.244	0.134	0.107	0.102	0.104	0.349	0.374	0.532	0.374
1972	0.590	0.516	0.785	0.522	0.264	0.158	0.112	0.112	0.179	0.423	0.494	0.538	0.391
1973	0.769	0.955	0.668	0.563	0.261	0.205	0.156	0.206	0.271	0.514	0.436	0.866	0.489
1974	0.923	0.769	0.648	0.536	0.244	0.308	0.145	0.164	0.247	0.453	0.392	0.558	0.449
1975	0.829	1.049	0.746	0.474	0.320	0.196	0.146	0.178	0.292	0.296	0.584	0.839	0.496
1976	0.909	0.778	0.654	0.481	0.283	0.168	0.143	0.198	0.257	0.345	0.501	0.480	0.433
1977	0.668	0.839	0.635	0.490	0.363	0.210	0.147	0.163	0.267	0.316	0.826	0.655	0.465
1978	0.768	0.532	1.015	0.509	0.322	0.158	0.148	0.145	0.291	0.513	0.713	0.622	0.478
1979	0.667	0.880	1.693	0.516	0.272	0.134	0.144	0.153	0.282	0.476	0.519	0.550	0.524
1980	0.722	0.831	1.018	0.481	0.256	0.177	0.147	0.165	0.251	0.503	0.650	0.491	0.474
1981	0.659	1.325	0.796	0.500	0.308	0.202	0.144	0.195	0.242	0.582	0.766	0.784	0.542
1982	0.812	0.892	0.912	0.521	0.288	0.240	0.144	0.155	0.273	0.606	0.780	0.620	0.520
1983	0.875	0.657	0.804	0.599	0.299	0.355	0.144	0.145	0.267	0.441	0.357	0.910	0.488
1984	0.729	1.246	0.873	0.549	0.234	0.201	0.112	0.147	0.167	0.480	0.733	0.711	0.515
1985	0.753	1.064	1.120	0.693	0.402	0.233	0.152	0.172	0.335	0.354	0.603	0.781	0.555
1986	0.870	0.966	0.948	0.576	0.295	0.077	0.183	0.195	0.146	0.331	0.551	0.658	0.483
1987	1.139	0.707	0.646	0.440	0.343	0.202	0.146	0.093	0.204	0.513	0.583	0.700	0.476
1988	1.217	0.888	0.567	0.249	0.103	0.117	0.075	0.097	0.145	0.263	0.351	0.565	0.386
1989	0.875	0.873	0.946	0.508	0.176	0.248	0.190	0.210	0.336	0.475	0.515	0.644	0.500
1990	1.004	0.514	0.535	0.333	0.192	0.330	0.195	0.068	0.470	0.814	0.780	0.694	0.494
1991	0.628	0.781	1.129	0.521	0.343	0.205	0.050	0.056	0.089	0.268	0.584	0.565	0.435
1992	0.744	0.660	0.790	0.489	0.217	0.148	0.058	0.147	0.182	0.489	0.425	0.362	0.393
1993	0.879	1.004	0.804	0.568	0.418	0.169	0.138	0.117	0.356	0.579	1.142	1.353	0.627
1994	0.991	1.207	0.705	0.625	0.232	0.137	0.073	0.079	0.179	0.456	0.460	0.628	0.481
1995	0.868	0.739	0.949	0.471	0.179	0.102	0.106	0.122	0.342	0.717	0.577	0.582	0.479
1996	0.715	0.885	0.803	0.646	0.316	0.134	0.069	0.127	0.198	0.392	0.539	0.746	0.464
1997	0.735	0.807	0.676	0.379	0.217	0.094	0.205	0.491	0.492	0.452	0.589	0.787	0.494
1998	1.091	1.456	0.999	0.653	0.246	0.303	0.120	0.242	0.212	0.408	0.472	0.580	0.565
1999	1.002	1.079	0.940	0.518	0.204	0.254	0.343	0.331	0.326	0.336	0.351	0.521	0.517
2000	0.626	1.008	0.991	0.601	0.337	0.232	0.245	0.259	0.349	0.351	0.417	0.600	0.501
2001	0.993	0.868	0.813	0.399	0.218	0.072	0.204	0.259	0.263	0.327	0.478	0.494	0.449
2002	0.343	0.834	1.042	0.515	0.227	0.160	0.234	0.239	0.042	0.368	0.522	0.652	0.432
2003	0.583	0.979	0.894	0.483	0.240	0.147	0.055	0.102	0.083	0.230	0.367	0.683	0.404
2004	0.586	0.721	0.562	0.370	0.380	0.312	0.333	0.342	0.466	0.472	0.447	0.712	0.475
2005	0.642	0.766	1.032	0.358	0.036	0.029	0.045	0.019	0.049	0.424	0.314	0.704	0.368
PROM.	0.783	0.881	0.877	0.516	0.274	0.188	0.146	0.166	0.247	0.442	0.546	0.652	0.477
DES. EST.	0.182	0.230	0.290	0.102	0.080	0.072	0.065	0.085	0.104	0.121	0.161	0.161	0.059
MAXIMO	1.217	1.456	1.874	0.795	0.454	0.355	0.343	0.491	0.492	0.814	1.142	1.353	0.627
MINIMO	0.343	0.514	0.535	0.249	0.036	0.029	0.045	0.019	0.042	0.230	0.314	0.362	0.368

QN-902

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m³/s)
Caudal de ingreso al Embalse Altos Machay + Laguna Lechecochoa

Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	0.332	0.495	0.676	0.437	0.206	0.104	0.091	0.071	0.015	0.350	0.400	0.394	0.298
1966	0.476	0.512	0.434	0.275	0.390	0.109	0.171	0.122	0.544	0.484	0.189	0.272	0.331
1967	0.639	0.726	0.547	0.290	0.092	0.035	0.178	0.096	0.226	0.400	0.255	0.332	0.318
1968	0.532	0.599	0.543	0.328	0.183	0.079	0.042	0.119	0.131	0.356	0.337	0.273	0.293
1969	0.359	0.542	0.384	0.261	0.120	0.145	0.119	0.102	0.219	0.318	0.292	0.472	0.278
1970	0.539	0.501	0.489	0.384	0.221	0.137	0.120	0.106	0.248	0.253	0.328	0.391	0.310
1971	0.539	0.578	0.504	0.422	0.147	0.074	0.113	0.074	0.103	0.304	0.284	0.488	0.302
1972	0.590	0.453	0.893	0.383	0.108	0.085	0.092	0.059	0.393	0.435	0.395	0.507	0.366
1973	0.755	1.048	0.613	0.615	0.180	0.148	0.103	0.172	0.261	0.286	0.296	0.498	0.415
1974	0.844	0.816	0.592	0.562	0.105	0.153	0.149	0.309	0.170	0.370	0.319	0.521	0.409
1975	0.696	0.738	0.901	0.304	0.319	0.136	0.172	0.158	0.364	0.281	0.450	0.599	0.426
1976	0.803	0.634	0.589	0.451	0.181	0.143	0.118	0.184	0.334	0.187	0.320	0.357	0.358
1977	0.678	0.797	0.713	0.436	0.195	0.140	0.131	0.179	0.230	0.303	0.524	0.355	0.390
1978	0.611	0.560	0.687	0.682	0.342	0.117	0.167	0.059	0.538	0.561	0.564	0.707	0.466
1979	0.750	1.171	1.602	0.725	0.233	0.063	0.266	0.171	0.251	0.289	0.373	0.350	0.520
1980	0.629	1.198	1.329	0.492	0.216	0.143	0.136	0.201	0.180	0.543	0.304	0.517	0.491
1981	0.803	1.499	1.144	0.454	0.216	0.128	0.096	0.221	0.250	0.478	0.694	1.086	0.589
1982	1.172	1.115	1.022	0.681	0.279	0.117	0.240	0.170	0.297	0.509	0.702	0.760	0.589
1983	1.079	1.078	1.020	0.721	0.122	0.264	0.136	0.156	0.215	0.373	0.289	0.911	0.530
1984	1.016	1.741	1.308	0.790	0.355	0.301	0.240	0.196	0.315	0.445	0.488	0.774	0.664
1985	0.871	1.333	1.177	0.931	0.403	0.190	0.123	0.253	0.321	0.351	0.535	0.762	0.604
1986	1.211	1.295	1.348	0.691	0.286	0.079	0.121	0.159	0.359	0.248	0.361	0.681	0.570
1987	1.270	0.984	0.630	0.764	0.347	0.117	0.118	0.175	0.208	0.432	0.578	0.851	0.540
1988	1.441	1.341	0.967	0.812	0.271	0.160	0.151	0.158	0.560	0.413	0.243	0.553	0.589
1989	1.209	1.306	1.340	0.672	0.274	0.192	0.152	0.187	0.208	0.482	0.464	0.583	0.589
1990	1.280	0.994	1.050	0.552	0.320	0.417	0.189	0.228	0.235	0.709	0.968	0.961	0.659
1991	1.026	1.037	1.146	0.625	0.255	0.181	0.157	0.156	0.181	0.520	0.847	0.736	0.572
1992	1.101	0.896	1.163	0.692	0.235	0.318	0.208	0.164	0.157	0.498	0.420	0.318	0.514
1993	1.026	1.461	1.250	0.813	0.422	0.147	0.276	0.149	0.335	0.568	1.140	1.225	0.734
1994	1.058	1.627	1.008	0.689	0.243	0.145	0.256	0.145	0.121	0.345	0.523	0.695	0.571
1995	1.169	0.877	1.349	0.703	0.360	0.265	0.171	0.133	0.213	0.445	0.674	0.773	0.594
1996	0.760	1.073	1.106	0.779	0.364	0.188	0.161	0.213	0.166	0.292	0.339	0.594	0.503
1997	0.492	0.700	0.641	0.290	0.191	0.159	0.151	0.273	0.276	0.295	0.362	0.478	0.359
1998	0.643	0.930	0.641	0.282	0.101	0.071	0.041	0.086	0.130	0.221	0.312	0.384	0.320
1999	0.942	0.995	1.024	0.670	0.480	0.388	0.426	0.497	0.139	0.487	0.149	0.389	0.549
2000	0.587	1.123	0.994	0.643	0.269	0.086	0.120	0.017	0.041	0.206	0.184	0.664	0.411
2001	1.064	1.037	1.012	0.540	0.303	0.086	0.081	0.005	0.081	0.208	0.414	0.311	0.429
2002	0.366	0.711	1.095	0.589	0.282	0.084	0.354	0.281	0.059	0.411	0.636	0.687	0.463
2003	0.599	0.867	0.995	0.497	0.387	0.133	0.044	0.118	0.148	0.104	0.266	0.668	0.402
2004	0.591	0.678	0.599	0.377	0.284	0.105	0.191	0.094	0.269	0.488	0.307	0.650	0.386
2005	0.528	0.825	0.999	0.374	0.089	0.030	0.080	0.177	0.068	0.376	0.307	0.292	0.345
PROM.	0.807	0.949	0.915	0.553	0.253	0.150	0.157	0.161	0.233	0.381	0.435	0.581	0.465
DES. EST.	0.290	0.328	0.308	0.182	0.100	0.086	0.078	0.086	0.128	0.124	0.211	0.227	0.121
MAXIMO	1.441	1.741	1.602	0.931	0.480	0.417	0.426	0.497	0.560	0.709	1.140	1.225	0.734
MINIMO	0.332	0.453	0.384	0.261	0.089	0.030	0.041	0.005	0.015	0.104	0.149	0.272	0.278

QN-904

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m³/s)

Caudal incremental entre los embalses Matacocha y Huangush Alto, incluyendo Canal Ushapata

Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	0.296	0.442	0.602	0.389	0.183	0.093	0.081	0.064	0.014	0.312	0.356	0.351	0.265
1966	0.424	0.456	0.387	0.245	0.348	0.097	0.153	0.109	0.485	0.432	0.169	0.242	0.295
1967	0.570	0.647	0.488	0.258	0.082	0.031	0.159	0.086	0.201	0.357	0.227	0.296	0.284
1968	0.474	0.534	0.484	0.293	0.163	0.071	0.037	0.106	0.117	0.317	0.301	0.244	0.262
1969	0.320	0.483	0.342	0.233	0.107	0.129	0.106	0.091	0.196	0.283	0.261	0.421	0.248
1970	0.481	0.447	0.436	0.342	0.197	0.122	0.107	0.095	0.221	0.226	0.292	0.348	0.276
1971	0.481	0.516	0.449	0.376	0.131	0.066	0.101	0.066	0.092	0.271	0.205	0.303	0.255
1972	0.424	0.325	0.655	0.370	0.190	0.095	0.087	0.030	0.209	0.312	0.254	0.385	0.278
1973	0.485	0.715	0.425	0.457	0.139	0.125	0.090	0.110	0.196	0.309	0.198	0.493	0.312
1974	0.633	0.606	0.417	0.430	0.080	0.115	0.101	0.194	0.111	0.265	0.264	0.398	0.301
1975	0.505	0.531	0.640	0.242	0.254	0.131	0.138	0.131	0.309	0.248	0.341	0.444	0.326
1976	0.639	0.491	0.450	0.327	0.134	0.088	0.038	0.164	0.274	0.132	0.289	0.261	0.274
1977	0.466	0.611	0.557	0.302	0.194	0.134	0.088	0.101	0.159	0.226	0.572	0.291	0.308
1978	0.392	0.406	0.562	0.340	0.214	0.122	0.078	0.043	0.222	0.242	0.163	0.297	0.257
1979	0.277	0.561	0.878	0.389	0.145	0.076	0.097	0.087	0.118	0.220	0.253	0.259	0.280
1980	0.364	0.541	0.634	0.258	0.128	0.064	0.117	0.141	0.156	0.383	0.127	0.299	0.268
1981	0.391	0.694	0.577	0.299	0.123	0.129	0.047	0.105	0.116	0.293	0.416	0.444	0.303
1982	0.512	0.272	0.477	0.404	0.179	0.092	0.065	0.085	0.198	0.340	0.440	0.381	0.287
1983	0.380	0.417	0.437	0.353	0.180	0.128	0.023	0.061	0.162	0.201	0.204	0.402	0.246
1984	0.473	0.824	0.657	0.334	0.190	0.149	0.137	0.126	0.113	0.252	0.299	0.395	0.329
1985	0.317	0.532	0.435	0.388	0.174	0.106	0.074	0.089	0.209	0.336	0.327	0.482	0.289
1986	0.700	0.721	0.557	0.422	0.191	0.065	0.045	0.092	0.193	0.178	0.273	0.573	0.334
1987	0.745	0.719	0.276	0.232	0.179	0.104	0.108	0.095	0.101	0.307	0.312	0.366	0.295
1988	0.726	0.577	0.419	0.350	0.165	0.084	0.049	0.065	0.117	0.180	0.119	0.351	0.267
1989	0.561	0.566	0.666	0.388	0.170	0.118	0.050	0.056	0.156	0.324	0.235	0.290	0.298
1990	0.553	0.407	0.413	0.226	0.123	0.204	0.059	0.053	0.151	0.433	0.450	0.427	0.291
1991	0.380	0.455	0.696	0.305	0.135	0.121	0.058	0.060	0.151	0.226	0.400	0.227	0.268
1992	0.351	0.324	0.441	0.212	0.100	0.146	0.050	0.083	0.098	0.268	0.300	0.194	0.214
1993	0.474	0.670	0.589	0.358	0.198	0.084	0.052	0.087	0.168	0.263	0.507	0.691	0.345
1994	0.521	0.658	0.452	0.417	0.115	0.057	0.081	0.118	0.125	0.291	0.235	0.378	0.287
1995	0.530	0.367	0.592	0.269	0.167	0.080	0.079	0.056	0.101	0.220	0.308	0.286	0.254
1996	0.375	0.475	0.430	0.342	0.172	0.079	0.048	0.090	0.070	0.215	0.298	0.297	0.241
1997	0.439	0.624	0.571	0.258	0.171	0.141	0.135	0.244	0.247	0.263	0.323	0.426	0.320
1998	0.574	0.829	0.571	0.252	0.090	0.063	0.036	0.076	0.116	0.197	0.278	0.342	0.285
1999	0.691	0.684	0.577	0.436	0.251	0.200	0.265	0.170	0.113	0.466	0.095	0.293	0.353
2000	0.487	0.894	0.745	0.524	0.186	0.017	0.017	0.012	0.018	0.169	0.002	0.530	0.300
2001	0.642	0.672	0.553	0.328	0.180	0.080	0.090	0.089	0.177	0.140	0.349	0.219	0.293
2002	0.153	0.593	0.757	0.379	0.201	0.101	0.317	0.072	0.166	0.216	0.361	0.169	0.291
2003	0.455	0.668	0.958	0.454	0.334	0.130	0.136	0.093	0.072	0.173	0.229	0.478	0.348
2004	0.225	0.500	0.486	0.189	0.191	0.133	0.199	0.166	0.122	0.480	0.316	0.451	0.288
2005	0.316	0.562	0.695	0.305	0.085	0.074	0.058	0.136	0.024	0.207	0.119	0.416	0.250
PROM.	0.468	0.561	0.547	0.333	0.169	0.104	0.094	0.097	0.155	0.272	0.280	0.362	0.287
DES. EST.	0.136	0.141	0.140	0.078	0.058	0.038	0.061	0.045	0.083	0.084	0.111	0.108	0.031
MAXIMO	0.745	0.894	0.958	0.524	0.348	0.204	0.317	0.244	0.485	0.480	0.572	0.691	0.353
MINIMO	0.153	0.272	0.276	0.189	0.080	0.017	0.017	0.012	0.014	0.132	0.002	0.169	0.214

QN-906

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m³/s)
Caudal incremental entre las Tomas: Huallamayo, Uchuhuerta y Yuncán
(incluye aporte de la cuenca del Río Santa Isabel)

Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	7.017	11.591	13.382	7.885	3.908	2.462	2.267	2.137	4.633	4.843	5.753	8.025	6.158
1966	10.456	10.550	8.853	4.945	5.873	2.539	1.924	1.742	2.845	5.729	6.743	9.062	5.938
1967	10.351	15.334	18.684	9.598	4.173	2.840	2.363	2.237	3.044	7.372	4.352	6.725	7.256
1968	10.670	13.056	13.407	6.942	4.332	3.061	2.452	2.755	2.777	6.265	6.167	6.822	6.559
1969	6.129	10.783	7.064	6.527	2.987	2.844	2.281	1.636	2.123	3.830	5.314	8.500	5.001
1970	11.681	11.510	10.090	9.447	5.445	3.285	2.909	2.189	3.873	3.168	5.231	8.408	6.436
1971	13.343	12.330	14.398	13.998	5.155	3.322	2.632	2.157	1.848	3.728	3.075	6.967	6.913
1972	10.281	8.060	14.676	10.653	5.074	2.927	2.419	1.850	3.259	5.104	4.807	8.241	6.446
1973	14.627	20.065	15.110	11.052	4.869	3.721	3.237	3.397	4.626	7.283	6.477	13.003	8.956
1974	20.921	18.752	12.823	12.397	4.756	3.084	3.746	2.856	2.947	5.603	4.105	7.119	8.259
1975	11.797	13.203	15.867	6.451	6.131	3.467	2.392	1.980	4.296	4.839	6.328	8.573	7.112
1976	14.305	13.210	10.677	7.822	4.050	3.033	2.130	2.338	4.572	2.495	3.829	4.868	6.111
1977	9.589	9.918	13.054	7.739	5.046	2.921	2.094	1.799	3.432	3.667	10.889	6.492	6.387
1978	11.431	10.324	12.194	8.141	5.183	2.908	2.111	1.545	3.647	3.499	6.250	6.305	6.128
1979	6.245	12.893	19.054	11.689	4.322	2.579	2.219	2.172	2.137	3.817	5.334	5.302	6.480
1980	6.534	10.682	12.373	6.589	3.355	2.199	2.425	2.231	2.134	6.266	5.112	6.310	5.517
1981	8.112	17.472	13.694	8.149	3.788	2.576	1.804	2.731	2.586	6.718	8.317	11.213	7.263
1982	12.871	13.840	10.928	8.154	4.514	3.698	2.824	2.857	3.815	6.849	9.848	8.384	7.382
1983	9.807	9.596	10.712	9.520	4.143	3.465	2.317	2.251	3.732	4.156	4.369	7.689	5.980
1984	10.363	22.916	16.413	12.478	4.889	3.649	2.993	3.171	2.532	4.663	7.444	8.277	8.316
1985	7.407	12.739	12.422	11.478	8.171	3.774	2.773	2.358	7.231	4.550	6.317	8.561	7.315
1986	13.477	17.614	18.219	10.928	7.425	3.422	3.368	3.493	3.685	4.112	5.155	5.735	8.053
1987	15.568	11.886	7.683	6.334	4.001	3.578	3.965	1.992	2.536	4.113	5.730	5.623	6.084
1988	16.895	13.611	8.886	9.147	4.802	3.364	2.665	1.887	2.058	3.154	3.031	5.870	6.281
1989	14.056	14.788	16.106	10.645	4.665	3.700	2.715	2.517	2.896	5.870	5.419	4.981	7.363
1990	12.067	7.799	9.174	5.701	3.887	5.460	3.140	2.138	3.246	9.256	11.662	9.538	6.922
1991	8.194	12.002	16.754	8.744	5.400	4.188	2.621	1.815	2.083	3.762	6.402	4.678	6.387
1992	6.795	6.304	8.848	4.985	2.464	2.377	1.861	2.319	2.057	5.321	4.206	2.989	4.210
1993	8.041	13.487	12.033	9.139	5.149	2.925	2.602	2.725	4.226	5.310	10.862	17.282	7.815
1994	14.146	18.712	11.525	10.221	4.569	2.972	2.609	2.233	2.289	3.361	4.673	4.130	6.787
1995	9.337	8.002	14.171	7.230	3.501	1.990	1.801	1.850	1.931	3.402	5.366	5.858	5.370
1996	8.176	10.681	11.362	9.143	4.464	2.536	1.746	2.028	2.479	3.159	3.482	6.493	5.479
1997	6.956	11.624	10.649	5.625	3.611	2.066	1.717	2.983	3.190	3.749	5.871	8.641	5.557
1998	14.077	17.904	15.287	9.030	3.363	2.627	2.086	1.784	1.848	3.966	4.903	6.348	6.935
1999	11.878	16.985	16.476	11.571	5.516	2.823	2.175	1.827	2.604	4.078	3.484	5.693	7.101
2000	9.458	14.414	15.962	10.827	4.272	2.920	2.773	3.176	3.104	3.247	3.231	6.940	6.694
2001	17.487	18.080	15.971	10.032	4.891	2.788	2.387	1.822	2.306	3.706	6.847	7.506	7.819
2002	4.687	13.314	15.266	8.832	4.783	2.538	4.120	2.111	2.691	5.033	8.750	9.339	6.789
2003	9.247	13.117	15.993	10.693	5.729	3.159	2.110	2.428	2.508	2.665	2.893	9.624	6.681
2004	5.639	10.071	9.417	5.300	3.623	2.684	2.825	2.518	3.904	7.997	6.059	8.903	5.745
2005	7.168	10.852	13.476	6.553	2.999	2.150	1.886	1.733	1.807	4.711	3.413	7.172	5.327
PROM.	10.668	13.172	13.150	8.837	4.617	3.040	2.524	2.287	3.062	4.742	5.793	7.517	6.617
DES. EST.	3.611	3.624	3.074	2.261	1.105	0.644	0.577	0.494	1.064	1.539	2.173	2.475	0.968
MAXIMO	20.921	22.916	19.054	13.998	8.171	5.460	4.120	3.493	7.231	9.256	11.662	17.282	8.956
MINIMO	4.687	6.304	7.064	4.945	2.464	1.990	1.717	1.545	1.807	2.495	2.893	2.989	4.210

QN-908

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m³/s)
Caudal incremental entre los Embalses de la Zona Alta y la Toma Uchuhuerta

Cuenca: RIO PAUCARTAMBO
 Fuente: ELECTROANDES S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	21.157	35.357	39.619	23.486	11.742	7.473	6.937	6.548	14.715	14.003	16.669	24.157	18.489
1966	31.708	31.685	26.665	14.611	17.288	7.649	5.463	5.082	7.064	16.334	20.733	27.799	17.673
1967	30.517	45.968	57.081	29.460	12.971	8.993	6.944	6.839	8.925	22.084	12.827	20.142	21.896
1968	31.944	39.259	40.925	20.992	13.179	9.525	7.745	8.414	8.371	18.682	18.397	20.755	19.849
1969	18.153	32.502	21.078	19.847	9.014	8.484	6.840	4.835	5.867	10.925	15.683	25.412	14.887
1970	35.454	35.050	30.513	28.950	16.606	10.038	8.909	6.646	11.510	9.115	15.406	25.483	19.473
1971	40.942	37.541	44.409	43.499	16.037	10.431	8.066	6.665	5.550	10.710	8.768	20.811	21.119
1972	31.105	24.361	44.258	32.749	15.618	9.022	7.429	5.774	9.443	14.873	14.041	24.703	19.448
1973	44.753	61.334	46.749	33.523	15.031	11.414	10.032	10.378	13.980	22.047	19.811	39.595	27.387
1974	64.601	57.789	39.356	38.068	14.926	9.259	11.627	8.272	8.870	16.671	11.899	20.970	25.192
1975	35.465	39.715	48.220	19.549	18.609	10.657	7.079	5.738	12.447	14.474	18.604	25.217	21.315
1976	43.062	40.224	32.255	23.619	12.351	9.322	6.572	6.762	13.512	7.214	10.819	14.273	18.332
1977	28.555	28.916	39.590	23.426	15.328	8.781	6.293	5.230	10.228	10.677	32.483	19.310	19.068
1978	34.749	31.385	36.414	24.360	15.611	8.849	6.340	4.709	10.413	9.626	18.627	18.363	18.287
1979	18.138	38.349	56.266	35.739	13.165	7.988	6.541	6.504	6.090	11.038	15.759	15.630	19.267
1980	18.889	31.218	36.142	19.758	10.092	6.660	7.281	6.496	6.070	18.265	15.345	18.690	16.242
1981	23.845	52.118	41.025	24.742	11.467	7.692	5.503	8.181	7.600	19.990	24.443	33.392	21.667
1982	38.487	42.329	32.303	24.203	13.629	11.433	8.633	8.745	11.291	20.222	29.343	24.840	22.121
1983	28.912	28.334	31.827	28.691	12.560	10.305	7.209	6.861	11.212	12.147	13.002	22.075	17.761
1984	30.664	69.328	49.418	38.374	14.799	10.963	9.005	9.630	7.443	13.542	22.176	24.348	24.974
1985	21.599	37.587	36.937	34.668	25.330	11.573	8.550	7.003	22.311	13.147	18.503	24.960	21.847
1986	39.815	53.066	55.485	33.133	23.075	10.813	10.548	10.766	10.946	12.307	15.096	15.682	24.228
1987	46.174	34.960	22.969	18.773	11.830	11.046	12.350	5.950	7.560	11.569	16.609	15.711	17.958
1988	50.307	40.467	26.216	27.743	14.801	10.446	8.322	5.706	5.663	9.081	8.941	16.994	18.724
1989	42.108	44.386	48.282	32.396	14.265	11.280	8.367	7.649	8.445	17.236	16.002	14.166	22.048
1990	35.445	22.730	27.123	17.043	11.803	16.460	9.684	6.519	9.439	27.391	34.964	28.197	20.566
1991	23.952	35.987	50.320	26.476	16.614	12.916	8.168	5.530	6.081	10.819	18.274	13.288	19.035
1992	19.286	18.052	25.608	14.454	7.289	6.856	5.654	7.009	6.083	15.582	11.989	8.499	12.197
1993	22.926	39.550	35.458	27.371	15.373	8.976	7.918	8.366	12.596	15.399	31.655	51.753	23.112
1994	42.554	56.256	34.546	30.794	14.087	9.243	7.940	6.711	6.798	9.306	13.569	11.037	20.237
1995	26.856	23.404	42.178	21.616	10.389	5.888	5.366	5.614	5.447	9.288	15.346	16.909	15.692
1996	24.085	31.478	33.883	27.390	13.373	7.717	5.325	6.009	7.513	8.988	9.603	18.964	16.194
1997	20.170	34.570	31.734	16.919	10.867	6.068	4.847	8.249	8.912	10.708	17.246	25.666	16.330
1998	42.488	53.571	46.536	27.775	10.355	8.005	6.535	5.268	5.344	11.727	14.391	18.731	20.894
1999	35.130	51.358	50.124	35.299	16.605	8.020	5.608	4.664	7.695	11.183	10.570	16.813	21.089
2000	28.232	42.331	47.934	32.585	12.794	9.146	8.618	10.018	9.639	9.537	9.895	19.834	20.047
2001	52.318	54.330	47.993	30.447	14.699	8.614	7.109	5.278	6.446	10.932	20.010	22.724	23.408
2002	13.714	39.766	44.956	26.469	14.442	7.754	11.973	6.092	8.143	14.991	26.211	28.587	20.258
2003	27.697	39.032	47.583	32.622	17.123	9.659	6.412	7.460	7.629	7.882	8.157	28.685	19.995
2004	16.213	29.619	28.025	15.987	10.619	7.966	8.141	7.313	11.449	23.749	17.915	26.293	16.941
2005	20.888	31.702	39.639	19.615	9.424	6.751	5.869	5.087	5.708	13.759	9.821	21.314	15.798
PROM.	31.782	39.438	39.455	26.761	14.029	9.272	7.652	6.843	9.035	13.835	17.063	22.214	19.782
DES. EST.	11.188	11.184	9.436	7.085	3.442	2.003	1.826	1.563	3.328	4.702	6.547	7.657	3.038
MAXIMO	64.601	69.328	57.081	43.499	25.330	16.460	12.350	10.766	22.311	27.391	34.964	51.753	27.387
MINIMO	13.714	18.052	21.078	14.454	7.289	5.888	4.847	4.664	5.344	7.214	8.157	8.499	12.197

QN-910

CAUDALES MEDIOS MENSUALES NATURALIZADOS (m³/s)
Caudal de ingreso al Embalse Victoria I

Cuenca: RIO PAUCARTAMBO
 Fuente: ELECTROANDES S.A.

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	0.122	0.183	0.249	0.161	0.076	0.039	0.034	0.026	0.006	0.129	0.147	0.145	0.110
1966	0.175	0.189	0.160	0.101	0.144	0.040	0.063	0.045	0.201	0.179	0.070	0.100	0.122
1967	0.236	0.268	0.202	0.107	0.034	0.013	0.066	0.036	0.083	0.148	0.094	0.122	0.117
1968	0.196	0.221	0.200	0.121	0.067	0.029	0.015	0.044	0.048	0.131	0.124	0.101	0.108
1969	0.132	0.200	0.142	0.096	0.044	0.053	0.044	0.038	0.081	0.117	0.108	0.174	0.102
1970	0.199	0.185	0.180	0.142	0.082	0.050	0.044	0.039	0.091	0.093	0.121	0.144	0.114
1971	0.199	0.213	0.186	0.156	0.054	0.027	0.042	0.027	0.038	0.112	0.085	0.125	0.105
1972	0.175	0.134	0.271	0.153	0.079	0.039	0.036	0.013	0.087	0.129	0.105	0.159	0.115
1973	0.200	0.296	0.176	0.189	0.057	0.052	0.037	0.045	0.081	0.128	0.082	0.204	0.129
1974	0.262	0.251	0.172	0.178	0.033	0.048	0.042	0.080	0.046	0.110	0.109	0.165	0.124
1975	0.209	0.219	0.265	0.100	0.105	0.054	0.057	0.054	0.128	0.103	0.141	0.184	0.135
1976	0.264	0.203	0.186	0.135	0.055	0.036	0.016	0.068	0.113	0.055	0.120	0.108	0.113
1977	0.193	0.252	0.230	0.125	0.080	0.056	0.036	0.042	0.066	0.094	0.236	0.120	0.127
1978	0.162	0.168	0.232	0.141	0.088	0.051	0.032	0.018	0.092	0.100	0.067	0.123	0.106
1979	0.114	0.232	0.363	0.161	0.060	0.032	0.040	0.036	0.049	0.091	0.104	0.107	0.116
1980	0.150	0.224	0.262	0.107	0.053	0.027	0.049	0.058	0.065	0.158	0.053	0.124	0.111
1981	0.162	0.287	0.239	0.124	0.051	0.053	0.020	0.044	0.048	0.121	0.172	0.184	0.125
1982	0.212	0.113	0.197	0.167	0.074	0.038	0.027	0.035	0.082	0.141	0.182	0.158	0.119
1983	0.157	0.173	0.181	0.146	0.075	0.053	0.009	0.025	0.067	0.083	0.084	0.166	0.102
1984	0.195	0.341	0.272	0.138	0.078	0.061	0.057	0.052	0.047	0.104	0.124	0.163	0.136
1985	0.131	0.220	0.180	0.160	0.072	0.044	0.031	0.037	0.086	0.139	0.135	0.199	0.119
1986	0.290	0.298	0.230	0.174	0.079	0.027	0.019	0.038	0.080	0.074	0.113	0.237	0.138
1987	0.308	0.297	0.114	0.096	0.074	0.043	0.044	0.039	0.042	0.127	0.129	0.152	0.122
1988	0.300	0.238	0.173	0.145	0.068	0.035	0.020	0.027	0.048	0.074	0.049	0.145	0.110
1989	0.232	0.234	0.276	0.160	0.070	0.049	0.021	0.023	0.064	0.134	0.097	0.120	0.123
1990	0.229	0.168	0.171	0.094	0.051	0.084	0.024	0.022	0.062	0.179	0.186	0.176	0.121
1991	0.157	0.188	0.288	0.126	0.056	0.050	0.024	0.025	0.062	0.093	0.166	0.094	0.111
1992	0.145	0.134	0.182	0.088	0.041	0.061	0.021	0.034	0.040	0.111	0.124	0.080	0.088
1993	0.196	0.277	0.244	0.148	0.082	0.035	0.022	0.036	0.070	0.109	0.210	0.286	0.143
1994	0.216	0.272	0.187	0.173	0.048	0.024	0.034	0.049	0.052	0.120	0.097	0.156	0.119
1995	0.219	0.152	0.245	0.111	0.069	0.033	0.033	0.023	0.042	0.091	0.127	0.118	0.105
1996	0.155	0.197	0.178	0.141	0.071	0.033	0.020	0.037	0.029	0.089	0.123	0.123	0.100
1997	0.181	0.258	0.236	0.107	0.071	0.059	0.056	0.101	0.102	0.109	0.134	0.176	0.132
1998	0.237	0.343	0.236	0.104	0.037	0.026	0.015	0.032	0.048	0.081	0.115	0.142	0.118
1999	0.183	0.356	0.277	0.097	0.042	0.006	0.003	0.014	0.065	0.032	0.030	0.033	0.095
2000	0.128	0.244	0.293	0.171	0.032	0.008	0.001	0.000	0.083	0.149	0.092	0.114	0.110
2001	0.338	0.322	0.207	0.098	0.032	0.009	0.007	0.005	0.004	0.005	0.056	0.133	0.101
2002	0.079	0.115	0.194	0.067	0.033	0.008	0.029	0.114	0.101	0.018	0.042	0.044	0.070
2003	0.044	0.063	0.138	0.042	0.045	0.012	0.004	0.018	0.014	0.003	0.007	0.052	0.037
2004	0.036	0.039	0.047	0.032	0.012	0.003	0.089	0.063	0.083	0.054	0.024	0.073	0.046
2005	0.037	0.045	0.141	0.056	0.022	0.005	0.035	0.036	0.057	0.003	0.002	0.022	0.038
PROM.	0.184	0.215	0.210	0.125	0.061	0.037	0.032	0.039	0.067	0.100	0.107	0.135	0.109
DES. EST.	0.069	0.077	0.057	0.038	0.024	0.019	0.019	0.022	0.034	0.044	0.051	0.052	0.024
MAXIMO	0.338	0.356	0.363	0.189	0.144	0.084	0.089	0.114	0.201	0.179	0.236	0.286	0.143
MINIMO	0.036	0.039	0.047	0.032	0.012	0.003	0.001	0.000	0.004	0.003	0.002	0.022	0.037

C.- VOLÚMENES DE LOS EMBALSES DE REGULACIÓN

VOLUMEN UTIL MENSUAL HISTORICO (Mm³)

EMBALSE : JAICO

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965												
1966												
1967												
1968												
1969												
1970												
1971												
1972												
1973												
1974												
1975												
1976												
1977												
1978												
1979												
1980												
1981												
1982												
1983											0.078	1.465
1984	2.883	5.152	6.849	7.883	8.338	8.716	8.935	9.221	9.534	9.776	9.500	10.883
1985	12.349	13.072	13.066	13.038	13.011	9.249	4.795	0.666	0.187	0.877	2.012	3.532
1986	5.226	6.923	8.769	9.854	10.427	10.572	2.868	0.166	0.441	1.085	2.123	3.404
1987	6.454	8.165	9.896	11.036	11.455	4.178	0.000	0.237	0.766	2.140	3.652	5.528
1988	8.788	11.011	12.530	13.175	13.126	8.601	2.058	0.769	0.692	1.396	2.307	3.821
1989	6.163	8.276	10.809	12.126	12.597	10.321	5.850	2.479	2.140	3.383	4.018	5.707
1990	8.397	9.640	11.072	11.936	12.449	13.037	5.663	1.273	0.245	2.020	4.041	5.900
1991	7.583	9.472	12.495	13.419	13.166	10.378	0.154	0.124	0.147	0.756	2.269	3.782
1992	5.775	7.427	9.544	10.811	11.393	11.682	11.530	7.848	8.284	9.595	10.697	8.064
1993	9.092	11.331	13.289	14.651	15.380	11.158	4.993	1.705	2.358	3.418	5.592	8.256
1994	10.614	13.179	14.899	15.780	15.841	15.485	7.878	0.777	0.309	1.094	2.130	3.449
1995	5.773	7.517	9.997	11.192	11.661	11.920	10.008	4.466	0.327	0.173	1.426	2.950
1996	4.737	6.401	8.375	9.899	10.498	10.734	10.841	5.406	0.270	1.117	1.962	3.432
1997	5.263	7.078	8.758	9.667	10.200	10.415	9.051	6.416	3.328	3.449	4.643	6.136
1998	8.893	12.198	14.728	15.847	15.667	9.838	5.834	3.235	3.768	4.818	5.793	6.598
1999	9.036	11.410	13.855	15.058	15.533	14.848	7.221	4.193	3.190	4.027	4.862	6.136
2000	7.814	10.339	12.994	14.552	15.052	15.006	12.903	7.688	3.608	3.544	2.161	3.768
2001	6.741	9.087	11.518	12.673	13.327	13.306	10.149	5.466	3.646	3.407	4.792	6.270
2002	7.189	9.207	11.999	13.334	13.942	13.064	12.151	7.027	5.727	6.712	8.063	9.810
2003	11.372	13.741	15.811	15.853	15.841	14.470	9.186	6.501	4.022	3.423	3.991	5.820
2004	7.390	9.196	10.700	11.659	11.789	8.773	5.146	3.906	3.268	4.533	5.690	7.598
2005	9.317	11.171	13.934	14.862	10.912	7.281	5.409	1.128	0.325	1.043	1.175	1.764
PROM.	7.584	9.591	11.631	12.650	12.800	11.047	6.937	3.668	2.572	3.263	4.043	5.394
MAXIMO	12.349	13.741	15.811	15.853	15.841	15.485	12.903	9.221	9.534	9.776	10.697	10.883
MINIMO	2.883	5.152	6.849	7.883	8.338	4.178	0.000	0.124	0.147	0.173	0.078	1.465

Observaciones:

- 1.- Registrado el último día del mes.
- 2.- Noviembre de 1983, se inicia la operación.
- 3.- Volumen Util Máximo : 15.935 Mio m³.

VALORES INTERPOLADOS

VOLUMEN UTIL MENSUAL HISTORICO (Mm³)

EMBALSE : ALTOS MACHAY

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965												
1966												
1967												
1968												
1969												
1970												
1971										2.353	2.788	3.635
1972	4.573	5.246	6.644	7.093	7.093	6.912	4.537	2.437	1.329	0.535	1.186	1.961
1973	3.247	4.804	5.800	6.723	6.256	4.129	2.177	0.720	0.220	0.488	0.415	0.955
1974	2.255	3.398	4.353	5.178	5.337	5.563	5.726	3.390	1.575	2.163	2.601	2.885
1975	3.983	5.041	6.483	6.916	6.641	6.626	3.198	0.369	0.530	0.905	1.569	2.499
1976	3.679	4.571	5.464	6.154	6.436	5.542	1.133	0.000	0.000	0.238	0.642	1.203
1977	3.576	4.745	5.934	6.759	7.270	7.263	4.455	0.675	0.520	1.043	2.254	2.764
1978	4.107	4.904	6.945	8.214	9.058	9.058	6.393	5.872	4.052	1.307	2.214	3.655
1979	5.245	7.309	10.632	12.002	12.407	12.458	7.745	3.866	1.974	0.770	1.366	1.910
1980	3.042	5.276	7.874	8.886	9.271	7.370	6.393	1.519	0.000	0.805	1.405	2.334
1981	3.892	6.699	8.974	10.116	10.508	10.651	8.202	5.287	3.525	2.898	4.519	6.850
1982	9.211	11.536	12.726	12.726	12.726	12.428	9.706	5.086	1.281	1.731	2.904	4.362
1983	6.675	8.828	11.139	12.726	12.726	11.533	6.962	0.815	0.426	0.433	0.307	2.147
1984	4.150	7.399	9.906	11.632	12.295	12.168	10.646	8.480	1.726	0.909	0.582	2.056
1985	3.909	6.405	8.898	10.742	11.557	11.926	12.179	7.446	4.534	3.604	3.752	5.032
1986	7.213	9.541	12.305	12.726	12.726	9.587	8.352	8.101	5.200	2.505	1.823	1.338
1987	3.610	5.005	6.275	7.916	8.573	8.724	8.388	2.712	0.063	0.687	1.726	3.449
1988	6.441	9.190	11.144	12.726	12.726	12.726	12.726	11.671	8.281	6.412	6.642	5.083
1989	7.468	9.850	12.510	12.726	12.726	11.453	8.770	5.136	0.931	1.731	0.359	1.480
1990	4.237	6.084	8.269	9.368	9.776	10.834	11.252	6.901	3.301	4.627	6.986	9.190
1991	11.360	12.726	12.726	12.726	12.726	12.726	12.726	6.979	3.568	4.619	6.226	5.095
1992	7.512	9.297	11.741	12.726	12.726	10.106	2.586	0.158	0.421	1.348	1.995	2.551
1993	4.680	7.374	9.827	11.409	12.239	10.733	5.477	2.208	2.876	3.998	6.307	8.873
1994	11.268	12.985	12.985	12.985	12.985	9.284	2.231	0.041	0.084	0.567	1.577	2.865
1995	6.075	7.695	10.594	12.021	10.920	5.110	0.932	0.725	0.317	0.543	1.911	3.549
1996	5.016	7.028	9.338	11.115	11.829	8.605	1.314	0.215	0.151	0.607	1.047	2.187
1997	4.037	6.096	8.211	9.236	9.770	9.845	7.541	5.600	1.545	0.466	1.964	3.834
1998	6.267	9.330	11.824	13.171	13.797	13.869	10.526	5.594	2.821	3.774	4.834	5.713
1999	8.410	11.045	13.176	13.869	13.869	13.869	13.869	8.569	3.154	3.144	3.088	4.042
2000	5.626	8.424	11.548	13.394	13.869	13.869	11.110	5.366	0.886	0.027	1.015	2.810
2001	5.661	8.169	10.878	12.279	13.091	13.313	11.757	5.902	1.140	1.087	2.161	2.995
2002	3.976	5.696	8.628	10.155	10.910	11.129	11.036	6.267	3.261	4.363	6.011	7.850
2003	9.453	11.552	13.869	13.869	13.869	13.869	9.688	5.794	3.328	0.794	0.152	1.940
2004	3.524	5.223	6.829	7.807	8.569	8.840	5.701	3.476	2.393	3.700	4.496	6.237
2005	7.651	9.647	12.323	13.292	13.531	9.582	6.659	1.593	0.199	1.206	1.701	2.482
PROM.	5.618	7.592	9.611	10.629	10.906	10.050	7.415	4.087	1.930	1.897	2.586	3.652
MAXIMO	11.360	12.985	13.869	13.869	13.869	13.869	13.869	11.671	8.281	6.412	6.986	9.190
MINIMO	2.255	3.398	4.353	5.178	5.337	4.129	0.932	0.000	0.000	0.027	0.152	0.955

Observaciones:

- 1.- Registrado el último día del mes.
- 2.- Octubre de 1971, se inicia la operación.
- 3.- Volumen Util Máximo hasta Mayo 92 : 12.726 Mio m³.
- 4.- Volumen Util Máximo entre Junio 92 - Agosto 95 : 12.985 Mio m³.
- 5.- Volumen Util Máximo desde Setiembre 95 : 13.869 Mio m³.

■ VALORES INTERPOLADOS

VOLUMEN UTIL MENSUAL HISTORICO (Mm³)

EMBALSE : MATACOCHA

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965												
1966												
1967												
1968												
1969												
1970												
1971												
1972												
1973												
1974												
1975												
1976												
1977												
1978												
1979												
1980										10.036	10.855	10.855
1981	10.855	10.855	10.855	10.855	10.855	10.830	9.697	9.247	9.233	9.343	9.348	9.352
1982	9.329	10.855	10.855	10.855	10.855	10.855	0.088	0.000	0.000	0.000	1.734	3.610
1983	5.591	7.467	9.773	9.926	9.854	9.833	4.535	0.000	0.000	0.000	0.000	1.327
1984	3.852	7.308	10.482	10.855	10.855	10.855	10.855	0.712	0.165	0.165	0.165	1.224
1985	2.951	5.358	8.332	10.378	10.855	10.855	10.855	10.855	10.855	0.768	1.987	4.031
1986	7.044	10.053	10.855	10.855	10.855	10.855	10.855	10.855	6.167	0.202	1.554	3.020
1987	5.451	8.887	10.448	10.855	10.855	10.855	2.361	0.168	0.500	0.231	1.440	3.319
1988	6.725	9.454	10.855	10.855	10.855	10.855	10.855	7.991	0.199	0.181	0.688	2.390
1989	5.318	8.002	10.855	10.855	10.855	10.855	10.855	10.855	0.169	1.489	2.738	4.455
1990	7.190	9.174	10.855	10.855	10.855	10.855	0.165	0.165	0.199	2.279	4.590	6.762
1991	9.057	10.855	10.855	10.855	10.855	10.855	10.855	7.432	0.165	0.165	1.891	3.095
1992	5.134	6.518	8.755	9.892	10.443	0.849	0.165	0.165	0.165	1.050	2.294	3.359
1993	5.393	8.413	10.855	10.855	10.855	10.855	10.855	10.855	10.855	10.855	10.855	10.855
1994	10.855	10.855	10.855	10.855	10.855	10.855	10.855	0.373	0.279	1.195	2.343	3.647
1995	6.149	7.891	10.855	10.855	10.855	8.794	0.000	0.210	0.412	1.446	2.852	4.479
1996	6.554	8.869	10.855	10.855	10.855	10.855	10.855	0.582	0.286	1.080	2.213	3.514
1997	5.652	8.056	10.829	10.829	10.829	1.040	0.179	0.179	0.179	1.162	2.406	4.150
1998	6.669	10.178	10.829	10.829	10.829	6.092	0.200	0.319	0.596	1.776	3.193	4.690
1999	7.788	10.291	10.291	10.291	10.291	10.291	10.291	0.861	0.766	2.007	2.942	4.313
2000	6.420	10.027	10.826	10.826	10.826	10.826	10.826	4.622	0.227	1.313	2.337	4.598
2001	7.671	10.829	10.829	10.829	10.829	10.829	10.829	10.829	0.195	0.788	2.964	4.353
2002	5.496	7.832	10.829	10.829	10.829	10.829	10.829	10.829	0.902	1.488	2.986	3.196
2003	5.503	8.072	10.829	10.829	10.829	10.829	10.829	0.190	0.565	1.390	2.328	3.906
2004	5.500	8.072	10.249	10.829	10.829	10.829	0.200	0.555	1.443	3.228	4.816	6.676
2005	8.314	10.615	10.829	10.829	10.829	10.829	0.000	0.148	0.044	1.491	2.711	4.173
PROM.	6.659	8.991	10.541	10.729	10.768	9.718	6.756	3.960	1.783	2.120	3.240	4.590
MAXIMO	10.855	10.855	10.855	10.855	10.855	10.855	10.855	10.855	10.855	10.855	10.855	10.855
MINIMO	2.951	5.358	8.332	9.892	9.854	0.849	0.000	0.000	0.000	0.000	0.000	1.224

Observaciones:

- 1.- Registrado el último día del mes.
 - 2.- Octubre de 1980, se inicia la operación.
 - 3.- Volumen Util Máximo hasta Julio 96 : 10.855 Mio m³.
 - 4.- Volumen Util Máximo desde Agosto 96 : 10.829 Mio m³.
- VALORES INTERPOLADOS

VOLUMEN UTIL MENSUAL HISTORICO (Mm³)

EMBALSE : HUANGUSH ALTO

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965												
1966												
1967							24.668	20.431	20.175	22.754	24.342	24.617
1968	24.436	24.155	24.806	24.806	24.806	24.806	24.806	23.468	13.061	14.081	15.262	17.023
1969	19.334	22.487	24.806	24.806	20.458	11.986	5.816	0.894	2.131	3.490	4.696	8.097
1970	11.571	14.488	17.641	20.034	21.460	22.312	23.085	15.545	14.560	13.539	15.582	18.097
1971	21.570	24.806	24.806	24.806	24.806	24.806	17.468	9.437	1.568	1.596	3.028	5.216
1972	8.496	10.852	15.533	18.033	19.407	20.074	20.702	17.042	18.233	20.485	21.398	24.176
1973	24.806	24.043	23.818	24.573	24.806	24.806	22.810	17.118	15.816	18.046	19.427	22.986
1974	23.746	24.292	24.806	24.806	24.806	23.120	15.866	11.945	5.321	4.686	5.556	7.127
1975	10.840	14.377	19.473	21.186	23.135	23.376	20.262	9.947	7.948	9.026	9.674	13.073
1976	18.085	21.605	24.806	24.806	24.806	23.625	16.406	4.582	4.841	4.438	4.895	6.937
1977	10.581	14.846	18.919	21.138	22.613	22.159	19.017	6.780	4.587	4.895	9.392	11.629
1978	14.700	17.692	22.634	24.806	24.806	17.923	10.072	9.539	8.496	4.240	6.393	8.691
1979	10.783	14.742	22.250	24.806	24.806	18.984	11.915	5.816	2.480	4.151	4.661	6.769
1980	9.556	13.503	18.428	20.323	21.268	18.833	15.804	6.511	0.843	2.821	3.460	5.864
1981	8.897	14.541	19.162	21.646	22.571	20.282	12.056	11.717	11.083	10.616	13.822	17.321
1982	21.021	23.120	24.806	24.806	24.806	21.715	23.376	12.421	5.241	5.741	7.149	8.180
1983	9.296	10.220	11.367	14.099	15.373	14.956	10.570	6.269	4.349	3.038	1.193	2.744
1984	4.004	6.387	7.953	10.898	12.215	10.547	7.987	10.927	2.917	4.463	6.959	8.981
1985	9.776	11.379	12.097	14.141	14.993	13.641	5.710	8.747	7.766	7.871	7.987	9.465
1986	11.437	13.527	18.143	21.364	23.050	23.511	19.407	9.122	11.233	15.816	15.136	12.321
1987	14.396	15.453	16.132	17.315	18.735	18.337	17.430	6.344	0.542	2.351	3.753	4.841
1988	6.991	8.552	10.158	12.841	14.099	14.724	11.787	10.794	9.139	8.641	9.527	10.616
1989	12.315	13.942	16.331	19.327	20.620	21.494	16.425	8.557	12.782	13.780	13.032	9.754
1990	11.065	11.828	12.978	14.560	11.477	11.857	21.895	16.562	16.562	17.820	19.261	20.647
1991	21.715	23.205	24.711	24.806	24.806	24.806	17.679	8.797	7.378	7.646	8.747	9.572
1992	10.512	11.355	12.516	13.038	9.094	18.696	19.953	20.532	14.742	16.145	15.084	14.590
1993	15.965	17.698	19.639	22.270	23.753	24.357	24.733	21.008	15.922	16.587	20.202	24.806
1994	24.806	24.806	24.806	24.806	24.806	24.400	18.650	15.650	7.492	7.149	7.777	8.296
1995	9.907	10.985	12.966	14.974	14.986	15.225	20.892	17.775	14.657	14.846	15.317	15.699
1996	16.824	18.097	19.513	22.110	23.425	21.639	15.940	16.027	9.975	9.958	9.352	10.238
1997	11.472	13.084	14.515	16.007	17.263	22.981	19.881	16.998	12.223	12.058	12.288	10.903
1998	12.471	14.540	17.562	19.435	14.180	15.908	15.995	12.305	9.804	10.117	10.817	11.794
1999	13.690	15.651	19.821	22.868	24.681	22.012	16.722	19.382	16.291	12.294	9.600	10.346
2000	11.758	13.986	18.568	22.229	23.589	21.852	16.960	17.594	15.786	12.081	6.394	7.692
2001	9.793	11.758	16.397	19.066	20.602	20.156	16.653	11.147	15.553	12.424	13.678	14.497
2002	14.666	16.100	18.127	20.291	21.636	19.112	18.764	13.395	17.799	17.036	17.972	18.836
2003	19.409	20.553	23.970	24.839	24.839	18.276	10.288	11.385	6.598	6.011	5.196	6.641
2004	7.245	8.497	9.798	10.540	10.380	6.625	11.852	6.469	2.510	3.796	4.614	5.821
2005	6.668	8.076	12.264	14.132	9.583	7.088	13.185	6.813	1.899	2.098	1.124	2.118
PROM.	13.998	15.980	18.507	20.195	20.485	19.565	16.850	12.341	9.695	9.909	10.595	11.971
MAXIMO	24.806	24.806	24.806	24.839	24.839	24.806	24.806	23.468	20.175	22.754	24.342	24.806
MINIMO	4.004	6.387	7.953	10.540	9.094	6.625	5.710	0.894	0.542	1.596	1.193	2.744

Observaciones:

- 1.- Registrado el último día del mes.
 - 2.- Julio de 1967, se inicia la operación.
 - 3.- Volumen Util Máximo hasta Mayo 94 : 24.806 Mio m³.
 - 4.- Volumen Util Máximo desde Junio 94: 24.839 Mio m³.
- VALORES INTERPOLADOS

VOLUMEN UTIL MENSUAL HISTORICO (Mm³)

EMBALSE : HUANGUSH BAJO

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965												
1966												
1967									0.692	0.692	0.692	0.669
1968	0.270	0.270	0.692	0.411	0.692	0.692	0.692	0.571	0.692	0.692	0.692	0.498
1969	0.692	0.692	0.692	0.692	0.692	0.683	0.692	0.692	0.629	0.674	0.620	0.692
1970	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.549	0.692	0.391	0.692	0.692
1971	0.692	0.692	0.692	0.692	0.692	0.692	0.560	0.651	0.501	0.686	0.128	0.674
1972	0.692	0.692	0.692	0.692	0.692	0.692	0.136	0.504	0.692	0.692	0.692	0.692
1973	0.692	0.692	0.692	0.692	0.692	0.692	0.614	0.554	0.654	0.692	0.692	0.692
1974	0.107	0.532	0.692	0.692	0.692	0.405	0.543	0.509	0.394	0.501	0.308	0.692
1975	0.692	0.692	0.692	0.692	0.692	0.591	0.574	0.614	0.692	0.620	0.554	0.692
1976	0.692	0.692	0.692	0.692	0.692	0.478	0.554	0.495	0.692	0.286	0.554	0.692
1977	0.692	0.692	0.692	0.692	0.692	0.686	0.686	0.663	0.498	0.692	0.692	0.692
1978	0.692	0.692	0.692	0.692	0.692	0.571	0.447	0.467	0.692	0.692	0.692	0.692
1979	0.692	0.692	0.692	0.692	0.464	0.617	0.606	0.481	0.433	0.692	0.692	0.692
1980	0.692	0.692	0.692	0.692	0.692	0.560	0.666	0.529	0.495	0.692	0.692	0.692
1981	0.692	0.692	0.692	0.692	0.692	0.560	0.683	0.566	0.543	0.692	0.692	0.692
1982	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.666	0.560	0.692	0.692	0.692
1983	0.692	0.692	0.692	0.692	0.689	0.614	0.549	0.458	0.391	0.411	0.372	0.692
1984	0.692	0.692	0.692	0.692	0.692	0.529	0.478	0.609	0.366	0.692	0.692	0.692
1985	0.692	0.692	0.692	0.692	0.692	0.660	0.492	0.549	0.692	0.529	0.692	0.692
1986	0.692	0.692	0.692	0.686	0.692	0.660	0.677	0.614	0.606	0.692	0.683	0.692
1987	0.692	0.692	0.692	0.692	0.692	0.617	0.692	0.537	0.289	0.580	0.692	0.692
1988	0.692	0.692	0.692	0.692	0.692	0.692	0.577	0.597	0.563	0.692	0.692	0.692
1989	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.523	0.657	0.692	0.674	0.692
1990	0.692	0.692	0.692	0.692	0.606	0.692	0.672	0.626	0.692	0.692	0.692	0.692
1991	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.589	0.549	0.692	0.692	0.692
1992	0.692	0.692	0.692	0.692	0.509	0.677	0.692	0.692	0.692	0.692	0.692	0.683
1993	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692
1994	0.692	0.692	0.692	0.692	0.692	0.663	0.674	0.692	0.617	0.692	0.383	0.532
1995	0.692	0.692	0.692	0.692	0.657	0.651	0.643	0.617	0.692	0.692	0.692	0.692
1996	0.692	0.692	0.692	0.692	0.692	0.554	0.614	0.629	0.692	0.629	0.523	0.692
1997	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.620	0.674	0.692	0.580	0.692
1998	0.692	0.692	0.692	0.692	0.617	0.669	0.660	0.640	0.640	0.692	0.692	0.692
1999	0.692	0.692	0.692	0.692	0.692	0.620	0.532	0.583	0.649	0.594	0.692	0.692
2000	0.692	0.692	0.692	0.692	0.634	0.580	0.540	0.537	0.586	0.526	0.692	0.692
2001	0.692	0.692	0.692	0.692	0.680	0.651	0.640	0.617	0.689	0.609	0.692	0.692
2002	0.692	0.692	0.692	0.692	0.686	0.689	0.600	0.643	0.591	0.692	0.692	0.692
2003	0.692	0.692	0.692	0.692	0.692	0.675	0.652	0.675	0.654	0.614	0.683	0.380
2004	0.251	0.692	0.692	0.692	0.489	0.583	0.617	0.692	0.677	0.692	0.692	0.692
2005	0.692	0.692	0.692	0.692	0.535	0.631	0.663	0.552	0.535	0.000	0.256	0.692
PROM.	0.654	0.676	0.692	0.684	0.664	0.636	0.610	0.593	0.601	0.622	0.623	0.673
MAXIMO	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692
MINIMO	0.107	0.270	0.692	0.411	0.464	0.405	0.136	0.458	0.289	0.000	0.128	0.380

Observaciones:

- 1.- Registrado el último día del mes.
- 2.- Setiembre de 1967, se inicia la operación.
- 3.- Volumen Util Máximo : 0.692 Mio m³.

VOLUMEN UTIL MENSUAL HISTORICO (Mm³)

EMBALSE : VICTORIA I

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965												
1966												
1967												
1968												
1969												
1970												
1971												
1972												
1973												
1974												
1975												
1976												
1977												
1978												
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1983												
1984												
1985												
1986												
1987												
1988												
1989												
1990												
1991												
1992												
1993												
1994												
1995												
1996												
1997				0.600	0.615	0.615	0.608	0.615	0.637	0.693	0.703	0.675
1998	1.234	1.581	1.247	1.190	1.198	1.200	0.262	0.039	0.021	0.000	0.098	0.232
1999	0.543	1.009	1.421	1.510	1.510	1.500	1.498	0.589	0.012	0.052	0.105	0.170
2000	0.377	0.713	1.164	1.390	1.429	1.433	1.431	1.431	0.091	0.081	0.061	0.227
2001	0.726	1.144	1.460	1.510	1.510	1.510	1.510	1.504	1.504	1.510	1.510	1.293
2002	0.819	1.103	1.462	1.510	1.510	1.502	1.508	0.437	0.062	0.083	0.219	0.365
2003	0.494	0.654	0.969	1.034	1.166	1.179	1.198	0.315	0.064	0.065	0.060	0.177
2004	0.263	0.361	0.504	0.565	0.576	0.589	0.081	0.078	0.087	0.267	0.324	0.504
2005	0.602	0.715	1.092	1.237	1.237	1.237	1.237	1.155	0.074	0.083	0.089	0.148
PROM.	0.637	0.938	1.175	1.164	1.189	1.191	1.012	0.626	0.310	0.344	0.385	0.455
MAXIMO	1.234	1.581	1.462	1.510	1.510	1.510	1.510	1.504	1.504	1.510	1.510	1.293
MINIMO	0.263	0.361	0.504	0.565	0.576	0.589	0.081	0.039	0.012	0.000	0.060	0.170

Observaciones:

- 1.- Registrado el último día del mes.
- 2.- Abril de 1997, se inicia la operación.
- 3.- Volumen Util Máximo hasta Febrero 98 : 1.581 Mio m³.
- 4.- Volumen Util Máximo desde Marzo 98: 1.510 Mio m³.

VOLUMEN UTIL MENSUAL HISTORICO (Mm³)

EMBALSE : PACCHAPATA

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965												
1966												
1967												
1968												
1969												
1970												
1971												
1972												
1973												
1974												
1975												
1976												
1977												
1978												
1979												
1980												
1981												
1982												
1983												
1984												
1985												
1986												
1987												
1988												
1989												
1990												
1991												
1992												
1993											0.586	0.927
1994	1.236	1.360	1.485	1.479	1.461	1.453	1.442	1.426	0.264	0.372	0.460	0.615
1995	0.864	1.092	1.397	1.463	1.447	1.434	1.421	0.000	0.064	0.130	0.284	0.425
1996	0.642	0.855	1.076	1.228	1.294	1.296	0.914	0.090	0.095	0.148	0.218	0.395
1997	0.615	0.820	1.000	1.104	1.148	1.151	1.140	0.093	0.088	0.157	0.257	0.430
1998	0.692	1.015	1.208	1.288	1.294	1.294	0.048	0.099	0.108	0.153	0.223	0.369
1999	0.697	0.972	1.202	1.373	1.373	1.373	1.373	0.086	0.148	0.250	0.337	0.475
2000	0.702	1.030	1.365	1.373	1.373	1.373	1.373	0.867	0.151	0.202	0.289	0.489
2001	0.845	1.115	1.373	1.373	1.373	1.373	1.373	0.048	0.133	0.286	0.144	0.332
2002	0.344	0.560	0.904	1.053	1.120	1.133	1.182	0.869	0.062	0.184	0.430	0.622
2003	0.756	0.990	1.257	1.373	1.373	1.373	1.373	0.205	0.239	0.257	0.321	0.479
2004	0.603	0.756	0.867	0.972	1.018	1.030	0.088	0.101	0.148	0.319	0.397	0.591
2005	0.726	0.902	1.174	1.228	1.237	1.223	1.223	1.182	0.053	0.171	0.215	0.215
PROM.	0.727	0.955	1.192	1.276	1.292	1.292	1.079	0.422	0.129	0.219	0.320	0.490
MAXIMO	1.236	1.360	1.485	1.479	1.461	1.453	1.442	1.426	0.264	0.372	0.586	0.927
MINIMO	0.344	0.560	0.867	0.972	1.018	1.030	0.048	0.000	0.053	0.130	0.144	0.215

Observaciones:

- 1.- Registrado el último día del mes.
 - 2.- Noviembre de 1993, se inicia la operación.
 - 3.- Volumen Util Máximo hasta Julio 95 : 1.485 Mio m³.
 - 4.- Volumen Util Máximo desde Agosto 95 : 1.373 Mio m³.
- VALORES INTERPOLADOS

D.- CAUDALES REGULADOS

CAUDAL REGULADO (m3/s)

Estación: YUNCAN

Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SET	OCT	NOV	DIC
1965	40.747	67.304	77.706	45.785	22.695	14.294	13.163	12.407	26.902	28.121	33.404	48.597
1966	60.717	81.282	51.409	28.713	34.103	14.742	11.171	10.114	18.522	33.286	39.154	52.621
1967	60.107	69.040	108.495	55.735	24.233	16.493	13.721	14.573	17.775	41.648	24.856	38.959
1968	62.172	75.927	77.448	40.417	25.052	17.774	14.239	18.540	20.095	38.001	35.357	39.029
1969	34.655	61.309	40.155	37.902	18.968	19.784	15.547	11.338	11.874	21.713	30.413	48.063
1970	86.533	65.627	57.414	53.938	31.087	18.748	16.602	15.579	22.812	18.689	28.471	47.888
1971	78.165	80.627	83.603	61.285	29.336	19.287	18.070	15.467	13.825	21.569	17.348	39.118
1972	58.119	45.592	82.948	60.719	28.952	16.809	14.905	12.758	18.821	29.095	27.308	48.529
1973	64.217	118.168	87.455	63.528	26.362	22.425	20.298	22.415	27.519	41.345	37.106	73.974
1974	120.931	108.015	73.854	71.089	27.555	18.582	24.348	18.931	20.412	32.513	23.403	40.504
1975	88.707	74.789	89.897	38.632	34.976	20.201	16.339	16.392	25.826	27.580	36.266	48.113
1976	80.752	74.946	60.470	45.155	23.409	16.493	16.681	18.438	26.370	14.898	21.799	27.245
1977	53.432	55.344	73.839	43.763	28.557	17.141	14.381	16.435	20.897	20.911	61.029	36.873
1978	64.729	58.380	68.201	45.944	29.781	19.586	16.228	9.355	22.194	22.930	35.112	35.217
1979	34.891	72.378	106.596	66.363	25.031	17.140	17.286	16.386	14.446	21.692	30.544	29.795
1980	36.477	59.559	69.038	37.141	16.985	14.480	15.538	18.293	15.178	35.273	28.891	35.395
1981	45.391	97.984	76.943	45.920	21.504	15.845	14.837	17.284	15.954	39.323	48.432	62.930
1982	72.486	77.909	82.380	47.345	26.210	20.777	20.811	22.450	26.433	39.366	55.522	47.051
1983	54.928	53.673	60.050	53.554	23.610	20.778	18.800	18.698	22.585	24.809	26.144	42.252
1984	57.464	128.538	91.987	70.114	27.480	21.800	18.839	21.758	20.590	28.595	42.493	45.848
1985	40.828	70.985	89.828	64.371	48.655	23.758	20.893	15.844	43.819	30.295	35.609	47.348
1986	74.952	98.509	102.051	61.638	42.272	20.661	24.418	25.250	23.408	25.127	29.539	33.504
1987	88.730	65.878	42.856	35.095	22.297	23.710	28.191	18.611	17.747	22.454	31.236	30.200
1988	93.694	75.340	49.160	51.221	27.430	21.036	19.059	13.262	18.944	18.992	19.620	33.081
1989	78.125	82.233	89.827	60.064	26.430	22.518	20.331	20.233	21.013	32.447	31.583	28.447
1990	88.527	42.872	50.985	31.738	23.410	30.888	21.080	17.688	20.595	51.343	64.582	52.539
1991	44.888	68.985	95.595	50.363	31.448	25.392	21.695	17.328	18.770	21.071	34.883	28.262
1992	36.899	34.343	48.407	27.438	15.424	14.634	13.448	15.534	13.908	29.211	23.675	17.924
1993	44.238	74.310	68.589	50.914	28.784	18.963	19.231	19.663	25.989	29.771	59.951	98.552
1994	80.255	106.833	68.234	59.012	26.513	18.994	22.769	21.466	17.115	18.761	25.748	22.216
1995	50.462	43.814	78.318	40.170	20.578	14.407	13.908	14.516	14.041	19.249	29.364	32.032
1996	44.982	59.035	63.028	50.759	24.913	16.619	15.071	18.320	18.822	17.572	19.533	35.783
1997	37.675	84.151	58.780	31.303	20.078	13.453	12.650	20.473	23.110	21.778	32.483	48.692
1998	77.971	98.750	65.572	50.753	21.347	18.612	17.840	14.578	12.457	21.697	26.604	35.202
1999	65.532	94.408	92.168	66.161	31.178	17.715	17.484	17.046	18.998	24.370	20.514	31.358
2000	52.227	78.979	88.227	60.052	23.944	17.663	18.762	24.603	24.491	20.181	20.620	27.585
2001	96.477	99.915	88.285	55.670	27.084	16.203	16.817	18.954	18.058	22.365	37.113	41.676
2002	28.192	74.003	84.297	49.209	26.787	15.983	24.418	18.478	19.989	28.420	48.566	52.381
2003	51.340	72.580	88.747	61.671	33.222	21.379	18.801	20.878	18.265	16.583	16.728	53.411
2004	30.716	55.277	52.126	29.457	20.818	16.049	21.478	17.759	24.504	44.198	33.449	49.052
2005	39.388	59.815	74.244	38.468	20.497	15.874	14.477	15.896	14.067	28.233	19.384	40.115
PROM.	59.794	73.978	74.012	50.107	26.623	18.876	17.942	17.322	20.262	27.306	32.678	42.173
DES. EST.	20.847	20.698	17.445	13.021	6.024	3.500	3.748	3.565	5.685	6.422	11.937	13.909
MAXIMO	120.931	128.538	108.495	81.285	48.655	30.688	28.191	25.250	43.619	51.343	64.582	98.552
MINIMO	28.192	34.343	40.155	27.436	15.424	13.453	11.171	9.355	11.874	14.698	16.620	17.924

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CAUDAL REGULADO (m³/s)

Estación: HUANGUSH BAJO

Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965	0.798	1.191	1.625	1.050	0.495	0.251	0.220	0.171	0.037	0.842	0.961	0.947
1966	1.144	1.231	1.043	0.680	0.938	0.262	0.412	0.293	1.308	1.185	0.455	0.653
1967	1.537	1.748	1.315	0.696	0.222	0.085	0.428	0.231	0.543	0.000	0.000	0.704
1968	1.496	1.553	0.908	0.898	0.334	0.190	0.100	0.829	4.284	0.475	0.355	0.072
1969	SI	0.000	0.058	0.629	1.912	3.820	2.588	2.082	0.075	0.240	0.259	SI
1970	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.921	1.102	SI	0.000
1971	0.000	0.053	1.212	1.018	0.353	0.177	3.061	3.145	3.342	1.851	0.215	SI
1972	SI	SI	0.020	0.033	0.000	0.000	0.207	1.311	0.032	0.000	0.333	0.000
1973	1.073	2.244	1.230	0.941	0.288	0.338	1.017	2.443	0.992	SI	0.000	0.000
1974	1.642	1.234	0.872	1.181	0.215	1.071	2.929	1.999	2.898	0.913	0.451	0.345
1975	SI	SI	SI	SI	SI	0.298	1.540	4.169	1.575	0.294	0.694	SI
1976	SI	SI	0.020	0.881	0.380	0.775	2.770	4.879	0.565	0.859	0.500	SI
1977	SI	SI	SI	SI	SI	0.540	1.411	4.848	1.339	0.422	SI	SI
1978	SI	SI	SI	0.079	0.578	3.031	3.187	0.308	0.914	2.242	SI	SI
1979	SI	SI	SI	0.082	0.475	2.393	2.904	2.560	1.824	SI	0.485	SI
1980	SI	SI	SI	SI	SI	1.164	1.408	3.900	2.821	0.222	SI	SI
1981	SI	SI	0.657	1.089	0.482	1.440	3.578	0.822	0.572	0.668	SI	SI
1982	0.009	SI	SI	SI	0.039	0.542	3.701	3.497	1.204	1.025	1.278	SI
1983	SI	SI	0.002	SI	0.019	1.107	1.344	2.881	3.698	SI	SI	SI
1984	SI	SI	SI	SI	SI	0.820	3.225	SI	0.887	4.893	0.304	SI
1985	SI	SI	SI	SI	SI	0.010	1.847	4.113	1.518	0.965	0.482	2.047
1986	0.028	SI	SI	SI	SI	0.482	3.772	5.270	2.479	0.144	SI	SI
1987	0.327	0.083	SI	0.011	SI	SI	1.272	1.807	3.973	0.630	SI	SI
1988	SI	SI	0.007	SI	SI	SI	2.027	3.150	2.881	0.000	0.449	1.357
1989	SI	SI	SI	SI	SI	0.370	0.409	2.152	0.367	SI	SI	SI
1990	SI	SI	0.058	SI	1.515	0.328	2.818	4.798	3.773	0.455	SI	SI
1991	SI	SI	1.315	0.768	0.365	0.327	SI	0.008	2.497	SI	0.739	0.314
1992	SI	SI	SI	SI	1.895	0.000	0.000	1.828	2.418	0.461	SI	0.144
1993	0.003	SI	SI	SI	SI	0.310	0.322	2.362	3.548	0.544	0.067	0.284
1994	1.407	1.774	1.218	1.128	0.458	0.921	1.384	1.248	1.389	0.137	0.106	0.021
1995	SI	SI	SI	SI	SI	0.955	2.234	1.548	1.614	0.313	0.641	SI
1996	SI	0.024	SI	0.121	SI	1.953	1.889	1.713	2.501	0.404	0.346	0.973
1997	SI	SI	0.170	SI	2.233	1.311	2.269	1.548	1.172	SI	SI	0.000
1998	0.000	0.000	0.000	0.000	0.000	1.596	2.723	2.968	1.510	2.306	0.898	0.000
1999	0.000	0.000	0.000	0.000	0.000	0.016	0.737	1.687	2.113	2.424	1.454	1.741
2000	0.000	0.083	0.000	0.000	0.000	SI	SI	2.053	2.853	1.355	SI	SI
2001	SI	SI	SI	SI	SI	0.399	1.558	2.305	2.695	0.132	0.056	0.000
2002	0.368	0.481	0.612	0.275	0.148	1.287	0.994	2.202	2.695	0.393	0.544	0.272
2003	0.151	0.222	0.319	0.890	0.900	2.881	3.358	3.782	2.018	0.393	0.544	0.272
2004	0.161	0.059	0.183	0.000	0.850	1.772	2.541	2.298	1.721	0.155	0.132	0.162
2005	0.340	0.517	0.531	0.280	1.988	1.125	1.911	2.731	2.006	0.347	0.478	0.000
PROM.	0.528	0.693	0.557	0.529	0.603	0.927	1.916	2.570	1.929	0.776	0.483	0.384
DES. EST.	0.818	0.767	0.553	0.447	0.850	0.888	1.144					

CAUDAL REGULADO (m³/s)

Estación: JAICO
Cuenca: RIO FAUCARTAMBO
Fuente: ELECTROANDES S.A.

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965	0.199	0.341	0.239	0.150	0.084	0.055	0.031	0.040	0.046	0.390	0.839	0.194
1966	0.206	0.765	1.123	0.703	0.412	1.685	1.815	1.713	0.520	0.097	0.165	0.214
1967	0.238	0.284	0.259	0.157	0.081	0.021	3.059	1.204	0.040	0.091	0.151	0.180
1968	0.000	0.000	0.000	0.000	0.187	3.010	1.706	0.004	0.000	0.000	0.000	0.000
1969	0.000	0.000	0.000	0.000	0.121	1.663	2.517	0.578	0.174	0.000	0.000	0.000
1970	0.000	0.000	0.000	0.000	0.000	1.125	1.860	1.489	0.467	0.011	0.269	0.013
1971	0.000	0.000	0.000	0.000	0.000	0.104	2.948	1.707	0.887	0.151	0.000	0.000
1972	0.000	0.000	0.000	0.165	0.438	1.281	3.867	0.067	0.080	0.040	0.000	0.000
1973	0.000	0.000	0.000	0.000	0.000	0.038	0.114	1.522	0.014	0.000	0.000	1.346
1974	0.495	0.078	0.073	0.043	0.145	1.798	2.440	1.344	0.104	0.163	0.303	0.359
1975	0.111	0.147	0.063	0.285	0.209	0.274	2.913	2.730	0.380	0.163	0.060	0.135
1976	0.000	0.016	0.023	0.010	0.003	0.002	0.819	2.191	1.938	0.774	0.093	0.013
1977	0.047	0.220	0.067	0.059	0.092	0.043	0.029	2.156	2.179	0.076	0.213	0.197
1978	0.052	0.056	0.049	0.029	0.016	0.011	0.714	1.474	1.884	0.407	0.128	0.229
1979	0.082	0.090	0.054	0.221	0.313	2.552	1.615	1.212	0.006	0.016	0.095	0.280
1980	0.092	0.098	0.027	0.053	0.027	0.518	3.191	1.461	0.713	0.023	0.029	0.045
1981	0.000	0.000	0.000	0.150	0.027	0.250	1.030	2.206	1.923	0.375	0.950	0.000
1982	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI	SI
1983	0.000	0.000	0.000	0.000	0.000	0.499	0.575	2.152	0.543	0.000	0.000	0.000
1984	0.000	0.000	0.121	0.487	0.244	0.876	2.028	1.105	1.039	0.454	0.148	0.000
1985	0.000	0.000	0.000	0.000	0.332	1.476	1.687	0.805	0.712	0.000	0.000	0.000
1986	0.000	0.000	0.000	0.000	1.510	1.430	0.743	1.617	0.359	0.158	0.263	0.484
PROM.	0.072	0.099	0.100	0.112	0.207	0.854	1.666	1.398	0.670	0.174	0.178	0.185
DES. EST.	0.124	0.182	0.246	0.162	0.329	0.908	1.107	0.743	0.692	0.208	0.259	0.289
MÁXIMO	0.495	0.765	1.123	0.703	1.510	3.010	3.867	2.730	2.179	0.774	0.950	1.346
MÍNIMO	0.000	0.000	0.000	0.000	0.000	0.002	0.029	0.004	0.000	0.000	0.000	0.000

SI SIN INFORMACION

CAUDAL REGULADO (m³/s)

Estación: ALTOS MACHAY
Cuenca: RIO FAUCARTAMBO
Fuente: ELECTROANDES S.A.

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965	0.240	0.164	0.371	0.210	0.108	0.154	0.978	0.843	0.821	0.732	0.118	0.172
1966	0.275	0.405	0.241	0.259	0.354	0.969	0.632	0.716	0.454	0.165	0.324	0.218
1967	0.359	0.344	0.238	0.244	0.045	0.065	0.088	1.182	0.870	0.150	0.150	0.414
1968	0.286	0.301	0.363	0.137	0.421	1.411	1.452	1.215	0.302	0.141	0.193	0.252
1969	0.362	0.278	0.255	0.185	0.076	0.488	1.764	0.607	0.334	0.099	0.164	0.148
1970	SI	SI	0.314	0.269	0.117	0.004	1.163	1.590	0.289	0.108	0.057	0.165
1971	0.109	0.230	SI	0.193	0.027	0.117	1.163	0.254	1.240	1.586	0.214	0.168
1972	0.157	0.318	0.361	0.196	0.082	0.043	2.026	1.620	0.981	0.739	0.143	0.147
1973	0.206	0.307	0.359	0.101	0.073	0.876	0.501	2.020	0.767	0.242	0.072	0.170
1974	0.222	0.339	0.295	0.013	0.070	0.073	1.011	1.309	0.930	0.712	0.069	0.216
1975	0.290	0.154	0.578	0.681	0.279	0.232	1.258	1.895	1.765	0.341	0.249	0.216
1976	0.215	0.188	0.156	0.109	0.122	0.724	1.843	2.451	0.365	0.370	0.338	0.225
1977	0.288	0.444	0.372	0.124	0.107	0.350	0.809	1.004	2.921	0.750	0.614	0.224
1978	0.180	0.301	0.246	0.220	0.099	0.048	0.029	2.020	1.445	0.898	0.479	0.284
1979	0.397	0.333	0.316	0.529	0.288	1.280	0.581	0.253	1.478	1.255	0.824	0.862
1980	0.422	0.408	0.156	0.131	0.102	0.059	0.244	2.295	1.230	0.199	0.177	0.208
1981	0.324	0.244	0.237	0.202	0.271	0.160	0.151	0.552	1.868	1.111	0.154	1.135
1982	0.318	0.321	0.347	0.589	0.274	0.683	1.154	1.543	1.830	0.184	0.993	0.164
1983	0.251	0.231	0.234	0.128	0.168	0.008	0.033	1.853	1.623	0.214	0.058	0.139
1984	0.218	0.472	1.146	0.625	0.255	0.181	0.157	2.301	1.497	0.128	0.227	1.158
1985	0.199	0.183	0.250	0.312	0.235	1.329	3.016	1.070	0.055	0.152	0.170	0.110
1986	0.231	0.348	0.334	0.203	0.112	0.728	2.238	1.369	0.077	0.149	0.249	0.287
1987	0.164	0.917	1.008	0.869	0.243	1.573	2.889	0.982	0.105	0.185	0.133	0.214
1988	SI	0.208	0.266	0.152	0.771	2.506	1.730	0.211	0.370	0.361	0.148	0.162
1989	0.213	0.269	0.244	0.093	0.097	1.431	2.883	0.623	0.191	0.122	0.169	0.168
1990	SI	SI	SI	SI	SI	SI	1.011	0.998	1.841	0.898	SI	SI
1991	SI	SI	SI	SI	SI	SI	0.043	1.289	1.927	1.200	SI	SI
1992	SI	SI	0.229	0.402	0.480	0.388	0.426	2.475	2.228	0.491	0.171	0.033
1993	0.000	0.006	SI	SI	0.092	0.065	1.150	2.181	1.769	0.527	SI	0.000
1994	0.000	0.000	0.000	0.000	0.000	0.000	0.662	2.191	1.918	0.228	0.000	0.000
1995	0.000	0.000	0.000	0.000	0.000	0.000	0.389	2.062	1.219	0.000	0.000	0.000
1996	0.000	0.000	0.130	0.497	0.387	1.103	1.634	1.572	1.100	1.050	0.514	0.000
1997	0.000	0.000	0.000	0.000	0.000	0.000	1.363	0.925	0.687	0.000	0.000	0.000
1998	0.000	0.000	0.000	0.000	0.000	1.553	1.172	2.088	0.608	0.000	0.116	0.000
PROM.	0.204	0.280	0.300	0.237	0.176	0.490	1.150	1.416	1.070	0.421	0.228	0.235
DES. EST.	0.127	0.185	0.248	0.206	0.172	0.814	0.814	0.881	0.709	0.397	0.213	0.279
MÁXIMO	0.422	0.917	1.146	0.689	0.771	2.506	3.018	2.475	2.921	1.586	0.993	1.158
MÍNIMO	0.000	0.000	0.000	0.000	0.000	0.000	0.029	0.211	0.055	0.000	0.000	0.000

SI SIN INFORMACION

CAUDAL REGULADO (m³/s)

Estación: VICTORIA II
Cuencas: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965												
1966												
1967												
1968												
1969												
1970												
1971												
1972												
1973												
1974												
1975												
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1992												
1993												
1994												
1995												
1996												
1997	0.029	0.199	0.381	0.126	0.035	0.025	0.058	0.098	0.093	0.088	0.130	0.187
1998	0.067	0.164	0.123	0.063	0.042	0.009	0.004	0.354	0.287	0.016	0.010	0.092
1999	0.051	0.110	0.125	0.084	0.017	0.006	0.002	0.000	0.600	0.153	0.100	0.052
2000	0.152	0.150	0.088	0.079	0.032	0.009	0.007	0.007	0.004	0.003	0.056	0.214
2001	0.256	0.000	0.060	0.049	0.033	0.011	0.027	0.514	0.246	0.010	SI	SI
2002	0.000	0.000	0.020	0.017	0.000	0.007	0.000	0.346	0.111	0.003	0.009	0.008
2003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.064	0.080	0.000	0.000	0.000
2004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.067	0.474	0.000	0.000	0.000
2005	0.000	0.000	0.000	0.000	0.022	0.005	0.035	0.087	0.474	0.000	0.000	0.000
PROM.	0.069	0.078	0.097	0.052	0.027	0.015	0.055	0.174	0.217	0.040	0.048	0.070
DES. EST.	0.091	0.087	0.118	0.045	0.021	0.018	0.118	0.183	0.205	0.056	0.051	0.087
MÁXIMO	0.296	0.199	0.361	0.128	0.065	0.056	0.365	0.514	0.600	0.153	0.100	0.214
MÍNIMO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000

SI SIN INFORMACION

CAUDAL REGULADO (m³/s)

Estación: PACCHAPATA
Cuencas: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
1965												
1966												
1967												
1968												
1969												
1970												
1971												
1972												
1973												
1974												
1975												
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1984												
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1987												
1988												
1989												
1990												
1991												
1992												
1993												
1994	0.008	0.104	0.060	0.101	0.034	0.017	0.023	0.034	0.478	0.028	0.021	0.036
1995	0.032	SI	0.026	0.038	0.045	0.024	0.024	0.544	0.000	0.027	0.013	0.015
1996	0.008	0.027	0.019	0.022	0.016	0.018	0.154	0.329	0.015	0.031	0.043	0.004
1997	0.021	0.063	0.068	0.021	0.024	0.032	0.006	0.449	0.060	0.036	0.038	0.038
1998	0.037	0.062	0.063	0.028	0.019	0.015	0.474	0.000	0.024	0.030	0.038	0.026
1999	0.000	0.000	0.000	0.006	0.024	0.003	0.000	0.488	0.000	0.000	0.000	0.000
2000	0.000	0.000	0.000	0.062	0.030	0.013	0.017	0.220	0.320	0.020	0.000	0.030
2001	0.000	0.000	0.000	0.055	0.030	0.010	0.028	0.531	0.000	0.000	0.121	0.000
2002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.195	0.395	0.014	0.000	0.000
2003	0.000	0.000	0.000	0.000	0.033	0.012	0.004	0.447	0.000	0.000	0.000	0.000
2004	0.000	0.000	0.000	0.000	0.000	0.000	0.364	0.010	0.000	0.000	0.000	0.000
2005	0.000	0.000	0.000	0.000	0.000	0.010	0.008	0.019	0.444	0.000	0.000	0.098
PROM.	0.009	0.023	0.020	0.028	0.021	0.013	0.094	0.272	0.145	0.015	0.023	0.021
DES. EST.	0.014	0.037	0.028	0.032	0.015	0.009	0.159	0.218	0.199	0.015	0.035	0.028
MÁXIMO	0.037	0.104	0.068	0.101	0.045	0.032	0.474	0.544	0.478	0.038	0.121	0.098
MÍNIMO	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

SI SIN INFORMACION

F.- VOLÚMENES MÁXIMOS, MÍNIMOS Y ÚTILES

SUB-SISTEMA YUNCAN-YAUPI

EMBALSE	Nivel		Volumen Util (Mm³)
	Mínimo	Máximo	
Laguna Jaico	4,196.430 msnm	4,230.500 msnm	15.935
Laguna Altos Machay	4,081.130 msnm	4,124.000 msnm	13.869
Laguna Matacocha	3,954.710 msnm	3,985.945 msnm	10.829
Laguna Huangush Alto	3,837.900 msnm	3,880.500 msnm	24.839
Laguna Huangush Bajo	3,672.000 msnm	3,674.500 msnm	0.692
Laguna Victoria I	4,050.600 msnm	4,059.800 msnm	1.510
Laguna Pacchapata	4,368.900 msnm	4,374.580 msnm	1.373
EMBALSE EQUIVALENTE	-	-	69.047

VOLUMEN UTIL TOTAL DEL SISTEMA (Mm³)	69.047
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**F.2.- VOLÚMENES MÁXIMOS, MÍNIMOS Y ÚTILES DE OTROS
EMBALSES DE REGULACION**

EMBALSE DE REGULACION HORARIA

VASO	Nivel		Volumen Util (Mm ³)
	Mínimo	Máximo	
Embalse Huallamayo	2,360.000 msnm	2,412.500 msnm	0.458
EMBALSE EQUIVALENTE	-	-	0.458

VOLUMEN UTIL TOTAL RESERVORIO HORARIO (Mm³)	0.458
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**G.- CUADROS Y CURVAS DE ALTURA – ÁREA – VOLUMEN DE LOS
EMBALSES**

ELEVACION - AREA - VOLUMEN

Fuente : ELECTROANDES S.A.

EMBALSE : HUANGUSH ALTO

ELEVACION (m.s.n.m.)	AREA (Km2)	VOLUMEN (Mm3)
3775.000	0.111	0.000
3790.000	0.250	3.565
3800.000	0.303	6.903
3810.000	0.356	9.965
3830.000	0.435	18.565
3,837.900	0.464	23.298
3,844.000	0.498	26.229
3,850.000	0.531	29.312
3,856.000	0.562	32.593
3,862.000	0.594	36.067
3,868.000	0.624	39.706
3,874.000	0.674	43.586
3,880.500	0.722	48.136

EMBALSE : HUANGUSH BAJO

ELEVACION (m.s.n.m.)	AREA (Km2)	VOLUMEN (Mm3)
3671.900	0.236	0.000
3672.000	0.264	0.002
3672.500	0.281	0.136
3673.000	0.298	0.272
3673.500	0.315	0.410
3674.000	0.332	0.551
3674.500	0.350	0.694

EMBALSE : JAICO

ELEVACION (m.s.n.m.)	AREA (Km2)	VOLUMEN (Mm3)
4190.000	0.298	0.000
4192.000	0.308	0.605
4194.000	0.317	1.229
4,196.430	0.331	2.018
4,202.000	0.357	3.909
4,212.000	0.459	7.728
4,217.000	0.517	9.848
4,222.000	0.595	12.388
4,227.000	0.693	15.588
4,230.500	0.774	17.953

ELEVACION - AREA - VOLUMEN

Fuente : ELECTROANDES S.A.

EMBALSE : ALTOS MACHAY

ELEVACION (m.s.n.m.)	AREA (Km2)	VOLUMEN (Mm3)
4,080.000	0.208	0.000
4,081.130	0.227	0.256
4,086.000	0.248	1.884
4,094.000	0.267	3.436
4,100.000	0.284	5.084
4,112.000	0.354	8.734
4,118.000	0.465	11.187
4,124.000	0.516	14.125

EMBALSE : MATACOCHA

ELEVACION (m.s.n.m.)	AREA (Km2)	VOLUMEN (Mm3)
3954.000	0.213	0.000
3,954.710	0.254	0.182
3,966.000	0.316	3.413
3,973.000	0.348	5.756
3,980.000	0.367	8.331
3,985.945	0.512	11.011

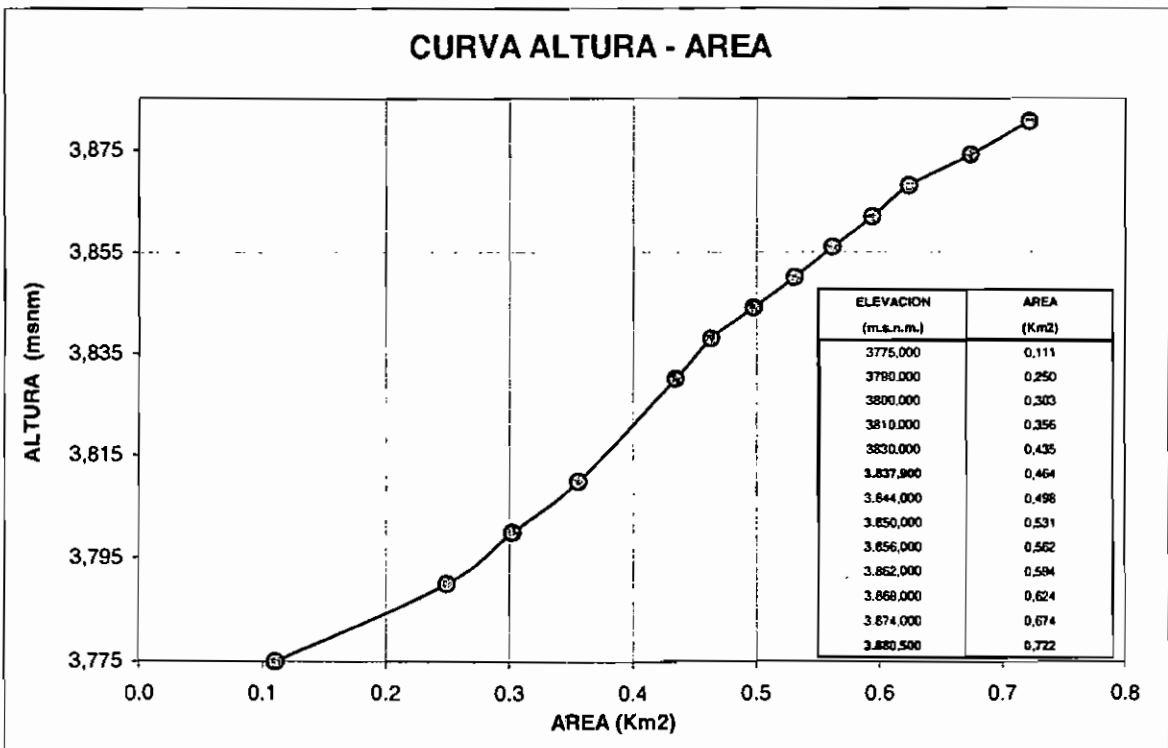
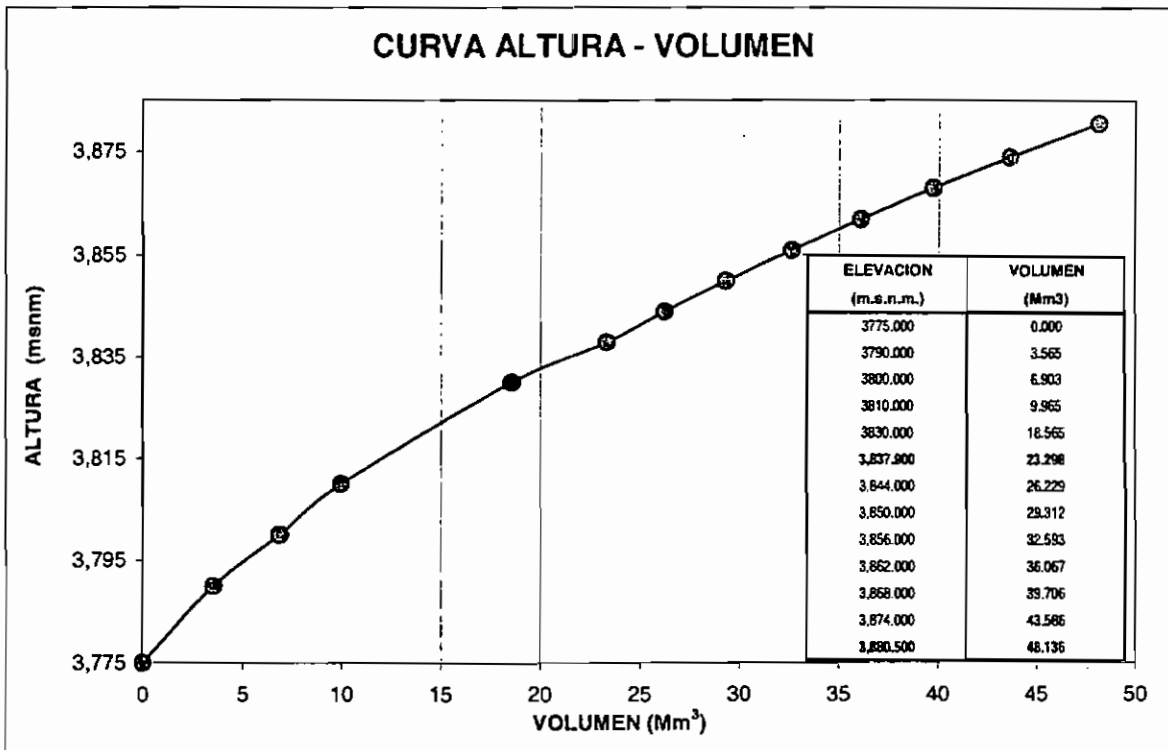
EMBALSE : PACCHAPATA

ELEVACION (m.s.n.m.)	AREA (Km2)	VOLUMEN (Mm3)
4,368.850	0.163	0.000
4,368.900	0.194	0.002
4,369.000	0.214	0.024
4,370.000	0.223	0.247
4,371.000	0.232	0.479
4,372.000	0.241	0.719
4,373.000	0.248	0.967
4,374.000	0.255	1.223
4,374.580	0.259	1.375

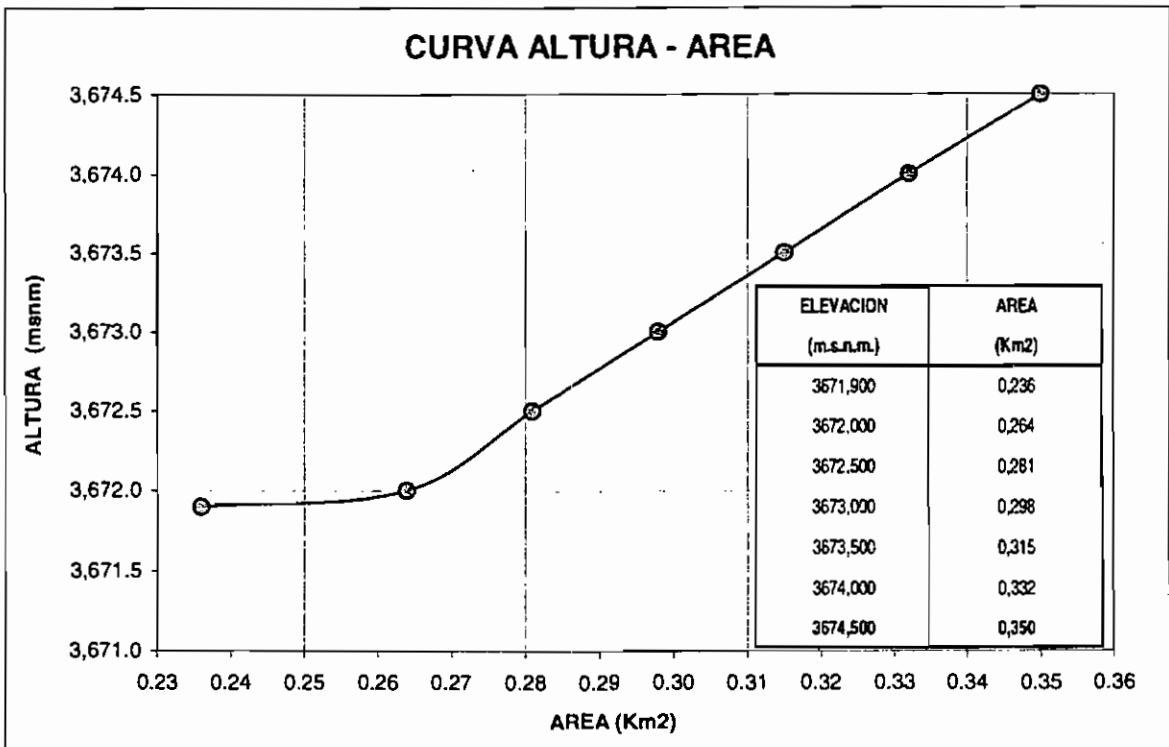
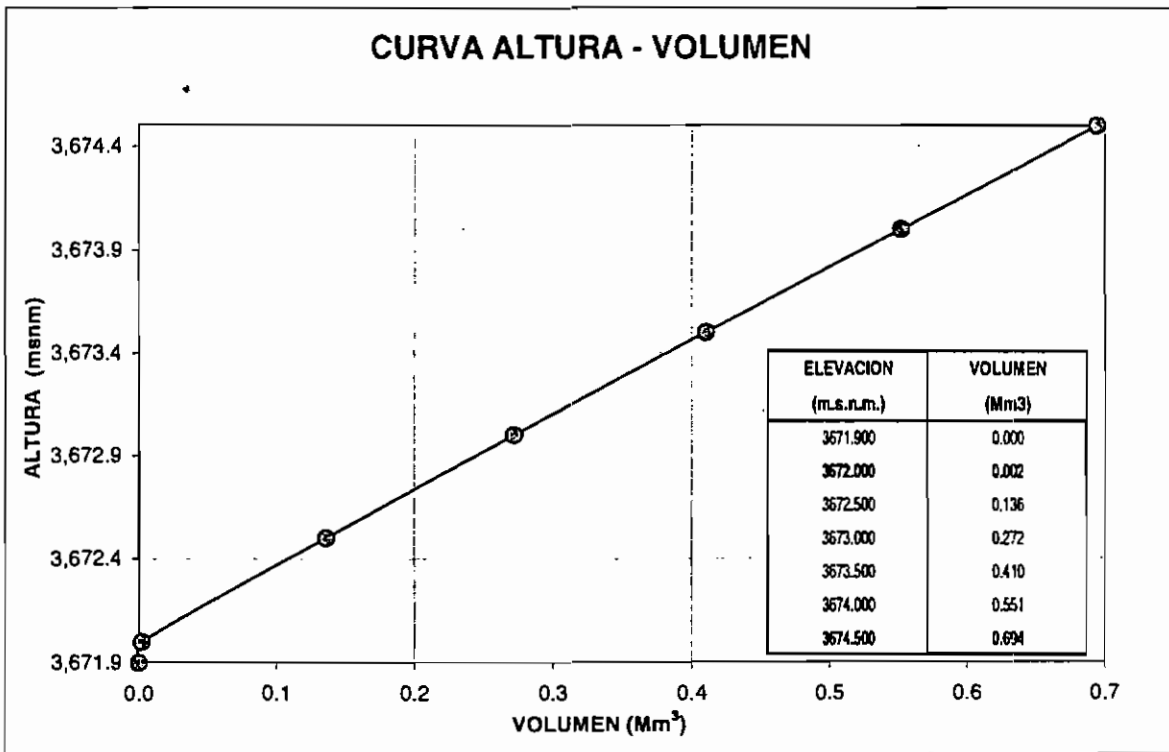
EMBALSE : VICTORIA I

ELEVACION (m.s.n.m.)	AREA (Km2)	VOLUMEN (Mm3)
4030.000	0.040	0.000
4035.000	0.072	0.272
4040.000	0.099	0.698
4045.000	0.117	1.238
4,050.600	0.136	1.940
4,052.000	0.142	2.127
4,054.000	0.151	2.420
4,056.000	0.161	2.746
4,058.000	0.175	3.102
4,059.000	0.208	3.293
4,059.800	0.227	3.451

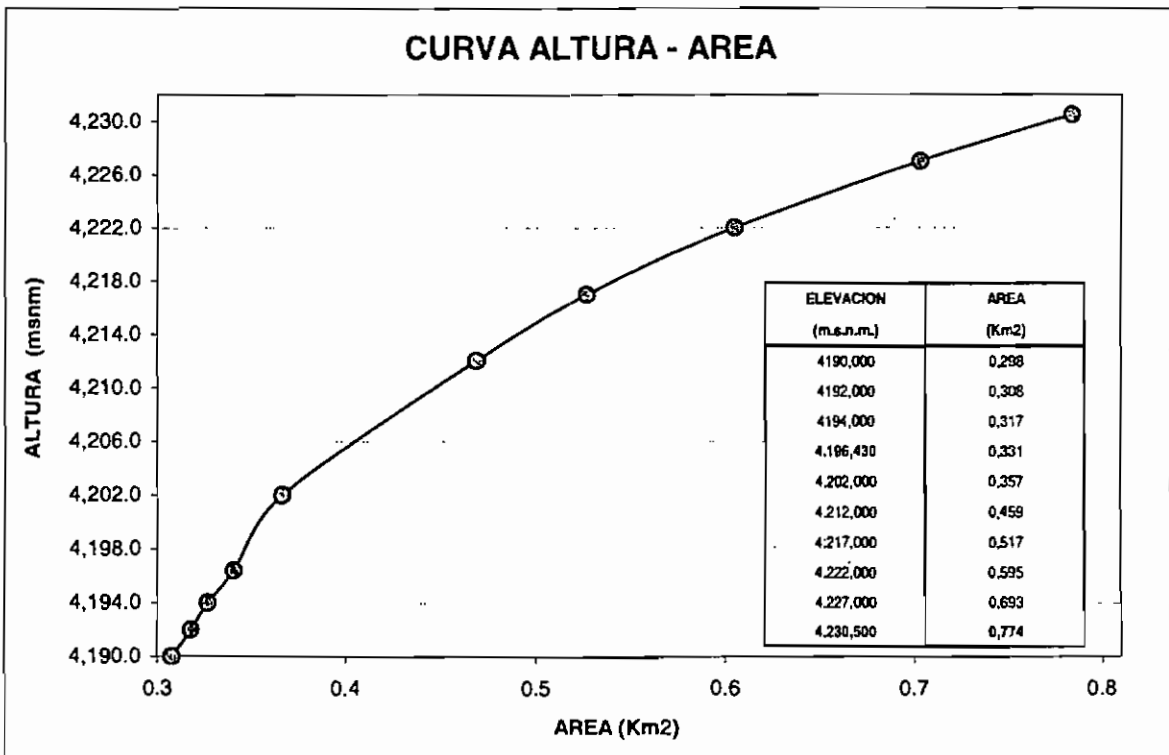
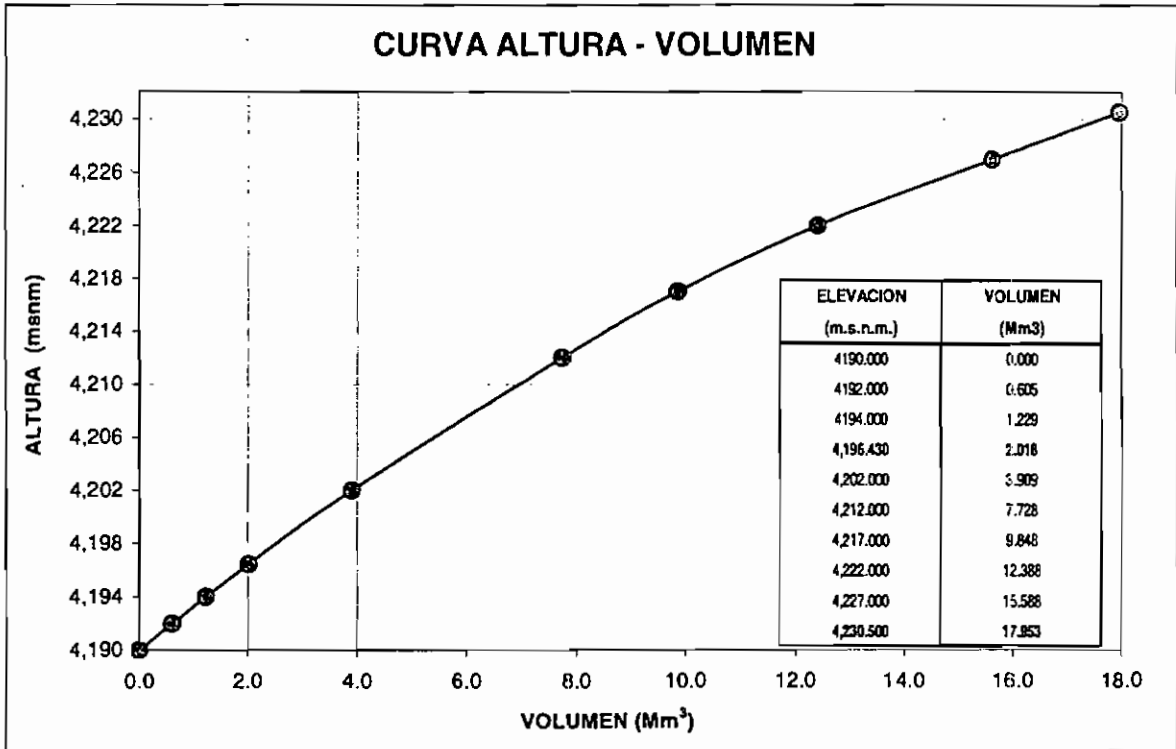
EMBALSE: HUANGUSH ALTO



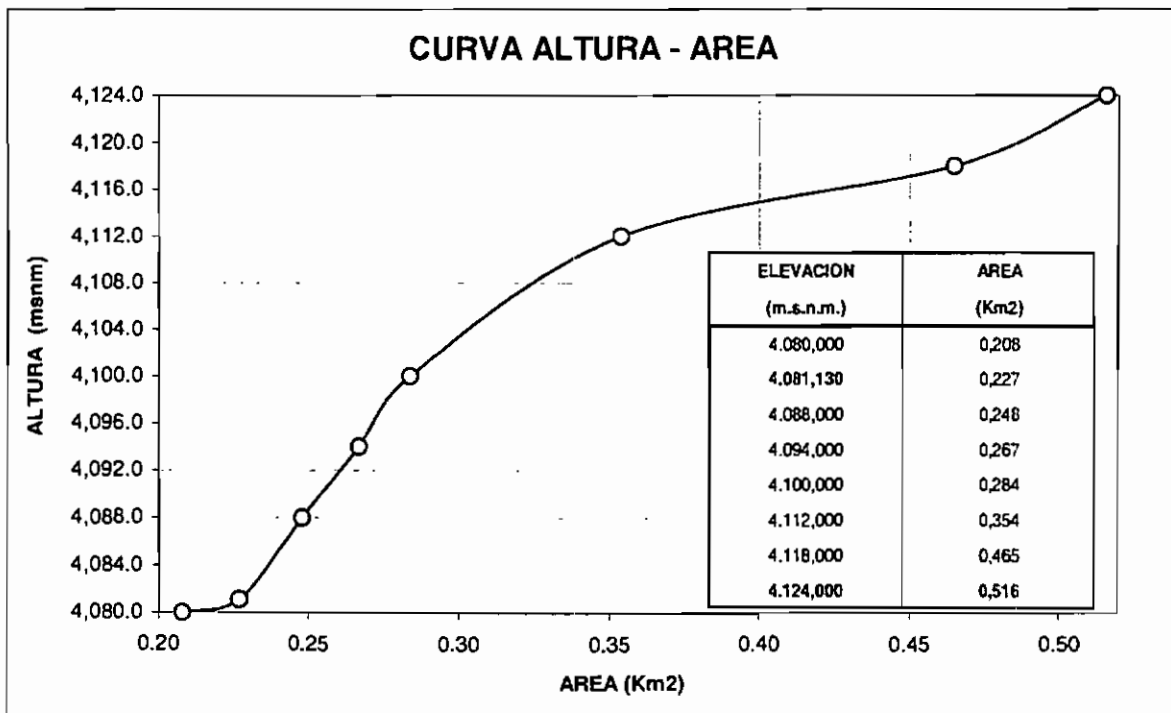
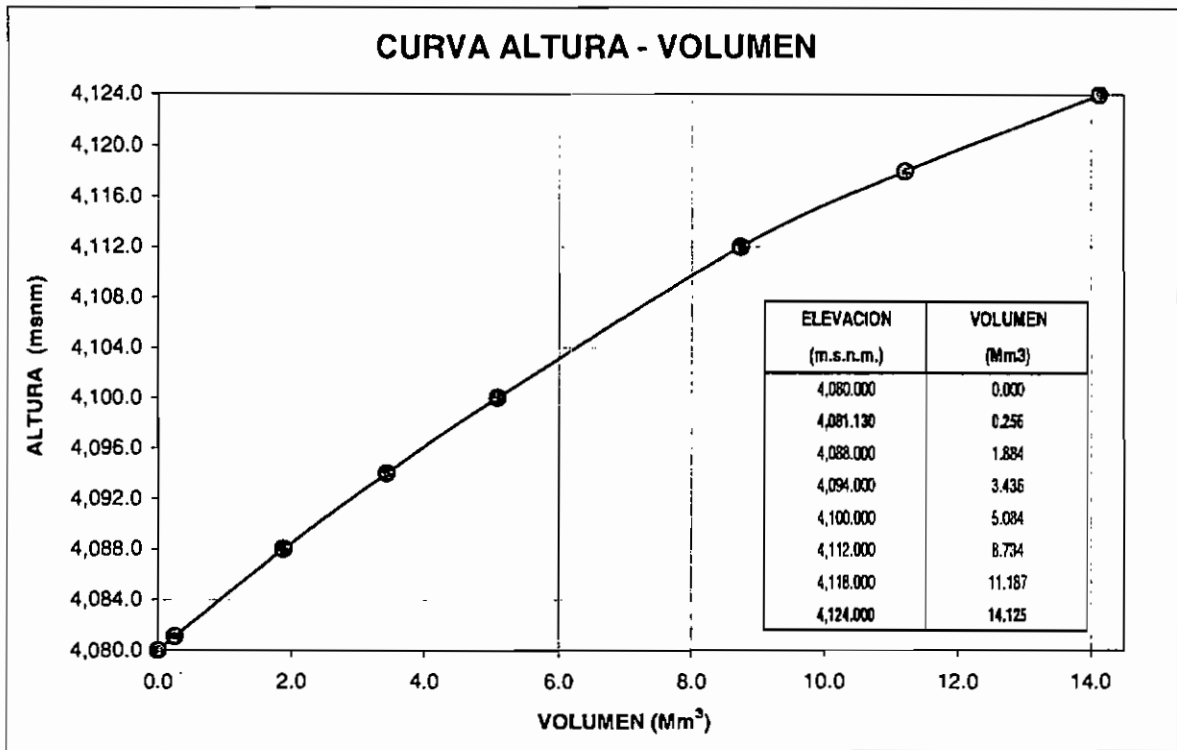
EMBALSE: HUANGUSH BAJO



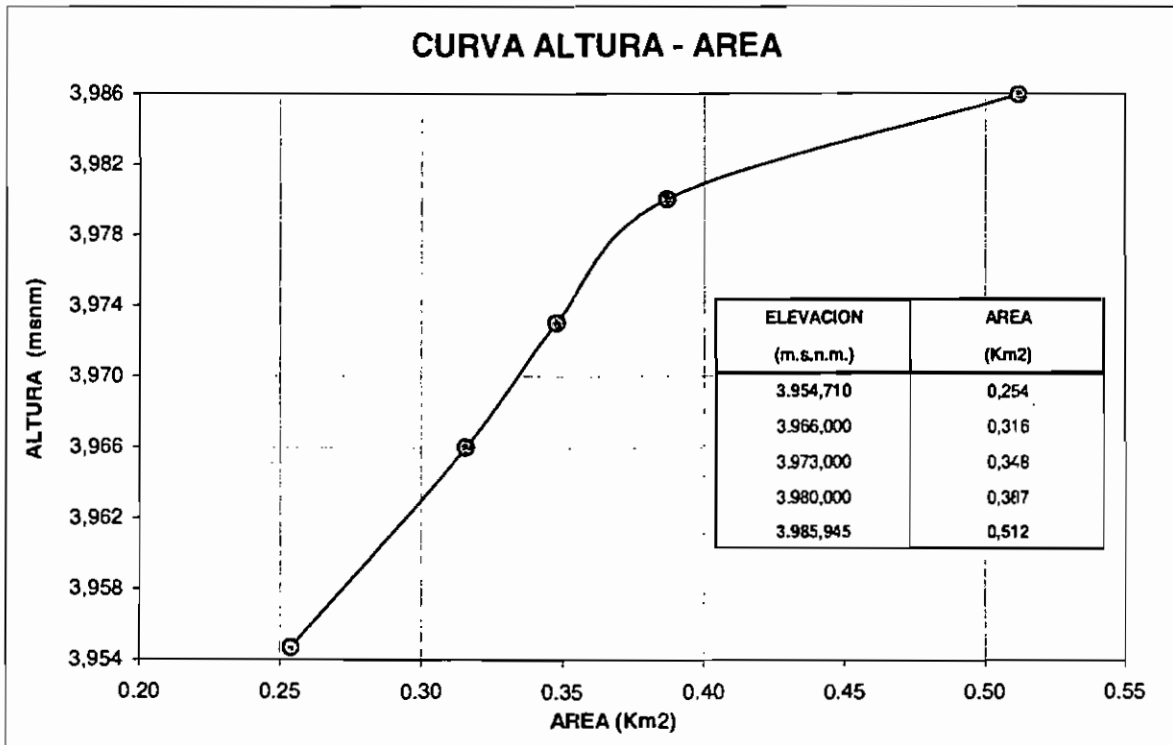
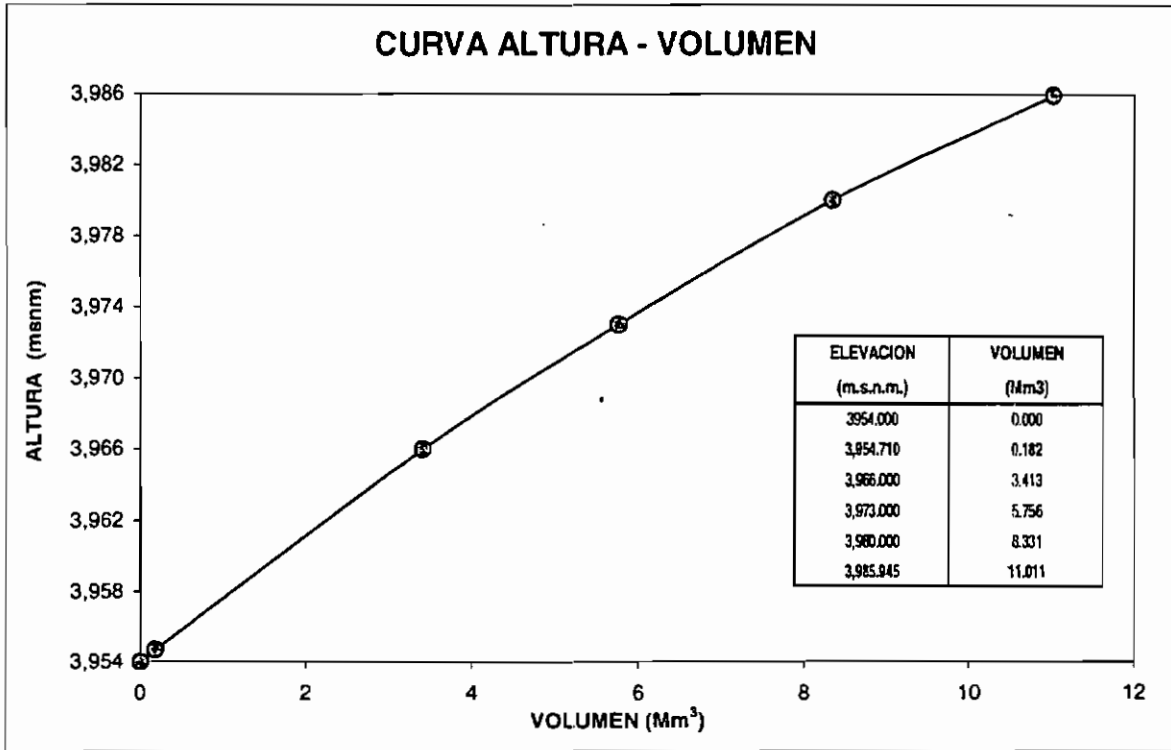
EMBALSE: JAICO



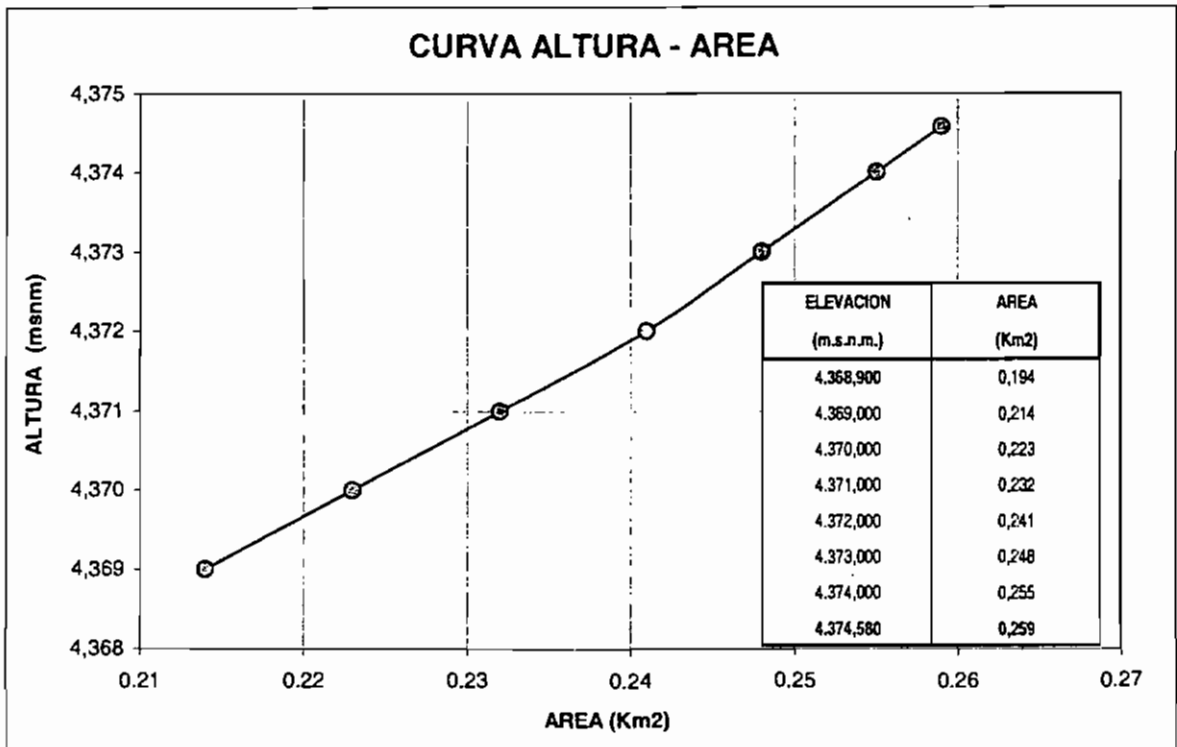
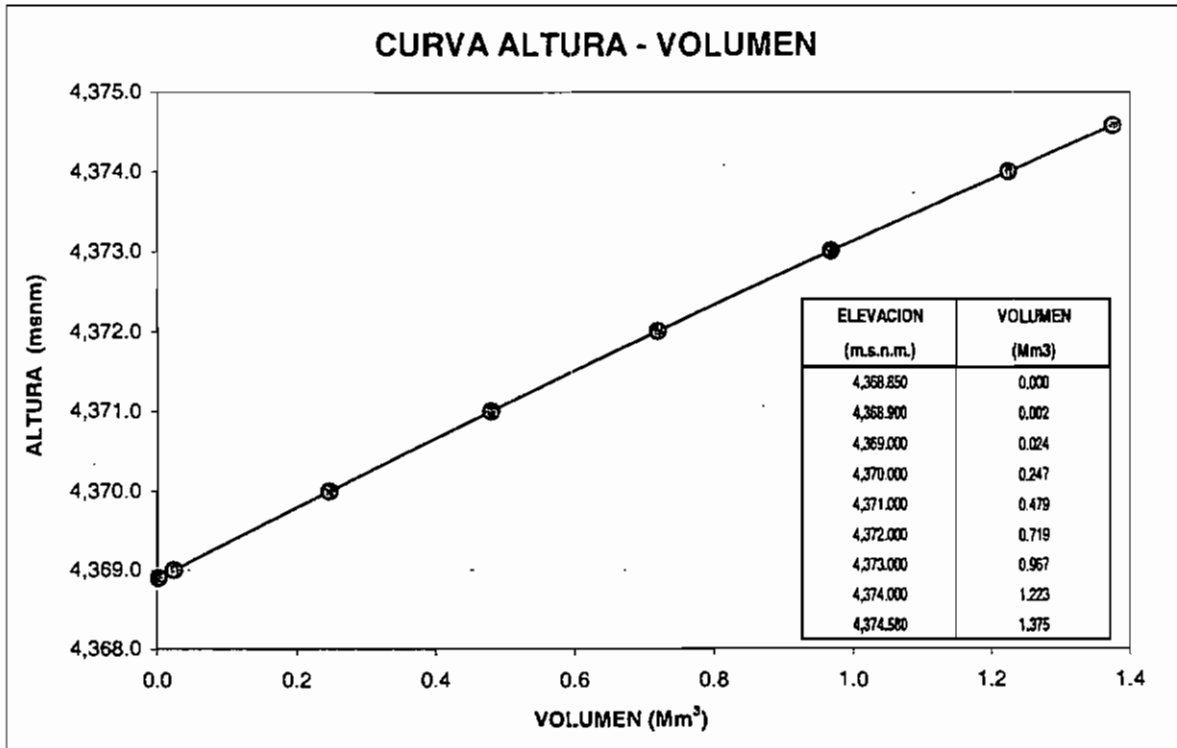
EMBALSE: ALTOS MACHAY



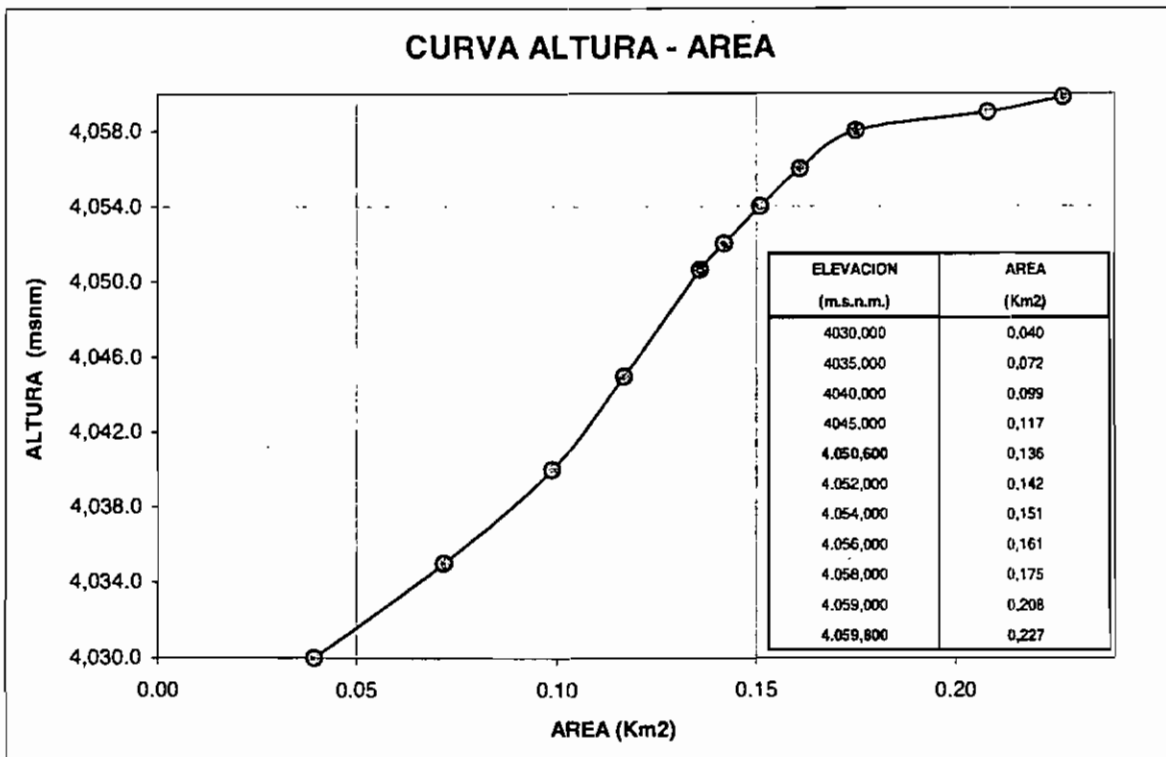
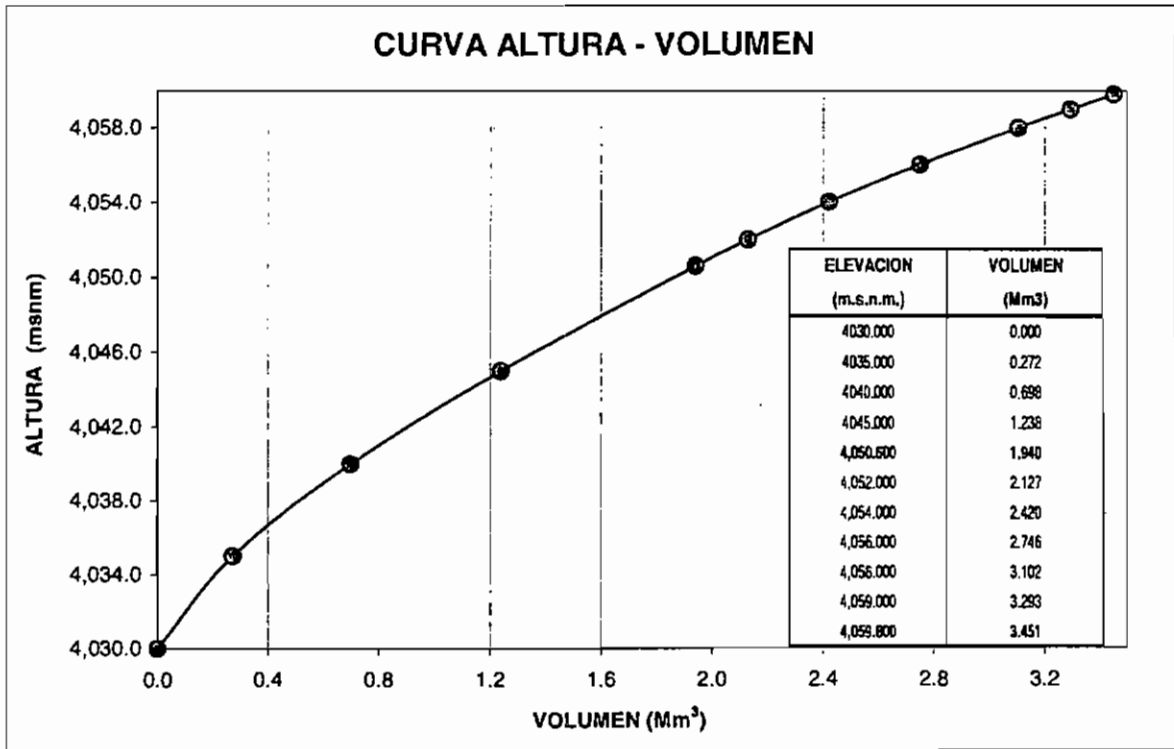
EMBALSE: MATACOCHA



EMBALSE: PACCHAPATA



EMBALSE: LA VICTORIA I



H.- PRECIPITACION MENSUAL

**ESTACIONES PLUVIOMETRICAS OPERATIVAS
SUBSISTEMA YUNCAN-YAUI**

ITEM	ESTACION	COORDENADAS GEOGRAFICAS		ALTURA (msnm)	PRECIP PROM (mm)
		LATITUD SUR	LONG. OESTE		
1	ALTOS MACHAY	10° 33' 05"	75° 53' 00"	4,140	1,481.5
2	CHALHUACocha	10° 35' 20"	75° 51' 35"	4,050	1,670.0
3	HACIENDA HUANCA	10° 40' 45"	76° 05' 00"	4,150	914.1
4	HUACHON	10° 37' 50"	75° 56' 50"	3,400	640.0
5	HUALLAMAYO	10° 45' 35"	75° 42' 55"	2,440	1,013.9
6	HUANGUSH ALTO	10° 34' 20"	75° 49' 25"	3,885	1,716.5
7	HUANGUSH BAJO	10° 35' 00"	75° 48' 25"	3,600	1,733.4
8	JAICO	10° 33' 20"	75° 54' 45"	4,230	1,525.7
9	LA VICTORIA II	10° 51' 30"	75° 55' 20"	4,000	1,134.2
10	LECHECOCHA	10° 31' 35"	75° 54' 00"	4,220	1,553.1
11	LUXOPATA	10° 50' 10 "	75° 51' 30"	4,000	1,231.8
12	MACHAVADO	10° 34' 50"	75° 53' 50"	3,850	1,314.4
13	MANTO	10° 44' 25 "	75° 35 '05 "	1,870	1,622.4
14	PACCHAPATA	10° 32' 40"	75° 53' 45"	4,360	1,389.8
15	PAUCARTAMBO	10° 46' 00 "	75° 48' 40 "	3,000	1,002.3
16	PUAGMARAY	10° 38' 30"	75° 46' 47"	2,450	1,391.8
17	YUNCAN	10° 43' 00"	75° 39' 00"	1,870	1,280.8

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: YUNCAN

Cuenca: RIO PALUCARTAMBO

Fuente: ELECTROANDES S.A.

Latitud S: 10° 43' 00"

Longitud O: 75° 39' 00"

Altitud: 1,870 msnm

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	126.6	187.6	222.4	71.8	10.2	38.0	35.3	50.5	119.3	123.4	96.6	112.8	1194.5
1966	150.6	176.7	156.8	73.1	74.5	6.6	7.5	41.2	35.9	114.4	112.9	135.4	1087.6
1967	173.1	253.5	307.7	103.9	55.5	26.2	21.6	46.6	99.3	132.9	51.8	79.9	1351.8
1968	271.6	204.9	158.5	70.2	38.9	16.5	37.4	53.6	64.4	146.6	86.2	129.4	1278.2
1969	103.7	140.8	66.3	36.2	38.6	44.1	16.3	42.4	41.8	132.6	63.8	115.1	863.7
1970	142.9	132.5	175.1	127.9	73.1	58.7	55.2	19.3	95.0	57.3	156.3	184.4	1277.7
1971	313.2	151.7	300.6	148.5	53.3	19.5	43.3	22.3	42.1	88.3	63.1	131.0	1394.9
1972	115.6	135.5	199.0	141.3	47.6	26.1	39.3	43.7	137.4	85.9	112.4	117.9	1201.7
1973	324.9	287.6	220.9	162.1	21.3	26.0	51.6	79.2	81.2	112.1	120.8	251.7	1739.4
1974	224.7	228.0	127.6	177.6	11.6	47.1	56.9	61.0	81.5	75.7	56.0	177.7	1307.4
1975	255.9	209.2	186.3	66.2	83.3	26.5	17.5	30.6	84.7	65.6	113.0	164.8	1305.8
1976	285.1	148.8	150.2	69.2	36.9	28.6	12.5	58.8	52.8	28.2	125.8	97.7	1094.4
1977	209.3	239.0	180.3	108.7	39.0	10.9	32.9	11.2	96.9	91.6	177.5	94.6	1272.1
1978	183.7	159.9	178.5	85.2	32.8	24.3	18.1	4.7	84.6	53.1	76.3	173.4	1074.6
1979	107.7	219.5	309.3	105.6	32.5	2.0	53.0	21.6	51.2	57.3	87.3	111.6	1158.8
1980	117.8	152.0	195.1	63.4	18.4	5.8	35.8	12.6	43.9	122.8	92.2	154.4	1011.8
1981	132.5	220.1	222.0	113.9	29.1	14.5	10.8	55.8	73.2	141.0	114.7	197.7	1325.3
1982	200.2	146.6	126.6	63.9	16.8	29.2	12.7	40.3	48.4	194.1	140.1	177.9	1197.8
1983	244.6	139.2	219.9	122.3	34.0	46.8	12.1	17.4	82.7	71.8	77.7	198.6	1246.9
1984	145.5	374.8	171.3	106.4	23.1	46.5	13.0	42.6	50.0	68.0	149.7	183.3	1394.2
1985	96.0	184.8	154.6	131.1	81.7	40.9	18.4	41.4	106.2	63.8	126.5	170.8	1216.0
1986	212.8	271.6	268.8	127.6	53.0	7.4	20.2	71.4	58.8	82.2	125.0	132.8	1409.4
1987	446.0	178.4	114.7	83.8	43.3	25.3	42.3	5.5	56.3	116.5	210.3	220.2	1542.6
1988	315.3	210.3	143.6	138.9	42.9	7.2	5.6	1.3	98.7	71.8	98.9	178.2	1308.7
1989	326.4	228.8	299.9	134.4	54.5	20.8	19.7	44.8	112.9	112.5	99.8	70.2	1522.5
1990	232.0	92.5	139.7	89.5	54.9	79.1	12.3	34.4	63.8	223.1	263.5	151.1	1435.7
1991	126.9	264.0	263.5	149.6	93.3	37.9	13.2	6.6	115.4	111.5	119.8	84.3	1387.8
1992	85.6	132.1	145.9	89.3	0.0	58.0	54.2	71.3	35.6	103.3	72.0	47.5	894.8
1993	205.2	185.7	193.8	134.4	61.2	10.7	14.6	45.0	61.0	94.9	174.5	355.0	1556.0
1994	254.0	224.0	129.7	171.1	15.5	18.7	18.8	14.5	68.4	173.6	72.3	88.4	1247.0
1995	183.8	176.0	224.4	98.3	26.0	37.3	7.9	17.8	66.7	79.3	67.7	147.8	1131.0
1996	133.2	126.8	235.8	133.1	62.0	9.3	11.2	40.8	63.5	71.0	86.5	84.7	1059.9
1997	155.4	246.5	162.9	58.1	53.6	34.5	9.1	68.4	100.3	69.0	157.1	239.1	1385.0
1998	256.3	436.7	247.0	60.8	35.9	34.5	2.3	21.8	44.2	75.1	74.7	150.7	1442.0
1999	201.2	185.2	200.2	129.4	35.9	18.7	34.0	66.4	57.2	75.9	82.2	126.1	1212.4
2000	150.1	206.8	243.6	161.8	49.7	30.9	34.6	36.1	85.7	68.8	99.9	170.8	1429.0
2001	284.6	169.7	185.7	105.7	42.7	13.0	42.4	34.4	72.6	133.0	114.6	168.9	1407.3
2002	103.4	232.3	227.7	56.4	37.1	12.7	99.9	25.4	59.9	111.6	156.2	221.0	1343.6
2003	159.9	124.3	279.2	103.3	55.6	5.8	16.3	36.7	50.3	24.5	53.2	238.8	1147.7
2004	101.9	167.0	162.9	50.7	107.3	51.9	37.2	94.4	79.4	233.7	147.1	184.7	1418.2
2005	138.7	158.7	220.2	73.6	21.3	9.6	46.3	14.5	62.4	161.9	120.4	210.1	1237.7
PROMEDIO	195.3	200.5	197.6	104.9	43.7	27.1	27.8	38.3	72.2	103.3	113.2	156.8	1280.8
DES. EST.	81.5	67.9	57.7	36.5	23.3	17.5	19.7	23.1	25.0	46.6	43.4	59.0	176.4
MAXIMO	446.0	438.7	309.3	177.6	107.3	79.1	99.9	94.4	137.4	233.7	283.5	355.0	1739.4
MINIMO	85.6	92.5	66.3	38.2	0.0	2.0	2.3	1.3	35.6	24.5	51.6	47.5	863.7

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: CHALHUACOCA
 Cuenca: RIO HUACHON
 Fuente: ELECTROANDES S.A.

Latitud S: 10° 35' 20"
 Longitud O: 75° 51' 35"
 Altitud: 4.050 msnm

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	136.2	187.7	326.9	268.1	31.4	29.5	40.9	96.5	96.2	162.7	161.8	163.5	1720.4
1966	184.9	215.6	191.1	132.3	121.2	20.8	21.3	51.2	97.9	199.5	212.5	185.0	1633.3
1967	286.2	288.7	378.6	69.9	83.5	28.2	33.4	83.9	104.8	203.6	132.2	187.9	1880.9
1968	264.9	248.7	257.8	167.7	95.8	43.1	34.3	139.6	107.8	196.4	173.7	173.4	1923.0
1969	128.0	175.7	131.5	74.4	30.6	47.3	19.3	81.8	90.8	160.8	190.9	210.2	1341.0
1970	207.2	189.2	187.3	149.6	77.6	63.7	35.2	42.2	76.8	130.0	196.9	174.1	1529.8
1971	201.2	202.4	322.1	251.3	72.2	41.1	36.9	68.8	34.4	148.7	149.5	219.1	1745.5
1972	181.8	148.8	328.8	145.8	87.3	32.5	20.8	38.5	82.0	186.1	161.5	127.8	1637.3
1973	310.5	300.9	170.0	180.5	48.4	72.0	41.4	90.9	93.1	205.0	119.6	242.3	1874.6
1974	365.1	228.4	196.1	198.9	22.2	43.3	29.8	52.8	54.9	182.2	124.7	159.2	1658.4
1975	288.9	261.7	250.7	70.0	89.9	44.4	37.2	79.0	131.0	116.2	184.5	247.7	1801.2
1976	336.8	192.0	200.3	81.4	54.6	44.5	15.4	109.1	74.0	121.8	145.0	134.4	1739.6
1977	200.8	252.0	195.1	97.8	131.3	41.0	47.6	57.7	89.4	138.3	290.4	198.2	1739.6
1978	202.4	134.8	324.1	138.5	91.9	28.7	58.6	29.4	126.9	160.2	212.5	179.3	1687.3
1979	129.5	228.2	391.1	150.5	48.2	20.4	22.5	38.5	111.1	172.0	162.1	160.9	1631.0
1980	211.0	225.9	387.1	150.5	48.2	20.4	22.5	38.5	111.1	172.0	162.1	160.9	1631.0
1981	177.5	346.1	232.8	119.3	83.6	24.9	16.5	102.8	43.9	195.4	245.7	228.4	1845.5
1982	238.4	238.8	215.6	158.9	62.4	48.0	23.9	43.5	94.2	216.7	232.9	178.8	1752.1
1983	267.8	152.9	209.5	305.7	72.8	66.9	16.2	28.4	83.9	144.7	106.6	266.5	1720.9
1984	227.5	388.0	250.9	202.2	73.6	57.0	27.4	71.7	79.4	188.4	206.7	224.9	1997.7
1985	135.7	338.6	222.3	195.8	103.5	45.1	19.2	48.0	117.5	135.7	243.4	249.3	1754.1
1986	308.4	303.8	311.2	151.8	96.3	12.4	27.3	61.1	64.2	120.6	141.7	148.1	1746.9
1987	305.7	151.1	55.0	88.9	70.8	55.4	42.4	25.0	78.0	157.5	169.5	168.4	1365.7
1988	389.7	197.5	128.2	173.3	81.7	16.5	9.6	9.7	43.0	123.3	141.7	207.5	1495.7
1989	284.4	247.6	333.8	132.2	60.8	35.3	18.7	63.8	82.5	189.9	172.2	168.0	1789.2
1990	310.0	124.8	157.0	87.3	54.7	102.6	19.4	27.7	85.9	247.3	257.7	206.2	1680.6
1991	168.6	201.1	361.6	138.5	66.1	80.0	12.9	14.2	54.6	159.2	205.9	167.6	1630.2
1992	103.4	158.5	136.8	71.1	32.5	49.9	18.4	77.3	72.6	290.0	123.4	74.5	1208.4
1993	197.2	214.8	221.7	146.8	72.1	22.6	39.4	83.6	155.4	158.4	299.1	310.4	1921.3
1994	283.8	168.0	210.3	156.6	58.5	27.2	27.1	7.1	52.8	177.9	124.0	183.4	1476.5
1995	258.0	237.1	306.1	125.0	30.9	48.8	17.9	51.6	40.0	185.4	212.9	244.4	1768.1
1996	224.0	228.5	199.3	173.6	106.6	33.1	27.4	59.3	97.5	131.8	154.8	220.9	1656.6
1997	238.0	251.1	216.3	128.9	97.0	21.2	23.7	78.0	47.1	119.6	149.2	244.6	1614.7
1998	339.3	295.2	262.9	135.5	38.0	50.9	2.3	46.5	37.8	179.7	155.2	128.5	1671.8
1999	249.9	228.1	185.8	90.8	44.8	15.9	29.3	23.0	47.2	136.3	92.8	174.7	1318.6
2000	321.1	319.2	289.0	248.1	141.3	76.5	23.1	83.9	74.4	115.1	106.9	240.8	2019.4
2001	284.8	287.8	250.3	116.9	66.1	37.7	46.2	68.1	108.4	165.2	211.0	172.9	1835.4
2002	100.8	222.2	254.3	97.8	35.2	8.1	101.9	30.5	95.8	166.0	167.9	187.2	1457.5
2003	193.3	281.1	283.6	185.9	144.5	25.4	10.4	84.8	102.4	86.6	132.5	330.5	1841.0
2004	161.7	227.5	201.2	81.6	67.8	65.5	59.4	83.0	125.9	276.9	205.2	207.8	1763.5
2005	143.0	222.1	296.8	149.1	29.2	15.5	34.0	30.3	40.8	95.1	94.5	153.2	1303.4
PROMEDIO	232.6	229.0	244.1	144.8	71.4	40.7	30.2	58.4	81.8	168.7	175.3	194.9	1670.0
DES. EST.	73.2	57.2	75.9	58.8	31.4	20.6	17.3	29.0	29.2	43.8	50.3	49.5	191.2
MAXIMO	369.7	386.0	391.1	305.7	144.5	102.8	101.9	139.6	155.4	290.0	299.1	330.5	2019.4
MINIMO	100.6	124.8	55.0	69.9	22.2	8.1	2.3	7.1	34.4	86.6	92.8	74.5	1208.4

Observación: Data extendida

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: ALTOS MACHAY
 Cuenca: RIO PAUCARTAMBO
 Fuente: ELECTROANDES S.A.

Latitud S: 10° 33' 05"
 Longitud O: 75° 53' 00"
 Altitud: 4.140 msnm

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	168.9	199.3	288.0	192.1	23.8	19.9	44.6	79.4	113.3	159.2	172.8	156.2	1617.5
1966	204.4	226.1	201.2	137.5	105.3	28.6	30.9	39.5	91.9	153.7	194.9	177.8	1591.8
1967	262.4	288.8	354.1	92.8	68.7	18.5	41.2	71.9	111.2	169.3	128.6	170.2	1775.7
1968	249.6	278.0	251.3	163.2	81.7	38.2	41.7	118.2	124.4	163.1	151.8	130.3	1789.3
1969	137.5	169.7	134.4	81.0	18.3	33.7	16.3	58.4	91.8	107.7	156.3	183.4	1188.3
1970	187.0	177.4	160.2	125.4	54.2	51.8	37.5	30.9	74.8	88.7	149.8	142.8	1280.1
1971	212.3	186.9	267.9	157.1	38.6	38.9	46.8	42.9	36.3	103.1	97.1	173.3	1401.0
1972	194.0	135.4	239.5	126.7	65.8	17.3	26.2	30.2	86.2	140.3	128.3	127.7	1317.8
1973	230.2	278.0	144.4	162.8	50.6	46.8	43.9	72.5	100.3	160.4	96.0	238.5	1624.2
1974	268.7	196.7	182.9	170.2	12.7	57.7	34.7	48.2	61.2	147.6	93.2	145.4	1417.2
1975	226.2	277.5	198.3	80.8	73.4	22.9	42.6	82.5	155.7	78.7	154.2	224.3	1597.1
1976	230.5	170.7	168.0	107.3	53.6	33.3	7.6	95.3	97.8	78.7	115.9	120.9	1279.6
1977	171.7	211.6	163.2	102.5	90.9	31.1	51.8	34.2	101.5	101.0	251.8	117.9	1429.2
1978	157.7	163.7	203.5	101.8	74.3	15.8	48.6	14.5	147.5	106.4	138.9	114.1	1286.6
1979	125.7	183.1	359.7	125.5	35.0	10.0	35.8	39.5	83.4	128.4	146.9	111.9	1363.8
1980	164.7	198.0	253.0	66.7	17.3	20.1	53.9	30.1	42.8	146.9	163.9	111.9	1288.3
1981	140.8	209.2	174.5	118.1	46.4	23.0	16.4	21.6	43.8	170.4	188.6	195.0	1468.6
1982	185.4	196.9	206.8	130.9	42.8	41.7	18.4	27.8	78.5	179.6	178.8	140.2	1425.4
1983	193.7	155.8	189.4	165.5	47.5	51.4	22.0	22.2	76.8	106.6	69.2	258.8	1368.9
1984	200.8	365.5	247.1	177.2	58.8	49.3	28.5	56.1	78.5	192.3	206.4	204.3	1684.6
1985	210.3	253.2	227.1	159.3	100.7	33.3	27.2	46.2	119.5	111.8	240.1	253.1	1780.8
1986	257.4	282.9	254.0	150.4	70.1	1.5	31.1	47.7	87.2	74.8	109.5	110.7	1457.3
1987	286.6	144.0	130.7	103.8	58.3	40.5	32.0	17.4	78.8	147.2	137.5	163.8	1336.4
1988	298.3	199.3	135.3	134.8	69.9	14.7	5.8	0.0	49.8	98.8	105.9	203.4	1316.0
1989	244.0	238.5	286.6	125.2	44.7	38.2	19.7	42.4	72.0	173.1	137.2	168.9	1590.5
1990	242.9	131.4	135.5	97.4	37.5	69.9	10.9	20.1	84.5	212.9	212.0	200.8	1475.9
1991	153.9	203.0	274.3	120.3	54.7	46.8	8.3	6.1	54.7	99.9	175.4	138.8	1334.2
1992	155.1	159.9	158.0	124.7	17.5	57.4	25.0	61.4	70.9	194.1	120.8	88.5	1231.3
1993	220.9	216.0	236.5	144.0	74.8	20.3	39.8	70.3	146.3	147.7	280.1	303.2	1899.9
1994	279.8	240.8	202.1	148.0	51.9	25.5	24.3	9.7	51.4	169.0	107.8	182.7	1493.0
1995	281.4	225.9	288.3	119.4	40.2	41.6	16.9	55.3	62.4	190.1	217.3	210.0	1748.8
1996	288.3	240.5	254.0	170.4	106.6	32.5	31.7	57.3	63.9	119.3	132.8	218.2	1883.3
1997	240.9	250.9	221.2	129.6	99.7	19.9	22.6	78.7	63.9	129.1	148.2	240.9	1645.6
1998	346.7	341.4	268.9	132.5	38.0	50.3	1.5	44.8	35.8	139.7	102.0	198.0	1699.8
1999	226.4	194.0	157.6	111.0	55.8	23.3	35.5	14.5	90.5	91.4	77.6	100.5	1178.1
2000	182.3	257.6	265.7	168.7	66.4	31.0	37.4	49.4	66.3	108.3	90.1	225.1	1568.3
2001	308.1	230.9	228.2	137.3	84.7	31.8	46.3	32.5	100.9	132.0	175.4	127.4	1635.5
2002	69.8	189.6	265.5	133.2	50.1	25.4	68.8	36.8	60.2	166.3	178.1	189.8	1420.6

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: HUACHON
Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

Latitud S: 10° 40' 45"
Longitud O: 76° 05' 00"
Altitud: 4,150 msnm

Estación: HACIENDA HUANCA
Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

Latitud S: 10° 37' 50"
Longitud O: 75° 56' 50"
Altitud: 3,400 msnm

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	69.4	75.7	111.9	67.6	10.1	8.6	20.8	31.7	44.7	60.5	70.4	62.5	633.9
1966	86.2	94.2	80.7	52.5	46.7	12.1	11.1	17.2	46.3	70.7	66.3	77.4	681.4
1967	88.8	72.4	89.6	21.0	16.4	4.6	9.8	20.8	28.5	46.2	32.6	45.7	454.2
1968	118.5	126.0	113.9	65.9	34.6	15.3	19.8	53.9	58.8	78.6	58.8	65.7	815.8
1969	32.8	39.7	33.8	19.7	4.3	8.5	3.4	13.4	20.0	27.2	38.8	41.6	281.9
1970	94.7	94.1	93.7	72.2	33.7	28.5	24.0	17.0	48.8	50.4	88.5	64.7	728.1
1971	95.0	78.7	124.3	69.7	18.8	16.3	18.2	19.8	15.1	42.7	45.0	76.0	617.4
1972	78.7	57.7	98.9	50.7	27.3	7.2	7.2	11.7	33.0	51.8	44.1	47.3	515.6
1973	67.4	87.3	48.5	50.4	13.8	18.5	15.9	25.1	32.5	51.5	28.7	78.8	516.4
1974	166.5	118.1	92.0	75.9	8.4	35.2	20.2	29.5	32.8	83.0	52.3	88.9	802.8
1975	118.7	128.5	93.3	94.1	55.7	28.3	13.4	4.5	48.0	44.5	47.4	60.2	674.3
1976	86.1	114.6	64.8	58.2	52.9	15.7	28.4	19.4	48.5	46.7	130.9	73.9	756.1
1977	63.2	53.1	79.8	40.3	30.0	5.4	20.9	5.9	57.1	42.4	64.5	51.0	513.8
1978	76.8	107.9	206.8	64.0	20.5	4.9	15.7	20.9	52.0	78.7	68.5	64.6	780.9
1979	89.7	102.9	130.8	38.8	10.1	12.4	30.1	21.4	28.5	78.9	89.8	61.2	594.4
1980	84.0	178.4	103.0	63.2	29.9	15.0	9.1	45.3	24.5	94.5	117.1	125.4	887.4
1981	72.5	72.9	76.5	51.6	16.3	15.3	7.2	10.5	30.7	69.1	71.2	51.8	547.6
1982	82.1	63.5	75.5	75.5	21.0	24.9	7.9	8.6	33.4	45.5	27.4	103.8	569.1
1983	65.2	128.8	80.5	54.3	21.9	15.8	9.3	17.8	25.3	63.3	82.1	67.4	609.1
1984	57.8	75.8	63.6	45.5	28.1	9.8	7.6	11.4	34.3	34.0	65.3	72.1	504.7
1985	75.2	83.0	74.5	41.7	22.9	0.6	8.8	14.1	19.0	21.2	32.0	34.9	427.9
1986	129.8	65.6	59.5	47.0	26.8	18.8	18.8	7.5	37.5	60.5	56.6	72.3	598.1
1987	110.6	69.0	49.6	49.4	24.0	5.7	1.9	0.0	16.7	36.1	35.4	68.5	486.9
1988	85.7	138.4	20.1	45.7	16.8	0.0	0.0	0.0	9.1	29.2	27.6	18.2	390.8
1989	39.9	22.9	16.3	41.4	22.9	64.3	0.0	12.2	44.4	135.0	94.9	79.1	575.3
1990	72.9	117.7	125.2	81.1	26.9	22.7	3.8	0.0	31.0	32.1	89.9	66.6	649.9
1991	23.9	91.2	61.5	21.0	0.8	28.7	8.5	20.3	24.4	85.3	42.0	28.8	436.4
1992	125.5	128.9	100.3	59.7	28.2	6.5	25.5	31.2	68.3	33.5	95.3	176.7	877.6
1993	135.9	106.9	37.6	87.8	14.6	4.8	4.3	2.5	20.5	85.1	47.3	80.8	630.1
1994	118.2	120.7	125.5	47.5	14.7	20.1	6.5	3.8	38.0	58.8	68.1	689.5	
1995	84.1	72.9	118.9	87.1	19.7	2.8	0.0	2.5	48.5	32.6	55.9	95.4	600.4
1996	87.5	88.1	58.3	41.1	33.7	9.0	3.0	33.0	30.5	74.9	57.8	104.9	621.8
1997	145.9	205.7	105.9	56.9	22.6	14.9	0.3	8.1	33.5	59.8	63.6	79.6	796.8
1998	114.4	129.8	139.2	59.8	43.6	41.1	13.5	10.7	42.7	38.9	58.4	56.5	748.8
2000	94.2	138.8	138.7	79.5	16.8	10.7	17.5	16.8	35.3	28.8	42.3	110.7	727.9
2001	175.8	168.8	109.3	79.0	50.5	16.5	27.3	13.7	41.5	52.3	106.8	97.5	938.1
2002	31.5	95.0	139.8	126.0	10.0	10.0	45.0	20.0	50.5	75.0	97.8	69.5	791.1
2003	82.8	102.8	174.8	55.0	35.0	3.0	0.5	38.8	45.0	19.3	40.7	99.5	695.2
2004	21.4	89.1	81.3	43.1	39.8	30.1	18.7	11.3	28.4	50.8	27.8	58.8	498.4
2005	77.9	93.1	143.9	23.1	6.7	3.0	6.3	16.1	44.3	105.0	68.1	128.8	718.3
PROMEDIO	88.5	99.5	94.1	55.2	24.7	14.8	12.6	18.1	36.9	58.4	63.2	76.0	640.0
DES. EST.	35.2	35.8	39.4	19.8	12.2	12.3	10.0	13.0	13.5	24.6	25.7	29.5	148.3
MAXIMO	175.8	205.7	208.6	126.0	52.9	64.3	45.0	53.9	66.3	135.0	130.9	176.7	936.8
MINIMO	21.4	22.9	18.3	19.7	0.8	0.0	0.0	0.0	9.1	19.3	27.4	18.2	281.9

Observación: Data extendida

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: HACIENDA HUANCA
Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

Latitud S: 10° 40' 45"
Longitud O: 76° 05' 00"
Altitud: 4,150 msnm

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	142.2	156.2	132.6	69.8	21.0	16.1	35.1	56.4	87.0	81.9	95.3	208.3	1101.9
1966	106.7	95.3	92.1	52.1	54.9	4.1	11.4	7.8	33.1	94.8	90.3	89.9	732.3
1967	114.5	127.1	195.6	24.0	23.0	10.8	25.4	17.8	35.6	151.1	41.1	118.1	884.1
1968	138.4	135.3	101.5	47.6	48.3	13.7	18.1	33.8	74.8	128.5	121.5	190.5	1051.8
1969	91.1	109.8	95.5	55.1	12.0	24.2	8.9	38.6	96.6	76.9	102.0	113.8	762.5
1970	142.9	138.6	142.9	105.4	52.3	42.5	37.7	25.3	76.6	76.0	131.3	129.7	1105.2
1971	149.2	117.0	197.5	109.2	30.4	25.1	27.1	30.9	23.1	65.3	71.6	118.6	965.0
1972	131.7	97.8	166.1	84.3	45.9	12.0	10.2	19.2	54.1	83.8	89.6	78.7	851.4
1973	97.4	129.5	73.5	74.4	19.5	25.4	24.7	38.5	48.8	77.0	41.8	118.6	769.1
1974	215.4	151.1	110.6	86.7	11.1	45.3	25.8	37.9	40.3	104.0	65.4	114.3	1007.7
1975	116.1	116.8	85.1	39.8	39.9	11.3	20.8	30.8	61.8	33.5	69.7	113.5	738.9
1976	144.2	105.2	106.9	81.8	28.5	13.3	5.2	52.8	47.0	54.9	68.8	71.9	758.3
1977	80.5	110.0	80.2	54.2	51.9	14.7	24.8	18.9	44.6	42.4	124.0	74.1	720.3
1978	137.5	106.5	172.3	87.3	65.3	10.9	48.3	13.0	122.8	92.0	148.5	114.8	1115.0
1979	74.7	104.2	197.8	58.7	19.8	4.5	13.5	19.4	51.0	78.8	64.8	63.3	748.3
1980	99.4	112.8	142.2	44.1	11.5	14.3	33.6	25.5	33.4	87.1	95.7	87.9	767.3
1981	81.5	170.5	99.8	59.0	29.7	14.9	8.6	44.7	23.3	89.4	115.2	124.6	861.1
1982	137.7	135.0	147.6	136.2	30.7	26.3	13.6	19.8	58.8	130.4	136.0	96.6	1033.5
1983	147.2	112.3	132.8	138.4	38.2	46.4	13.4	15.0	60.3	81.7	47.9	182.7	1016.1
1984	115.1	228.3	142.4	94.0	40.3	27.3	18.5	30.8	44.5	112.3	106.7	119.5	1077.7
1985	92.1	124.5	102.7	73.9	58.3	15.6	12.3	17.7	55.7	56.4	104.3	116.9	817.4
1986	187.3	206.7	185.7	101.8	58.9	1.7	21.6	35.1	46.8	52.3	79.7	89.0	1066.6
1987	233.0	118.0	107.0	64.3	48.3	28.7	35.7	13.2	89.0	105.0	98.1	128.8	1068.6
1988	209.8	128.0	93.7	93.2	44.4	11.0	3.5	0.0	30.8	68.1	64.8	125.8	872.9
1989	143.9	175.1	110.4	73.7	29.5	12.5	6.9	17.1	36.9	81.7	77.0	64.9	828.6
1990	117.0	63.3	68.7	60.5	28.8	69.0	7.2	15.4	83.4	160.1	139.3	121.9	912.6
1991	110.6	150.6	200.5	91.7	39.8	34.8	8.4	2.9	47.0	69.5	137.7	106.7	998.0
1992	96.9	143.3	125.2	69.0	10.3	51.1	16.9	45.8	54.6	158.0	92.0	66.5	929.8
1993	102.7	112.8	112.2	67.1	34.4	7.3	21.0	35.4	73.2	58.4	117.4	166.6	906.5
1994	203.4	189.8	111.5	120.4	31.3	11.6	12.5	8.0	33.7	113.7	75.5	128.8	1017.8
1995	133.7	119.5	142.8	56.5	20.5	21.8	8.8	18.0	37.9	81.0	96.8	92.9	830.0
1996	148.9	145.2	183.3	109.4	55.1	16.4	13.8	26.2	65.3	74.5	91.5	148.2	1078.8
1997	118.2	108.5	149.6	82.5	47.6	8.2	10.9	41.5	55.9	77.2	114.5	136.7	949.3
1998	224.6	189.8	118.5	87.7	15.7	34.1	2.7	21.3	13.1	101.2	82.4	100.5	991.6
1999	104.9	141.4	172.2	41.7	12.8	24.8	18.2	5.5	46.0	55.2	77.8	89.4	789.9
2000	149.2	138.4	154.1	46.1	18.3	15.9	9.0	27.8	30.8	66.8	34.0	144.1	832.3
2001	218.8	138.6	138.7	54.0	50.3	28.5	35.9	9.5	39.7	50.8	115.7	112.7	989.2
2002	60.4	168.1	152.1	42.3	40.8	30.9	34.8	13.6	62.7	93.5	94.3	151.8	945.3
2003	125.4	153.7	130.8	90.3	23.3	10.8	18.4	44.4	89.8	37.9	91.5	106.7	903.0
2004	71.7	190.6	47.2	53.2	78.8	31.2	32.0	24.3	39.7	101.1	59.9	149.2	876.7
2005	133.1	151.3	139.4	41.2	14.8	0.0	4.5	21.3	38.5	103.1	68.2	72.0	787.4
PROMEDIO	132.9	136.4	130.7	72.9	34.7	21.2	18.3	24.8</					

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: HUANGUSH ALTO
 Cuenca: RIO PAUCARTAMBO
 Fuente: ELECTROANDES S.A.

Latitud S: 10° 34' 20"
 Longitud O: 75° 49' 25"
 Altitud: 3.885 msnm

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1985	140.3	196.1	328.6	157.0	40.0	31.6	86.2	69.2	146.0	161.8	163.8	200.6	1701.2
1986	213.5	194.0	188.0	110.8	212.7	21.1	13.0	29.5	103.8	233.8	158.9	248.8	1727.7
1987	245.8	242.5	309.0	120.3	83.4	25.7	58.5	58.7	147.5	178.5	91.4	145.5	1707.8
1988	253.6	234.7	219.0	119.6	73.7	30.0	45.1	83.3	60.0	201.5	172.2	124.9	1617.6
1989	162.9	222.6	155.1	99.0	60.5	55.8	23.4	46.1	91.5	169.5	172.7	221.2	1482.3
1990	220.8	204.2	220.6	155.0	75.7	67.4	56.1	50.3	113.3	119.7	193.3	217.5	1696.9
1991	239.0	217.1	329.9	175.3	87.3	49.9	56.6	34.7	47.1	143.6	136.3	161.8	1659.6
1992	210.3	169.7	333.2	179.3	81.8	25.4	50.7	52.8	127.9	189.3	173.1	188.4	1782.1
1993	353.8	331.3	226.8	244.8	57.0	75.3	90.7	76.3	112.0	186.3	88.1	353.5	2207.7
1994	341.0	284.0	237.7	218.2	9.4	56.4	46.8	102.6	96.0	173.0	134.5	204.0	1903.6
1995	271.0	246.6	260.3	124.6	107.2	47.0	80.4	69.9	159.3	113.5	184.8	245.2	1915.8
1996	339.5	180.8	205.4	128.0	76.0	49.7	20.6	87.3	147.1	119.3	145.5	156.8	1656.0
1997	235.7	154.2	288.5	161.5	83.1	30.5	41.7	17.1	164.2	135.8	179.2	160.8	1619.3
1998	112.1	237.5	443.4	110.9	53.1	15.2	49.0	46.1	93.8	156.2	142.0	132.3	1591.4
1999	202.7	154.2	288.5	161.5	83.1	30.5	41.7	17.1	164.2	135.8	179.2	160.8	1619.3
2000	165.2	233.1	328.9	90.4	38.2	24.3	61.1	53.4	81.7	198.9	145.8	137.8	1560.8
2001	194.3	318.8	234.3	144.3	37.0	24.4	24.4	24.4	77.8	171.1	244.4	226.3	1793.1
2002	224.4	247.8	213.0	154.6	48.8	49.4	35.7	38.5	103.9	231.8	192.8	196.6	1737.1
2003	243.8	157.2	201.8	162.9	55.9	64.8	12.8	32.8	108.1	98.6	120.7	243.1	1520.3
2004	236.4	361.2	255.5	203.2	95.4	66.4	31.9	88.5	93.9	222.0	169.7	187.0	1971.1
2005	137.8	274.7	252.6	98.3	85.9	47.4	17.2	47.8	138.8	107.6	177.7	237.5	1623.3
2006	286.3	293.9	312.4	135.5	78.1	8.2	35.8	52.5	102.2	103.5	140.3	318.5	1865.2
2007	307.1	178.3	102.1	106.8	85.3	57.5	59.6	50.4	100.0	174.6	151.0	209.0	1581.7
2008	348.8	244.0	199.3	177.8	52.6	15.0	6.4	0.0	60.5	108.1	143.4	229.2	1583.1
2009	289.5	254.7	337.2	178.0	80.8	41.8	42.9	81.9	82.3	178.1	174.8	159.6	1841.4
2010	309.7	180.5	191.1	143.8	88.0	131.0	31.9	45.1	99.8	262.5	244.4	243.7	1949.5
2011	174.4	212.5	341.0	163.9	55.0	99.6	22.9	32.3	78.6	153.3	208.8	171.2	1711.5
2012	159.5	157.0	212.0	114.2	20.5	76.8	31.5	102.5	102.1	203.2	152.8	103.6	1435.7
2013	239.9	283.5	245.4	158.8	68.4	23.8	38.2	80.1	142.4	148.6	291.0	379.5	2097.4
2014	270.5	211.9	233.4	178.1	57.7	40.6	30.9	17.5	91.1	161.3	129.2	200.3	1622.5
2015	287.0	241.8	306.2	83.2	58.7	53.3	15.0	29.5	68.3	171.7	200.2	215.3	1710.2
2016	199.3	227.7	228.4	138.8	64.5	32.9	42.3	47.9	87.8	137.5	138.3	186.3	1529.7
2017	227.5	281.9	222.9	122.2	63.9	12.4	19.7	139.8	140.1	129.8	160.3	232.7	1773.2
2018	250.3	324.4	283.1	91.3	23.1	51.7	3.4	28.7	60.3	188.8	136.4	203.1	1653.1
2019	271.1	340.6	300.7	202.3	66.0	54.1	47.3	78.3	82.3	92.4	131.7	217.7	1884.5
2020	320.1	297.3	275.1	108.6	58.4	38.7	73.1	27.8	134.1	140.8	168.3	81.6	1733.9
2021	110.1	239.5	293.4	121.7	52.3	31.7	123.3	38.4	87.8	175.2	134.8	207.4	1614.3
2022	150.3	282.8	283.8	139.9	76.3	8.7	7.5	56.9	68.3	104.4	124.8	261.1	1562.8
2023	99.6	208.6	267.4	83.3	69.1	55.5	64.6	91.3	106.2	234.0	149.5	236.7	1663.8
2024	176.5	228.3	289.0	82.8	10.9	7.3	34.1	39.0	54.2	168.8	97.2	220.3	1408.0
PROMEDIO	232.1	243.7	259.3	142.0	67.6	43.6	41.9	55.6	102.9	181.3	162.8	203.9	1716.5
DES. EST.	86.4	53.5	81.0	39.5	33.1	25.8	24.5	27.7	30.5	41.7	44.4	80.3	169.9
MAXIMO	353.6	361.2	443.4	244.8	212.7	131.0	123.3	139.8	164.2	262.5	291.0	379.5	2207.7
MINIMO	99.6	154.2	102.1	82.6	9.4	6.2	3.4	0.0	47.1	92.4	88.1	81.6	1408.0

Observación: Data extendida

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: HUALLAMAYO
 Cuenca: RIO PAUCARTAMBO
 Fuente: ELECTROANDES S.A.

Latitud S: 10° 45' 35"
 Longitud O: 75° 42' 55"
 Altitud: 2.440 msnm

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	98.2	145.5	172.6	55.7	7.9	29.5	27.4	39.2	92.8	95.7	74.9	87.5	926.7
1966	106.7	125.2	112.5	51.6	52.8	4.7	5.3	29.2	25.4	61.1	80.0	95.9	770.6
1967	137.7	201.7	244.8	82.7	44.1	20.8	17.2	37.1	78.0	105.7	41.0	63.6	1075.4
1968	225.0	169.7	131.3	58.2	30.8	13.1	31.0	44.4	53.3	121.4	71.4	107.2	1058.8
1969	106.9	145.1	68.3	39.4	39.7	45.5	16.8	43.7	43.1	136.7	66.4	118.7	890.3
1970	124.0	114.9	151.8	110.9	63.3	50.9	47.8	18.7	82.4	49.7	135.6	159.9	1107.9
1971	224.5	106.8	215.5	108.4	38.2	14.0	31.0	16.0	30.2	61.8	59.6	93.9	999.9
1972	94.7	111.0	163.1	115.8	39.0	21.4	32.2	35.8	112.8	70.4	92.1	96.6	984.7
1973	236.2	209.1	160.6	117.9	15.5	18.9	37.5	57.6	59.0	81.5	87.8	183.0	1284.8
1974	160.7	183.1	91.3	127.0	8.3	33.7	40.7	43.6	44.0	54.2	41.5	127.1	935.2
1975	175.1	143.2	127.5	46.6	57.0	16.1	12.0	21.0	58.0	45.0	77.3	112.8	893.6
1976	281.1	146.7	148.0	68.2	36.4	28.1	12.3	58.0	52.0	27.6	123.8	96.3	1078.7
1977	150.9	172.3	115.5	78.4	28.1	7.9	23.7	8.0	69.9	86.2	127.9	88.2	917.0
1978	182.0	141.0	157.4	75.1	26.9	21.4	14.2	4.1	74.8	46.8	69.0	152.8	947.3
1979	90.4	184.3	259.7	88.6	27.3	1.7	44.5	18.3	43.0	46.1	73.3	93.7	972.9
1980	110.9	143.2	183.8	59.7	15.4	5.5	33.5	11.8	41.4	115.5	86.8	145.5	953.0
1981	109.2	181.4	183.0	93.9	24.0	11.9	8.9	46.0	60.3	116.2	94.5	163.0	1092.3
1982	130.6	160.7	136.1	71.0	3.0	39.8	24.8	22.4	42.4	156.2	150.6	101.5	1065.1
1983	171.3	96.3	172.8	86.5	10.2	63.4	8.6	13.1	23.4	43.9	94.9	146.4	980.8
1984	102.1	247.3	144.0	101.3	19.7	27.3	12.7	33.4	19.7	56.6	93.2	128.9	936.4
1985	53.3	150.6	129.0	99.9	28.3	27.8	7.8	21.1	95.5	76.2	95.4	165.1	951.8
1986	174.9	264.2	235.2	75.8	27.9	2.5	13.6	59.9	70.5	52.7	94.4	73.0	1143.4
1987	212.0	125.0	120.1	132.0	24.7	15.3	33.1	13.8	119.5	191.6	153.5	258.3	1396.9
1988	271.3	157.5	125.5	122.3	18.3	18.3	2.0	0.0	50.9	37.6	69.5	99.6	971.0
1989	189.5	148.8	256.7	92.2	34.5	27.8	6.5	18.7	82.7	142.2	95.9	48.8	1124.1
1990	161.8	63.4	91.1	58.0	28.5	72.0	13.6	34.8	94.4	134.7	225.4	153.8	1127.5
1991	57.4	189.2	157.5	117.8	54.0	26.3	18.0	0.8	52.8	77.8	95.1	76.8	924.7
1992	108.6	150.5	147.3	73.9	2.0	46.3	16.9	58.8	39.8	70.5	63.5	48.1	830.4
1993	186.2	155.2	235.1	96.3	72.2	6.9	12.7	48.1	54.9	85.9	173.6	303.3	1430.4
1994	172.0	207.6	100.5	112.3	34.3	30.0	17.0	12.4	51.2	125.6	52.3	58.3	973.5
1995	180.3	157.6	163.9	48.9	32.1	19.6	5.1	16.0	59.9	99.6	66.0	80.3	949.3
1996	133.0	116.3	162.6	133.0	52.8	13.8	5.8	36.3	54.1	70.5	43.4	96.1	937.3
1997	114.6	199.4	173.1	38.6	40.4	16.5	6.6	54.6	71.4	51.8	84.2	166.8	1028.0
1998	190.4	205.5	111.6	39.6	14.5	15.4	1.1	22.6	43.7	113.7	87.6	124.1	989.6
1999	153.7	171.8	150.8	133.3	74.0	9.8	27.9	22.7	26.7	47.2	117.1	103.9	1036.5
2000	93.9	202.1	168.4	107.4	43.9	0.0	25.9	46.3	78.8	41.8	60.6	142.7	1026.6
2001	209.2	162.0	202.1	93.2	52.2	22.5	37.9	23.4	50.4	106.1	71.8	106.0	1136.8
2002	65.8	300.1	178.0	50.2	35.1	8.6	55.1	46.7	33.8	85.5	106.1	123.3	1090.1
2003	85.8	137.5	165.8	89.6	63.5	1.1	5.1	77.8	47.2	32.2	47.0	146.4	919.0
2004	88.2	149.7	221.4	1.6	46.0	31.3	24.1	53.5	29.2	84.2	34.3	116.3	881.8
200													

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: HUANGUSHABAO
 Cuenca: RIO PAUCARTAMBO
 Fuente: ELECTROANDES S.A.

Latitud S: 10° 35' 00"
 Longitud O: 75° 48' 25"
 Altitud: 3,600 msnm

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	130.6	195.0	320.9	173.7	41.8	26.9	32.0	76.6	26.3	155.9	149.5	201.0	1550.2
1966	180.8	205.6	198.9	113.4	177.1	16.5	12.3	21.9	117.3	214.3	182.2	217.9	1658.2
1967	267.8	273.2	330.8	153.7	85.7	25.3	57.1	55.8	152.4	215.2	99.1	141.9	1858.0
1968	250.0	200.4	259.1	98.0	77.1	43.8	40.5	69.8	55.8	201.9	161.5	150.1	1636.0
1969	140.2	208.9	159.7	134.5	56.6	49.3	19.9	32.4	93.2	159.7	190.3	225.1	1467.8
1970	214.9	194.3	211.5	172.2	62.0	69.5	54.2	48.6	121.3	122.7	196.0	166.8	1634.0
1971	180.9	211.7	316.3	151.9	61.4	41.6	51.1	37.3	54.0	150.5	159.6	170.9	1597.2
1972	175.4	173.7	348.2	154.7	98.6	30.5	51.3	43.1	139.8	197.0	181.9	183.1	1777.3
1973	327.5	326.0	217.6	257.4	60.4	79.7	67.1	83.7	118.5	218.8	111.7	358.1	2244.5
1974	359.9	282.7	237.9	243.1	9.8	45.0	35.3	102.8	106.8	191.5	135.1	183.0	1932.7
1975	289.9	244.4	288.9	135.0	106.8	45.3	62.1	69.3	149.6	111.0	183.3	259.5	1939.1
1976	328.8	204.1	243.7	147.2	83.8	45.2	20.2	93.7	140.0	114.2	138.2	156.6	1715.9
1977	221.4	308.1	240.3	130.3	120.8	41.3	62.0	44.2	180.3	141.8	302.4	153.7	1904.6
1978	202.7	182.8	336.0	209.2	81.5	25.9	35.9	18.1	160.4	152.8	198.7	186.8	1788.8
1979	137.7	235.5	514.0	137.7	59.9	15.8	54.1	57.4	111.6	174.2	163.3	156.9	1819.9
1980	222.4	257.8	389.1	98.8	39.0	24.6	67.2	59.4	74.7	213.1	188.9	133.0	1765.8
1981	195.8	318.8	259.0	147.8	32.6	21.6	31.5	109.5	82.3	197.2	238.8	239.3	1871.8
1982	235.0	253.3	213.5	163.6	47.5	50.0	32.5	39.2	97.4	226.7	211.2	198.0	1798.9
1983	255.6	171.5	230.1	154.4	54.0	74.0	12.6	31.8	95.1	137.8	114.6	265.4	1597.1
1984	232.9	328.3	247.3	194.3	86.7	61.2	25.9	84.8	86.7	182.3	200.8	171.6	1882.6
1985	129.2	224.8	238.4	111.7	98.9	46.2	19.8	48.8	133.2	125.7	206.8	278.9	1660.0
1986	296.7	325.0	324.5	147.7	75.7	5.7	40.6	71.1	101.4	116.3	123.9	204.9	1839.7
1987	278.8	196.7	86.2	126.0	83.1	58.8	54.5	43.5	156.6	189.7	194.1	151.9	1509.9
1988	342.7	240.4	167.8	170.4	38.5	11.0	5.1	0.0	67.0	112.8	154.3	218.4	1524.4
1989	272.0	279.9	334.1	177.8	47.4	34.4	47.9	58.9	73.8	195.4	151.8	144.3	1817.3
1990	310.6	174.5	207.1	140.4	87.6	117.9	25.4	48.3	105.8	265.5	255.7	227.5	1946.3
1991	186.6	226.1	367.9	156.5	55.2	89.3	15.4	30.4	71.1	187.9	195.5	182.4	1744.3
1992	145.4	156.8	197.9	109.6	19.3	61.7	25.3	84.8	68.4	189.5	165.6	98.0	1340.3
1993	214.4	299.1	235.7	134.8	65.3	19.2	37.2	63.1	135.9	151.9	269.8	371.2	2017.6
1994	272.2	206.1	187.3	199.0	42.6	43.4	28.8	16.9	104.3	172.7	123.3	193.0	1587.6
1995	269.2	241.4	306.5	57.3	65.0	45.2	13.3	34.3	73.7	149.0	199.8	222.0	1676.7
1996	183.6	210.8	229.2	136.1	64.1	29.8	34.7	46.1	88.7	146.6	133.5	211.3	1514.5
1997	213.5	291.8	203.6	102.2	87.8	10.7	25.7	135.0	126.9	119.9	140.8	227.9	1685.8
1998	267.0	354.8	279.4	91.2	28.5	52.6	5.8	29.0	87.8	183.9	139.2	207.1	1704.3
1999	289.1	322.6	241.8	112.8	112.8	27.1	33.1	31.7	119.8	121.3	118.6	160.9	1803.2
2000	269.4	367.5	312.3	210.8	74.0	46.1	46.2	73.0	68.7	115.3	54.7	134.2	1790.2
2001	295.6	309.2	301.4	133.8	70.8	45.7	75.4	34.4	138.9	154.8	217.7	126.2	1903.7
2002	121.4	214.5	291.9	124.5	52.5	21.7	106.3	31.1	72.0	186.0	155.8	203.1	1580.8
2003	157.4	292.9	305.8	198.9	130.4	10.4	13.8	84.0	73.4	118.5	140.8	270.8	1775.1
2004	104.8	240.2	274.7	90.1	71.8	64.7	74.3	90.4	114.0	240.6	140.8	229.7	1738.1
2005	173.2	272.3	282.2	99.3	10.9	7.8	29.8	63.0	180.7	147.8	94.7	258.8	1489.5
PROMEDIO	228.2	250.1	266.9	149.8	67.8	41.0	39.1	54.9	99.2	166.7	167.8	202.0	1733.4
DES. EST.	87.0	55.3	73.4	43.4	32.7	23.9	21.9	28.1	32.2	39.4	48.9	56.5	53.4
MAXIMO	359.9	367.5	514.0	257.4	177.1	117.9	106.3	135.0	160.4	265.5	302.4	371.2	2224.5
MINIMO	104.8	156.8	86.2	57.3	9.8	5.7	5.1	0.0	26.3	111.0	54.7	96.0	1340.3

Observación: Data extendida

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: JAICO
 Cuenca: RIO PAUCARTAMBO
 Fuente: ELECTROANDES S.A.

Latitud S: 10° 33' 20"
 Longitud O: 75° 54' 45"
 Altitud: 4,230 msnm

ANO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	192.0	199.8	286.4	204.5	21.7	18.2	52.5	84.5	117.2	165.3	189.9	150.5	1681.5
1966	204.5	233.6	216.5	127.7	118.7	29.7	24.2	39.7	106.7	149.9	217.6	172.6	1641.4
1967	264.0	295.1	370.2	89.7	75.8	18.3	39.7	72.2	110.2	169.8	141.9	185.1	1812.0
1968	250.6	265.7	250.1	180.6	87.3	33.5	42.8	124.3	127.3	179.7	157.9	159.9	1832.7
1969	155.2	171.9	163.4	93.1	22.0	48.1	20.2	68.3	101.4	139.1	161.2	196.8	1340.7
1970	188.9	201.6	189.4	135.5	88.5	56.1	42.8	33.5	80.3	107.8	167.2	155.8	1427.4
1971	240.9	208.9	284.5	195.2	63.1	38.6	46.0	55.0	37.7	107.1	107.8	197.7	1582.3
1972	207.9	152.3	247.3	134.0	80.3	19.3	19.1	27.9	84.1	140.3	107.2	115.3	1334.0
1973	203.5	274.8	146.7	150.1	39.6	55.4	51.7	80.8	100.6	163.3	99.6	244.0	1610.3
1974	285.5	196.4	165.2	161.4	108.6	66.3	35.9	47.4	55.5	138.9	82.8	144.2	1370.1
1975	227.4	275.2	190.3	90.5	83.5	29.9	45.3	68.4	142.8	74.1	155.5	235.8	1618.7
1976	259.8	198.7	164.1	96.7	47.3	20.3	13.6	98.3	74.3	93.9	123.4	117.9	1308.3
1977	161.9	213.8	159.5	106.9	125.1	34.2	62.5	47.4	93.3	81.3	243.8	178.2	1505.7
1978	201.4	127.5	257.6	127.5	63.6	17.3	83.2	19.3	136.1	163.5	200.4	183.2	1580.8
1979	163.3	227.7	437.6	137.4	37.5	9.8	21.8	30.9	123.8	147.6	130.6	142.5	1610.1
1980	182.8	211.1	237.1	97.1	22.2	23.1	63.5	49.7	63.6	157.1	177.6	120.8	1425.7
1981	159.1	350.4	202.6	118.8	77.5	31.6	17.6	92.5	45.5	192.2	235.2	216.3	1722.7
1982	220.0	229.4	231.2	140.4	52.5	43.4	28.4	34.0	104.9	200.1	227.4	164.2	1673.9
1983	245.7	163.3	202.9	227.3	63.3	81.2	15.7	19.7	92.8	132.9	88.0	253.0	1685.6
1984	195.7	405.6	255.7	165.3	88.1	50.7	32.9	61.8	86.3	210.4	183.0	203.1	1922.6
1985	193.5	254.5	214.6	184.9	96.3	33.2	20.0	38.7	128.5	128.4	255.7	240.0	1786.3
1986	258.0	280.0	250.9	137.7	87.7	3.5	31.1	52.8	67.6	78.4	125.9	138.9	1510.3
1987	284.4	142.0	131.1	101.9	61.9	34.9	54.7	18.8	92.6	133.1	115.2	152.3	1322.9
1988	306.7	180.4	140.4	149.4	70.8	13.4	5.7	0.0	46.5	107.5	97.1	193.1	1311.0
1989	251.9	227.6	279.1	125.1	51.0	38.5	16.3	54.2	93.9	187.8	166.4	147.1	1618.9
1990	234.8	118.3	138.3	100.4	46.3	97.2	19.7	20.3	93.5	224.1	228.4	193.4	1614.7
1991	156.7	196.4	279.7	129.6	56.7	61.3	10.1	6.6	59.9	99.2	187.6	151.9	1385.7
1992	157.4	152.2	156.3	109.9	19.9	64.3	25.4	82.2	81.0	198.7	129.0	100.2	1256.5
1993	201.8	221.4	249.4	157.1	87.8	20.7	40.5	77.2	163.6	156.2	282.8	311.5	1970.0
1994	270.2	225.7	162.6	143.0	47.9	20.3	21.7	8.8	43.1	135.8	98.2	173.7	1371.0
1995	258.6	213.7	280.6	109.0	41.4	39.6	16.1	52.2	70.3	171.5	205.4	200.7	1659.3
1996	231.4	219.9	241.0	155.3	95.9	34.3	31.4	52.3	79.3	115.0	134.3	201.8	1591.9
1997	230.9	238.2	198.0	120.0	82.3	18.7	18.5	78.3	48.4	125.5	143.8	234.5	1537.1
1998	328.0	323.0	245.8	134.7	39.0	56.6	0.8	30.3	27.2	131.8	89.8	162.7	1589.3
1999	169.5	186.2	194.8	115.1	63.7	36.7	39.9	17.7	92.7	96.2	103.4	126.8	1244.7
2000	185.5	245.8	256.8	159.1	81.1	34.9	39.8	48.8	81.1	104.6	89.6	208.5	1515.4
2001	294.3	233.6	240.4	104.6	79.0	30.2	56.8	38.6	99.1	131.0	135.1	108.3	1549.5
2002	73.8	186.6	277.0	149.5	57.0	28.3	89.3	33.2	73.2	149.9	157.3	144.2</	

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: LA VICTORIA II
Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

Latitud S: 10° 51' 30"
Longitud O: 75° 55' 20"
Altitud: 4,000 msnm

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1985	104.5	169.3	237.5	169.1	23.4	14.1	30.4	34.4	97.3	75.2	94.7	136.9	1186.8
1986	156.0	149.3	96.5	42.2	94.8	0.6	0.7	3.4	47.5	148.1	101.8	157.4	1000.1
1987	214.1	211.9	244.4	34.1	37.1	10.4	45.5	57.9	72.9	168.4	35.1	95.5	1227.3
1988	126.1	189.1	227.4	79.2	85.3	28.7	26.3	108.7	58.4	211.8	72.5	122.3	1313.8
1989	174.8	183.3	162.4	81.9	18.1	46.8	36.5	25.1	26.8	191.1	224.4	173.7	1338.5
1990	200.7	187.0	97.3	128.7	123.3	54.3	79.0	45.6	161.6	152.8	207.0	109.3	1526.6
1991	171.1	149.1	197.4	125.9	38.6	27.0	38.1	16.5	28.4	59.6	78.8	152.1	1078.6
1992	177.8	199.6	197.1	120.4	56.3	30.3	36.7	57.0	87.0	132.8	136.9	158.0	1388.9
1993	195.6	219.3	166.9	85.3	17.9	13.0	28.8	73.9	41.9	125.9	100.3	262.4	1329.4
1994	129.5	135.1	86.9	113.8	3.3	44.5	32.9	32.2	42.0	56.1	68.6	151.9	898.8
1995	137.3	193.7	123.4	56.1	67.7	24.8	10.5	35.9	99.8	81.0	63.5	134.9	1008.4
1996	204.3	121.7	110.1	45.6	11.1	12.8	14.1	25.4	59.8	35.6	44.5	85.1	770.1
1997	65.4	164.9	129.4	74.6	57.0	15.9	30.7	5.2	70.0	66.7	194.3	100.7	974.8
1998	109.9	118.1	101.8	57.4	39.4	15.2	18.9	16.5	72.8	51.6	101.8	63.8	768.8
1999	66.0	143.5	285.0	71.1	17.8	5.7	22.9	28.7	37.3	54.8	92.0	122.4	945.0
2000	125.0	142.2	142.2	60.3	34.3	12.7	40.8	19.7	54.8	95.5	81.3	69.2	877.6
2001	128.3	175.3	153.7	74.8	18.8	12.7	2.5	47.2	47.0	141.7	130.2	154.1	1095.9
2002	132.5	130.7	110.2	81.3	6.1	15.2	23.1	25.4	54.6	105.7	215.7	129.4	1058.2
2003	149.1	144.4	161.7	153.8	50.9	92.8	12.8	77.1	135.0	179.5	102.1	300.1	1529.1
2004	208.5	209.3	231.3	181.8	62.5	30.6	27.4	37.7	81.5	180.1	208.5	278.3	1713.5
2005	209.9	67.3	132.6	192.6	30.4	56.0	138.7	108.8	107.3	83.3	118.1	130.2	1371.4
1986	184.8	302.0	324.0	113.9	54.2	9.1	145.8	218.4	151.9	160.0	68.5	139.7	1872.1
1987	226.1	210.7	115.2	179.3	23.2	9.7	5.2	18.6	30.8	85.9	72.1	63.5	1042.5
1988	228.2	100.8	103.4	123.7	102.5	2.9	2.0	16.1	104.1	67.2	154.9	156.3	1162.1
1989	184.7	232.8	303.2	288.7	9.5	18.3	8.1	39.5	8.1	137.5	22.9	54.0	1305.3
1990	65.9	58.9	72.1	19.8	259.2	87.5	190.8	216.8	120.0	179.5	160.9	82.3	1491.7
1991	82.3	135.4	185.7	106.1	35.7	29.6	28.8	11.3	39.0	52.5	117.1	8.9	832.4
1992	47.9	105.5	88.5	40.8	9.8	62.2	27.1	54.2	35.1	18.2	11.3	19.3	519.7
1993	137.8	106.0	96.4	99.7	41.8	11.6	38.0	71.8	203.0	68.3	187.5	230.7	1394.2
1994	138.6	194.8	161.9	172.2	29.2	17.8	7.0	5.5	36.8	148.5	100.3	47.6	1062.2
1995	64.7	192.7	231.3	40.5	15.0	105.5	56.8	13.5	97.3	243.2	223.0	214.1	1498.6
1996	242.5	222.1	293.3	153.3	24.0	18.0	4.8	22.0	42.3	86.3	87.5	81.6	1275.5
1997	113.1	195.2	94.9	45.7	58.5	4.6	1.0	106.9	51.2	157.0	48.8	159.8	1040.9
1998	211.3	142.7	114.8	49.8	19.9	92.0	0.0	58.8	70.7	40.7	95.5	144.4	1010.2
1999	204.7	200.9	193.5	86.0	31.9	6.6	25.0	16.0	77.0	76.6	97.3	95.7	1111.2
2000	152.5	212.8	191.3	112.2	24.4	12.0	18.0	34.4	82.8	57.5	66.2	193.7	1139.8
2001	218.4	166.5	142.1	97.1	63.2	28.7	48.9	49.5	56.8	63.6	141.8	148.3	1242.7
2002	65.3	154.2	258.6	20.7	36.7	20.9	62.0	42.5	52.5	52.6	83.3	40.5	910.8
2003	53.7	59.1	93.8	30.4	30.0	4.1	1.4	18.0	13.8	8.5	6.5	84.9	404.2
2004	48.9	117.9	26.8	10.8	9.5	43.7	55.5	82.2	80.1	110.4	23.1	148.1	734.8
2005	55.8	174.7	250.5	55.4	11.5	2.5	18.2	18.7	28.9	100.9	69.2	271.5	1057.8
PROMEDIO	144.1	165.6	184.4	94.0	43.4	28.1	34.5	48.2	68.8	103.9	105.4	133.7	1134.2
DES. EST.	56.4	49.0	71.9	57.3	44.1	28.9	37.1	47.3	41.4	56.6	59.0	68.9	298.9
MAXIMO	242.5	302.0	324.0	288.7	259.2	106.5	150.8	216.8	203.0	243.2	224.4	300.1	1872.1
MINIMO	47.9	56.9	26.6	10.8	3.3	0.6	0.0	3.4	8.1	8.5	6.5	8.9	404.2

Observación: [] Data extendida

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: LECHECOCCHA
Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

Latitud S: 10° 31' 35"
Longitud O: 75° 54' 00"
Altitud: 4,220 msnm

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1985	183.9	190.7	273.5	190.6	25.1	21.3	45.2	75.8	111.4	181.9	184.3	167.3	1632.0
1986	215.2	233.8	210.6	138.7	126.1	27.5	27.8	45.8	101.3	147.2	198.5	173.3	1651.8
1987	256.0	279.7	384.2	100.5	72.4	19.3	45.3	74.0	120.8	159.6	138.2	168.8	1796.6
1988	209.2	231.8	213.8	136.4	71.3	38.7	33.3	111.6	107.1	147.1	128.5	126.3	1537.8
1989	183.9	190.2	177.2	131.7	73.5	54.9	48.4	34.0	79.4	105.8	167.6	148.8	1388.9
1990	208.9	213.1	295.9	214.0	59.8	37.3	47.8	47.8	41.3	107.7	101.5	184.2	1584.0
1991	208.9	143.8	244.9	131.7	74.5	18.9	33.0	33.8	100.5	172.5	139.2	123.7	1425.5
1992	221.7	240.6	136.0	152.3	54.5	64.3	59.7	72.1	104.7	164.6	100.5	230.8	1602.0
1993	263.1	193.3	197.8	165.1	18.7	73.7	41.0	52.9	56.8	158.9	91.8	160.3	1471.4
1994	246.5	215.1	151.9	93.3	43.2	45.6	14.9	101.2	110.9	80.9	114.8	90.0	1315.4
1995	253.8	215.1	151.9	93.3	43.2	45.6	14.9	101.2	110.9	80.9	114.8	90.0	1315.4
1996	173.6	214.9	171.5	119.4	126.4	29.6	59.8	48.1	88.8	77.1	212.3	171.8	1492.9
1997	214.0	112.0	285.2	103.1	85.7	14.7	59.4	18.3	112.8	149.7	192.2	149.7	1496.8
1998	148.0	223.1	418.2	143.3	41.9	14.7	47.4	38.9	106.3	149.2	135.6	118.7	1585.3
1999	184.9	249.9	280.3	103.3	25.3	54.4	70.6	48.1	73.0	187.8	197.4	139.4	1614.2
2000	164.4	330.7	208.4	131.6	103.9	36.9	12.7	88.3	57.2	204.0	202.7	219.9	1781.7
2001	208.2	225.6	249.7	154.8	51.8	45.1	26.0	39.9	101.8	203.6	232.2	171.2	1707.7
2002	281.0	185.3	219.1	227.3	68.6	81.5	22.6	22.9	93.1	133.8	78.1	283.1	1878.2
2003	188.2	369.5	232.0	146.9	56.3	50.1	31.3	54.6	75.2	180.8	169.6	210.2	1784.9
2004	177.0	221.5	200.1	136.1	84.1	31.4	28.2	39.4	101.3	95.3	209.6	215.2	1537.2
1988	275.7	293.0	281.5	155.7	70.4	1.7	31.1	38.2	31.8	105.0	115.6	126.7	1504.6
1989	204.8	210.0	214.3	130.8	67.1	34.6	28.5	49.0	84.2	142.1	156.8	171.5	1483.7
1990	195.9	200.9	205.1	125.2	64.2	33.1	27.3	46.8	80.5	135.9	150.0	164.1	1429.0
1991	263.1	231.3	286.8	132.3	17.4	42.5	14.9	43.9	54.7	121.7	203.5	157.2	1571.3
1992	202.5	204.5	308.1	119.4	58.5	48.7	11.2	8.4	64.3	65.1	151.4	154.3	1414.4
1993	153.8	139.3	185.7	101.1	16.1	90.4	25.0	83.0	82.7	181.7	142.4	129.8	1290.8
1994	200.5	202.4	160.8	130.0	55.4	17.9	39.5	29.7	106.5	131.5	265.6	245.8	1586.4
1995	228.1	242.5	151.5	138.4	52.0	17.0	20.9	9.4	43.0	139.9	102.5	179.5	1322.7
1996	285.8	209.8	299.5	105.7	38.2	41.4	16.3	50.0	64.1	156.2	194.8	202.2	1664.0
1997	167.8	201.7	181.9	139.4	87.6	27.2	27.2	55.4	51.4	102.1	127.6	196.6	1388.4
1998	251.7	236.0	206.3	99.2	77.2	21.4	15.2	81.3	81.6	100.2	119.5	228.7	1518.3
1999	362.3	383.5	278.4	142.3	34.3	48.1	2.1	43.8	37.1	128.2	119.7	181.4	1737.0
2000	309.1	221.7	228.4	157.8	82.8	42.6	50.3	24.6	79.8	140.7	118.9	139.7	1586.4
2001	197.9	270.8	294.0	153.5	71.0	38.9	46.8	79.2	113.0	110.9	87.9	217.6	1891.5
2002	285.9	245.5	249.8	125.1	93.2	35.9	61.9	29.9	131.8	129.7	150.9	130.8	1870.0
2003	65.3	221.1	285.5	145.4	50.0	27.9	69.2	35.4	78.4	220.5	171.2	178.0	1550.9
2004	131.8	188.7	228.5	114.3	73.9	6.3	2.3	45.5	61.7	75.5	75.4	215.4	1219.3
2005	128.1	119.8	192.5	77.4	57.0	48.2	35.7	48.0	69.1	249.9	54.5	169.2	1207.4
2005	128.8	166.4	245.3	71.0	17.9	3.0	35.5	37.3	71.7	154.2	129.0	217.6	1277.7
PROM													

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: LUXOPATA
Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

Latitud S: 10° 50'10"
Longitud O: 75° 51'30"
Altitud: 4,000 msnm

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	117.70	179.80	226.90	107.90	15.10	28.90	33.30	44.20	110.50	104.70	95.40	121.20	1185.6
1966	178.00	193.40	157.30	71.00	96.20	5.00	5.60	30.80	47.20	148.90	126.40	167.90	1227.5
1967	194.80	243.80	290.70	76.30	49.60	20.50	32.00	52.60	91.30	151.20	46.30	66.60	1339.7
1968	222.90	203.50	168.00	75.20	48.40	22.00	34.10	75.60	63.80	174.50	83.00	123.60	1320.4
1969	134.10	165.60	101.00	54.70	35.60	46.60	23.60	40.80	41.40	156.60	133.50	142.70	1080.4
1970	157.10	139.50	144.30	124.10	87.00	55.40	61.10	27.20	113.60	86.40	167.60	154.30	1317.8
1971	67.8	153.6	215.7	140.0	34.3	27.5	39.4	29.3	47.0	98.5	145.5	152.4	1171.1
1972	166.3	130.1	255.4	146.2	42.7	45.8	13.4	25.7	111.3	128.1	80.6	178.2	1323.8
1973	192.9	208.2	181.9	148.3	36.7	54.9	31.2	84.4	57.9	153.5	90.0	236.8	1474.7
1974	151.1	172.2	124.0	63.9	6.7	27.5	35.6	54.3	151.1	95.1	88.4	176.1	1158.2
1975	178.1	168.6	178.8	74.7	107.1	21.8	40.1	67.2	131.1	75.4	89.0	151.4	1300.1
1976	265.4	160.8	199.2	110.0	24.2	29.3	25.5	69.2	119.1	64.0	77.2	110.0	1253.9
1977	113.1	241.3	183.3	107.4	61.2	10.9	41.2	9.8	118.5	88.0	185.1	110.2	1268.0
1978	171.7	176.5	173.4	96.9	48.9	24.1	21.0	41.5	105.7	90.2	135.9	135.4	1221.2
1979	104.1	171.5	266.7	65.8	14.2	5.1	53.3	43.2	57.2	80.3	132.1	130.2	1143.5
1980	100.6	158.0	233.7	154.9	29.2	19.1	61.0	57.5	68.5	78.1	101.8	71.1	1222.5
1981	161.3	226.1	167.6	107.9	27.0	17.8	7.6	77.9	56.6	181.9	153.0	166.5	1363.2
1982	172.7	165.4	163.8	145.3	9.0	24.1	15.7	47.0	62.2	181.3	212.1	114.3	1312.9
1983	180.3	155.6	174.4	101.6	52.1	34.9	22.9	7.6	129.2	68.7	108.0	152.4	1187.7
1984	208.3	233.7	199.4	139.7	7.6	16.3	16.5	13.2	49.5	125.7	146.3	186.4	1344.6
1985	153.7	216.4	242.8	158.2	140.5	66.4	23.1	6.4	47.0	2.6	123.2	134.1	1316.6
1986	168.8	203.8	189.8	164.3	79.4	6.5	26.7	40.9	71.3	154.6	89.5	147.8	1361.2
1987	267.1	221.0	181.3	110.5	59.7	19.4	39.4	37.1	78.7	53.3	106.7	127.5	1281.7
1988	279.0	173.7	188.5	158.9	101.8	5.5	4.1	1.8	23.3	41.9	70.2	153.4	1201.9
1989	324.6	112.5	315.4	103.3	25.3	3.0	0.9	2.2	82.1	106.0	48.0	101.8	1225.1
1990	228.0	51.0	31.5	38.9	71.5	105.6	5.6	3.2	66.7	242.8	165.5	213.1	1223.4
1991	136.1	70.0	215.5	127.9	15.7	92.3	17.3	15.7	123.9	209.4	185.0	96.9	1305.7
1992	158.1	254.9	245.1	94.9	53.4	73.1	7.9	33.6	45.5	154.1	28.8	21.9	1172.1
1993	283.3	175.8	192.8	148.4	22.2	0.0	0.0	75.1	59.7	74.5	133.1	252.6	1415.5
1994	254.8	194.0	283.6	96.1	5.8	24.4	4.1	0.0	62.6	112.7	35.5	107.0	1180.6
1995	170.2	218.9	219.9	13.4	100.7	60.1	28.8	6.0	124.2	104.7	151.1	173.2	1369.0
1996	185.8	223.0	184.2	157.3	27.2	15.7	19.8	62.4	59.5	143.4	71.9	190.8	1320.8
1997	129.5	170.2	141.0	85.7	42.7	4.5	0.0	66.0	76.2	88.9	113.0	165.1	1082.8
1998	211.7	202.0	189.1	38.1	15.2	4.0	0.0	0.0	0.0	205.8	107.7	194.8	1168.4
1999	171.6	167.8	146.6	154.9	48.3	24.9	19.3	34.4	69.8	69.8	91.4	120.7	1118.3
2000	164.2	235.0	203.5	103.1	43.4	41.9	32.9	37.4	59.0	65.0	65.0	179.5	1252.4
2001	217.2	161.1	264.0	139.9	77.7	9.0	38.6	25.4	98.8	100.0	240.0	68.8	1348.4
2002	78.7	150.5	309.0	24.8	60.9	24.9	99.4	99.4	98.8	36.5	99.1	41.1	1083.9
2003	184.2	127.4	270.6	125.7	14.7	0.7	0.6	73.6	18.4	31.9	106.4	211.3	1165.7
2004	69.1	220.3	135.3	41.2	28.0	25.7	31.3	30.0	44.2	196.5	58.2	123.8	1003.8
2005	102.9	160.2	255.4	168.0	9.0	37.4	23.5	3.9	75.0	28.9	28.9	46.8	687.8
PROMEDIO	175.8	175.5	200.6	101.1	43.9	28.0	24.7	38.0	73.3	113.6	110.6	142.7	1231.6
DES. EST.	56.5	44.9	59.0	43.5	32.6	24.8	20.4	28.9	35.6	56.0	46.9	49.2	133.2
MAXIMO	324.6	254.9	315.4	164.3	140.5	105.8	99.4	151.1	242.8	240.9	252.6	1474.7	1474.7
MINIMO	69.1	51.0	31.5	6.9	3.8	0.0	0.0	0.0	0.0	2.8	6.5	21.9	687.8

Observación: Data corregida Data extendida

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: MACHAVADO
Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

Latitud S: 10° 34' 50"
Longitud O: 75° 53' 50"
Altitud: 3,850 msnm

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	126.1	150.8	249.9	102.6	26.3	22.5	51.0	65.7	93.0	115.5	146.5	141.8	1291.7
1966	181.6	187.5	139.5	96.3	96.7	24.7	21.3	38.3	118.9	177.2	179.7	178.1	1437.8
1967	251.0	259.9	319.6	62.8	47.4	16.5	31.1	96.9	109.7	198.8	111.3	195.5	1696.5
1968	226.1	241.8	210.5	94.3	50.3	28.3	38.7	95.3	102.8	148.3	121.8	126.9	1483.1
1969	136.7	177.0	144.9	83.8	16.7	31.1	8.2	49.1	79.1	110.3	163.4	165.4	1165.7
1970	133.2	112.4	134.2	109.3	50.7	39.3	41.8	23.3	90.2	65.5	128.0	134.5	1062.4
1971	203.2	138.3	300.0	133.0	31.0	35.0	33.4	38.3	30.3	85.1	105.1	155.5	1288.2
1972	186.5	142.6	250.2	116.0	58.4	17.8	9.4	28.6	76.5	107.9	95.2	110.6	1201.9
1973	183.1	245.8	151.1	147.8	36.6	48.8	49.8	78.1	95.3	147.3	68.0	236.9	1488.4
1974	271.4	180.0	106.3	51.8	16.8	48.0	27.9	47.1	43.8	118.4	78.1	140.5	1130.1
1975	239.7	192.0	149.1	70.2	76.8	18.7	38.7	56.4	102.0	59.3	124.1	222.5	1349.5
1976	135.9	166.8	138.8	95.8	75.6	21.4	32.1	25.7	71.2	72.5	216.8	112.1	1194.5
1977	135.6	118.3	184.9	86.0	73.1	9.2	35.7	12.7	150.7	70.0	161.1	120.7	1138.0
1978	120.5	168.3	308.7	81.9	35.8	6.8	24.6	38.4	73.9	138.4	109.6	99.4	1205.3
1979	142.6	158.7	203.7	52.5	16.1	23.7	47.3	37.0	49.1	126.9	130.8	100.7	1087.3
1980	124.1	245.1	144.6	83.6	35.5	21.1	12.1	64.6	34.7	119.4	179.1	213.9	1277.8
1981	173.9	158.8	188.0	136.7	35.9	36.4	13.7	23.1	66.6	170.1	164.7	112.1	1280.0
1982	171.8	148.9	166.2	168.5	45.5	53.4	20.1	21.3	77.8	98.4	64.2	251.6	1287.5
1983	195.1	385.8	233.8	154.0	74.5	42.9	24.2	43.8	64.8	178.7	177.9	207.5	1780.8
1984	160.8	257.8	204.0	138.6	86.4	30.8	29.7	32.2	100.9	105.6	171.6	237.6	1577.6
1985	240.0	269.2	242.3	130.3	72.2	1.3	26.1	41.3	56.5	80.7	87.9	104.1	1331.9
1986	244.2	125.7	112.1	89.2	49.0	29.2	30.8	11.3	87.0	102.3	103.2	137.8	1101.4
1987	267.6	165.3	116.5	107.8	50.3	16.5	3.7	0.0	36.4	80.0	77.9	148.0	1070.0
1988	210.8	201.0	253.3	104.4	46.8	30.6	16.3	40.9	75.4	169.3	152.0	140.8	1441.4
1989	215.7	121.5	129.4	81.5	32.6	68.5	14.5	21.7	93.5	193.4	191.3	162.5	1348.1
1990	126.1	153.0	245.0	103.6	43.3	38.5	7.1	4.5	59.3	103.3	164.9	128.1	1176.7
1991	138.6	138.5	143.3	91.0	16.4	50.1	15.5	54.3	58.3	165.1	102.4	71.8	1045.3
1992	155.9	192.4	215.8	122.7	61.1	10.6	33.1	70.3	134.3	114.7	225.5	317.5	1653.9
1993	234.8	204.4	170.7	139.7	42.9	14.8	17.8	9.3	44.5	127.1	95.4	156.0	1267.4
1994	240.5	194.2	260.3	105.4	42.3	39.3	18.2	42.7	59.7	158.1	189.7	175.9	1516.4
1995	187.7	205.6	228.6	135.6	85.8	27.8	26.8	51.2	72.9	115.1	110.1	180.4	1427.4
1996	209.3	205.1	179.9	98.1	80.4	17.5	16.5	65.9	51.9	108.1	127.1	211.4	1371.2
1997	313.0	288.0	219.4	113.4	31.0	41.7	0.5	31.9	32.1	145.3	86.4	148.1	1448.8
1998	243.2	223.5	181.9	137.1	61.9	27.5	37.3	21.5	74.8	118.5	76.9	111.5	1317.6
1999	186.0	236.8	239.3	150.1	46.8	28.3	49.0	49.5	64.5	92.4	80.3	193.8	1414.6
2000	290.0	227.4	213.2	111.0	87.2	29.2	44.8	28.2	92.4	134.2	171.1	131.1	1539.8
2001	76.4	158.5	255.1	116.8	43.2	16.7	79.5	31.2	59.4	128.8	157.3	143.5	1264.2
2002	124.2	170.1	244.8	109.0	80.4	9.0	0.9	39.4	36.7	56.8	70.8	249.8	1171.9
2003	20.6	153.5	143.3	52.2	51.8	57.2							

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: PACCHAPATA
 Fuente: ELECTROANDES S.A.
 Latitud S: 10° 32' 40"
 Longitud O: 75° 53' 45"
 Elevación: 4.350 msnm

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1985	187.6	225.9	272.9	214.0	25.2	16.4	43.7	66.7	109.8	158.1	182.5	164.8	1670.6
1986	214.0	244.5	169.9	106.5	101.8	25.0	15.9	23.5	89.8	120.8	200.5	162.7	1474.7
1987	282.3	287.7	412.0	61.7	53.9	15.4	20.9	73.5	106.9	172.4	106.8	158.4	1751.7
1988	183.3	221.4	192.2	107.2	53.8	21.4	22.7	92.1	99.7	104.8	104.8	86.1	1289.3
1989	118.7	147.8	108.4	71.7	18.5	25.8	9.8	42.8	73.1	76.1	105.3	124.8	920.8
1990	231.9	126.6	109.0	69.3	25.9	42.2	22.3	17.4	41.1	73.3	81.7	128.0	880.7
1991	227.1	189.1	294.7	178.8	48.2	38.3	44.1	46.7	37.1	102.6	105.4	181.0	1490.9
1992	222.8	160.7	275.2	142.6	77.7	20.2	24.0	33.7	96.8	155.6	130.8	133.4	1473.3
1993	190.3	235.2	131.7	139.3	41.1	48.9	48.8	68.6	91.2	144.4	82.4	216.2	1436.9
1994	286.5	204.9	171.0	141.8	15.3	65.0	37.0	52.3	57.6	149.6	92.2	157.7	1430.7
1995	246.0	284.7	193.9	88.8	83.7	24.3	44.9	87.4	142.2	73.5	160.5	241.9	1629.6
1996	197.6	160.5	138.9	82.9	38.9	24.5	8.1	75.5	73.5	70.8	92.4	92.2	1045.8
1997	125.8	164.8	124.0	83.3	81.0	22.8	39.7	30.0	69.3	65.2	181.9	112.3	1099.7
1998	128.8	95.3	162.5	75.3	57.5	10.2	40.0	11.8	101.2	86.0	125.0	98.5	989.9
1999	105.0	150.5	286.5	91.1	28.5	7.7	24.5	28.4	72.3	107.4	94.4	87.5	1083.8
2000	167.5	199.9	246.1	77.2	19.8	29.1	57.9	40.7	58.1	152.5	170.1	117.0	1333.9
2001	156.1	324.3	192.9	119.3	88.1	30.1	15.7	84.0	47.7	180.0	211.4	231.5	1659.1
2002	188.2	137.8	183.7	165.1	43.8	40.1	19.9	29.5	83.0	181.4	191.7	140.1	1457.9
2003	193.3	388.1	248.1	163.4	85.0	49.0	29.7	54.9	77.8	193.0	192.5	210.0	1868.8
2004	151.4	196.5	168.4	118.9	73.4	25.6	20.2	33.3	49.7	62.8	88.8	122.2	1324.6
2005	288.2	314.8	282.2	180.4	84.0	2.2	33.3	48.7	62.8	88.8	122.2	133.4	1621.6
1987	245.4	148.2	137.8	100.8	55.5	33.1	34.9	21.9	78.2	124.1	121.0	148.8	1246.1
1988	328.8	248.4	179.2	156.8	77.2	23.3	12.1	12.7	63.4	126.7	215.1	155.0	1550.3
1989	259.8	240.8	297.4	130.3	42.9	40.1	18.0	46.5	79.4	169.8	176.8	164.0	1867.4
1990	177.5	93.3	104.6	79.5	30.3	67.8	12.3	15.1	68.2	152.6	165.2	145.3	1111.5
1991	165.3	196.3	287.3	123.0	55.3	48.0	9.5	6.6	62.2	101.8	177.5	148.5	1381.1
1992	259.3	269.5	253.0	157.4	16.4	85.2	24.6	61.6	70.4	160.4	136.0	114.9	1608.7
1993	188.8	191.4	145.7	127.0	55.8	17.8	38.3	27.5	106.4	127.6	284.4	284.7	1571.4
1994	245.2	241.1	151.4	153.3	55.8	20.2	22.3	7.7	47.0	148.7	111.1	203.3	1407.1
1995	312.7	220.1	293.2	111.2	39.6	44.8	17.0	53.8	81.8	168.8	202.5	208.5	1733.6
1996	216.7	251.0	209.2	151.8	91.0	31.8	29.7	55.7	50.9	121.4	138.4	213.6	1581.2
1997	230.0	212.5	195.8	105.8	74.4	21.4	16.5	77.2	65.9	115.3	111.7	215.0	1441.5
1998	320.5	327.2	237.9	128.2	33.4	48.8	2.2	40.0	30.9	105.4	126.5	153.3	1552.1
1999	218.7	188.8	160.1	94.0	57.5	30.9	30.4	14.4	51.1	99.6	73.8	67.6	1088.9
2000	160.4	220.0	227.6	125.4	60.0	25.0	33.8	49.4	79.4	84.2	76.8	183.2	1325.2
2001	225.2	198.5	173.8	92.2	79.5	26.6	40.9	25.8	103.1	96.5	100.9	83.6	1244.6
2002	60.8	218.9	283.2	147.2	48.8	27.4	87.0	31.1	71.9	188.1	172.3	182.1	1498.8
2003	120.8	184.4	200.4	120.7	80.8	6.0	1.8	48.8	55.3	70.0	80.0	219.9	1188.9
2004	130.0	133.5	156.8	80.4	57.5	46.7	37.3	49.5	68.8	240.8	160.7	144.2	1442.6
2005	137.8	148.8	247.3	73.2	15.8	1.8	12.9	0.0	58.5	153.3	132.7	209.9	1189.8
PROMEDIO	198.8	208.0	207.2	119.2	53.0	31.4	28.8	41.1	73.7	126.8	140.1	163.6	1389.8
DES. EST.	62.5	83.1	67.2	34.0	22.9	17.8	14.8	23.2	22.8	41.6	51.2	50.5	239.9
MAXIMO	328.8	386.1	412.0	214.0	101.8	85.2	67.0	92.1	142.2	240.8	280.8	284.7	1868.6
MINIMO	60.8	93.3	104.6	71.7	15.3	1.8	1.8	0.0	30.9	65.2	59.1	67.6	860.7

Observación: Data extendida

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: MANTO
 Fuente: ELECTROANDES S.A.
 Latitud 10° 44' 25"
 Longitud 75° 35' 05"
 Elevación 1.870 msnm

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1985	182.2	270.0	320.1	103.4	14.6	54.7	50.9	72.7	171.8	177.6	139.0	162.3	1719.3
1986	198.0	233.5	209.8	96.8	98.4	6.7	9.9	54.4	47.5	151.2	149.2	178.9	1437.1
1987	225.0	329.8	400.1	135.1	72.1	34.0	28.1	60.6	129.1	172.8	67.0	103.9	1751.4
1988	382.9	288.9	223.5	99.0	52.0	28.1	56.7	75.8	90.7	206.7	121.8	182.5	1802.2
1989	167.5	227.4	107.0	61.7	62.3	71.3	26.3	68.5	67.5	214.1	135.3	185.9	1394.8
1990	181.7	168.5	222.6	182.6	92.9	74.8	70.1	24.5	120.8	72.8	198.7	234.4	1624.2
1991	235.4	209.8	344.9	180.6	59.9	65.2	63.8	48.9	55.7	127.5	86.1	154.0	1632.8
1992	125.1	157.5	228.6	180.6	92.4	32.8	50.4	40.2	257.8	99.7	213.6	172.9	1851.5
1993	318.1	348.5	306.0	216.0	29.5	41.8	54.7	112.7	94.4	153.4	209.1	371.9	2253.9
1994	288.1	283.3	189.0	188.8	18.8	40.7	94.0	73.7	70.3	150.4	87.6	178.5	1841.0
1995	225.2	278.2	220.9	131.7	105.3	58.6	43.8	32.6	113.2	99.8	128.5	205.1	1634.9
1996	279.5	179.1	189.5	91.2	90.4	37.3	33.8	120.7	115.4	74.7	147.2	151.4	1510.0
1997	294.1	306.7	235.1	190.3	88.2	62.0	95.4	48.3	99.0	106.6	212.1	139.5	1877.3
1998	247.2	216.7	228.4	137.6	63.0	33.5	42.9	12.5	127.8	75.2	93.2	182.4	1470.4
1999	203.0	331.2	377.6	125.9	67.8	11.2	81.6	40.4	76.6	97.8	132.8	127.8	1673.7
2000	179.3	173.3	284.8	69.7	42.5	7.0	35.8	42.8	81.6	186.6	154.3	256.2	1513.3
2001	188.8	250.8	302.5	180.4	62.9	28.5	22.8	124.1	143.1	202.6	180.2	218.6	1881.1
2002	231.8	141.1	117.5	72.2	27.2	45.5	45.5	35.3	35.3	103.1	103.1	255.7	1446.1
2003	279.9	168.1	247.4	159.9	50.9	50.3	25.7	30.3	141.0	147.2	101.7	199.5	1601.9
2004	171.1	433.6	234.8	128.7	41.2	90.0	14.9	76.8	115.0	110.3	181.7	175.0	1770.9
2005	101.4	198.0	200.7	178.9	79.9	71.9	14.0	53.0	108.0	126.8	144.3	173.2	1446.1
1986	274.2	287.3	248.6	88.8	69.8	16.3	53.8	84.4	97.9	124.2	121.5	168.2	1638.0
1987	427.5	236.1	163.2	148.3	33.7	38.8	43.0	11.7	61.1	158.1	164.2	275.1	1760.8
1988	364.2	215.9	230.5	123.2	71.9	13.6	7.8	2.5	39.5	135.2	149.1	134.1	1587.5
1989	255.2	225.5	305.5	194.9	114.4	46.8	25.8	25.7	80.5	141.5	100.7	102.2	1816.5
1990	289.7	122.8	151.1	111.5	68.2	138.6	23.7	72.6	80.2	196.1	238.6	220.4	1709.7
1991	166.8	212.4	291.0	187.3	80.3	62.1	24.8	11.9	116.4	148.8	193.1	150.3	1624.8
1992	159.6	139.2	231.8	124.0	5.8	62.7	50.0	123.5	89.1	202.2	129.0	78.5	1401.4
1993	267.2	167.0	388.3	217.4	99.8	72.5	62.9	68.0	84.8	124.8	168.1	248.1	1964.9
1994	272.3	299.5	140.0	140.2	84.1	19.9	16.0	23.8	102.4	226.8	78.7	99.6	1503.1
1995	196.8	198.5	188.5	66.3	31.2	43.6	29.7	28.3	181.4	242.0	66.5	155.4	1428.2
1996	182.5	151.7	151.0	114.3	68.8	29.2	18.5	55.1	61.3	80.3	105.3	113.5	1131.5
1997	177.4	221.4	239.7	59.7	89.4	50.5	8.6	86.9	121.4	132.6	158.5	196.6	1542.7
1998	272.6	337.7	130.1	178.5	31.2	70.2	19.6	119.3	87.3	144.8	111.3	173.4	1596.0
1999	289.4	311.8	312.6	168.8	57.5	43.6	44.4	101.3	101.3	101.3	101.3	101.3	1820.8
2000	150.5	206.7	226.2	145.7	44.8	82.4	82.4	48.9	84.5	94.5	103.3	130.9	1460.8
2001	294.1	206.9	228.9	104.9	39.6	25.6	86.3	68.1	122.4	162.6	122.5	145.7	1629.8
2002	157.8	271.5	333.8	77.9	51.8	30.0	114.8	39.3	120.4	195.8	192.4	271.3	1856.4
2003	173.8	140.4	303.1	166.4	74.8	21.0	22.1	41.0	96.3	49.8	83.3	290.8	1464.6
2004	86.0	208.5	181.0	38.3	96.4	77.7	65.2	106.7	82.4	195.0	191.9	220.3	1547.4
2005													

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: PUAGMARAY
Cuenca: RIO PALUCARTAMBO
Fuente: ELECTROANDES S.A.

Latitud S: 10° 38' 30"
Longitud O: 75° 48' 47"
Altitud: 2,450 msnm

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	160.4	237.7	281.9	91.0	12.9	48.2	44.8	64.0	151.2	156.3	122.4	142.9	1513.7
1966	268.7	315.3	283.3	130.5	132.9	11.8	13.4	73.4	64.1	204.2	201.4	241.5	1940.5
1967	191.7	280.9	340.9	115.1	61.5	29.0	23.9	57.1	147.2	147.2	57.1	88.5	1487.4
1968	241.5	162.2	140.9	82.5	32.8	18.4	33.2	47.7	57.2	130.3	76.7	115.1	1136.5
1969	189.0	288.6	120.8	89.6	70.3	80.4	29.6	77.3	76.2	241.7	152.7	209.8	1574.0
1970	177.8	164.8	217.8	159.1	90.9	73.0	68.5	24.0	118.2	71.2	194.5	229.4	1569.3
1971	208.7	137.3	245.1	125.0	43.0	32.2	40.6	27.0	37.2	81.2	64.3	108.2	1149.8
1972	100.3	125.8	183.5	138.2	60.1	25.3	38.5	36.0	169.6	79.7	139.9	124.8	1224.7
1973	132.3	131.2	108.7	78.0	10.5	13.9	21.9	39.8	36.2	54.8	86.1	128.7	823.9
1974	264.0	274.0	189.7	186.2	18.3	47.1	80.9	72.1	70.6	121.2	78.0	189.8	1579.9
1975	248.0	247.1	209.9	103.0	97.2	43.8	31.6	32.6	102.0	85.4	124.5	190.7	1515.8
1976	266.7	186.5	172.5	81.4	84.6	33.5	23.4	91.1	85.4	52.3	138.5	126.5	1322.4
1977	266.6	291.2	210.9	159.5	67.9	36.9	68.4	31.7	104.5	105.8	207.9	124.9	1680.2
1978	207.7	181.5	195.1	107.4	46.2	27.9	28.4	8.3	102.4	61.9	82.7	176.3	1225.8
1979	164.2	291.0	363.1	122.3	53.0	7.0	71.2	32.9	67.6	82.0	116.4	126.5	1497.2
1980	207.8	227.3	335.3	93.0	41.2	9.0	49.7	38.6	87.8	218.1	172.3	287.0	1764.9
1981	114.1	187.3	186.3	104.8	32.7	14.6	11.9	83.9	76.8	122.1	97.5	147.2	1120.1
1982	247.3	164.0	136.9	77.6	25.1	42.6	35.5	57.4	83.1	214.3	176.3	247.3	1507.4
1983	222.1	130.1	197.9	119.5	36.0	41.0	16.0	20.2	88.2	92.7	75.9	159.2	1206.2
1984	152.2	388.4	195.0	112.0	30.9	66.6	13.4	57.3	79.3	94.3	159.2	172.1	1520.7
1985	71.4	138.6	128.8	111.5	58.5	40.8	11.7	34.2	78.8	66.9	98.0	124.5	963.5
1986	274.0	314.7	291.2	121.9	69.1	13.3	41.8	67.7	87.1	104.9	138.7	170.0	1714.2
1987	391.8	185.9	124.7	104.1	34.6	28.7	38.3	7.7	52.6	123.2	168.0	222.2	1481.8
1988	401.3	251.7	220.9	153.8	87.8	12.3	7.9	2.2	139.5	122.2	146.5	164.4	1710.3
1989	155.1	120.6	181.4	67.8	45.0	18.0	12.1	18.7	51.6	67.8	53.5	46.0	837.8
1990	239.8	96.9	133.7	92.4	56.6	99.2	16.6	49.2	66.1	192.7	229.9	170.8	1445.9
1991	133.4	216.5	252.0	144.0	78.9	45.4	17.2	9.4	105.3	118.2	142.1	108.6	1389.0
1992	161.5	178.7	248.8	140.5	3.8	79.8	73.9	128.3	82.1	201.2	132.4	81.6	1512.4
1993	111.2	83.0	132.3	82.8	37.9	19.8	18.2	31.3	39.0	51.7	80.1	141.4	828.5
1994	320.2	316.5	164.0	189.4	80.8	23.5	21.2	23.2	102.7	243.8	91.9	114.3	1873.1
1995	203.6	200.4	220.9	87.0	30.6	43.4	20.1	24.7	132.7	171.9	71.8	162.3	1359.3
1996	270.0	238.1	330.8	211.5	111.9	32.9	25.4	82.0	106.7	129.3	165.7	169.5	1873.8
1997	168.2	236.4	196.3	60.0	72.2	43.0	9.0	88.5	112.0	112.0	43.3	134.3	1277.2
1998	145.0	130.9	110.4	49.9	6.6	18.7	2.3	6.8	22.1	55.2	44.9	159.0	749.6
1999	158.9	246.6	207.4	152.3	77.2	11.7	28.9	31.3	91.1	87.8	84.1	125.1	1300.5
2000	195.9	255.4	133.5	114.7	57.7	27.3	9.9	54.5	79.7	89.0	104.3	167.8	1389.7
2001	272.3	265.5	218.2	129.0	44.1	29.3	41.4	17.2	109.3	159.6	130.9	137.2	1574.0
2002	132.3	222.7	218.1	106.1	54.0	28.5	89.2	35.9	82.7	149.3	198.2	208.3	1502.3
2003	242.0	228.5	282.6	125.6	80.0	12.8	9.5	42.0	85.7	64.9	87.5	283.8	1513.0
2004	81.0	219.0	198.9	64.6	80.3	48.1	49.8	67.8	95.7	204.3	122.5	188.6	1398.6
2005	139.3	180.4	239.3	68.9	11.2	4.5	21.6	34.2	48.2	151.6	82.6	209.7	1189.5
PROMEDIO	203.0	212.4	209.8	113.2	52.8	33.6	31.9	44.5	85.2	124.0	120.1	161.3	1391.8
DES. EST.	75.2	68.9	66.0	37.5	28.6	21.8	21.9	27.7	31.5	55.8	49.0	51.1	283.1
MAXIMO	401.3	388.4	363.1	211.5	132.9	99.2	88.2	128.3	169.8	243.6	229.9	287.0	1940.5
MINIMO	71.4	83.0	108.7	49.9	3.8	4.5	2.3	2.2	22.1	51.7	43.3	46.0	749.6

PRECIPITACION MENSUAL CORREGIDA Y EXTENDIDA (mm)

Estación: PUAGMARAY
Cuenca: RIO PALUCARTAMBO
Fuente: ELECTROANDES S.A.

Latitud S: 10° 46'00"
Longitud O: 75° 48'40"
Altitud: 3,000 msnm

AÑO	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC	ANUAL
1965	88.4	136.6	176.0	92.3	12.9	19.9	25.2	32.5	82.9	75.9	73.2	95.6	111.4
1966	125.9	133.3	104.5	46.8	69.8	2.9	3.3	17.6	34.4	108.3	87.6	120.5	855.1
1967	176.1	209.8	248.5	61.0	41.5	16.2	30.9	47.5	77.3	137.1	38.6	79.7	1164.4
1968	146.9	144.9	141.5	54.9	37.4	16.6	23.5	59.4	45.2	131.4	58.4	92.5	952.8
1969	90.1	107.8	71.2	37.9	20.9	30.9	16.6	24.4	25.1	103.8	95.1	94.5	718.3
1970	133.7	117.1	110.3	101.3	75.8	44.8	52.1	24.7	99.0	79.8	148.7	118.6	1090.7
1971	121.2	138.2	203.2	134.1	27.1	35.2	35.1	35.1	35.1	73.6	108.8	95.7	1040.4
1972	97.5	126.0	163.3	114.3	41.8	35.7	13.1	45.2	55.4	78.7	79.0	132.4	982.4
1973	159.7	172.1	158.3	127.0	31.8	40.9	22.4	54.7	60.3	134.6	94.0	287.3	1343.1
1974	109.7	143.3	140.3	138.8	1.3	20.8	31.6	33.3	47.1	58.5	78.7	197.2	1000.6
1975	138.0	165.1	140.7	54.1	72.6	30.0	61.0	43.1	96.8	51.1	62.5	145.5	1060.5
1976	163.4	113.0	108.0	79.4	19.2	17.5	7.0	39.4	63.5	46.4	43.7	114.3	814.8
1977	91.4	127.5	81.5	80.0	22.9	15.2	30.9	11.8	104.8	83.9	141.6	102.4	893.9
1978	111.9	108.5	147.3	72.4	33.7	20.3	12.7	15.0	67.4	57.4	81.6	107.1	815.3
1979	81.3	154.2	158.4	85.4	23.7	1.8	57.2	29.2	24.4	78.2	105.4	105.4	882.6
1980	81.3	168.3	186.7	30.5	10.2	4.6	43.7	32.0	32.0	99.1	100.6	69.9	858.9
1981	125.0	156.5	161.3	77.3	19.3	14.0	11.4	61.1	51.4	127.0	106.0	161.1	1061.4
1982	141.7	160.0	146.1	97.0	2.9	57.3	25.4	35.3	55.4	140.6	153.0	106.7	1131.3
1983	153.7	109.9	146.2	76.2	36.8	81.0	13.3	20.3	85.5	53.6	94.7	128.4	979.6
1984	120.2	208.9	137.6	91.2	28.3	28.1	13.5	28.1	44.6	89.1	121.8	157.0	1068.6
1985	107.2	99.7	103.4	114.6	41.3	34.4	53.7	51.7	76.5	45.5	87.2	106.8	924.2
1986	137.3	203.6	209.1	87.1	38.3	7.3	53.0	95.6	69.6	74.5	77.2	97.1	1149.9
1987	270.8	170.1	98.9	121.2	27.0	13.7	17.3	11.5	38.4	84.5	110.0	109.0	1070.4
1988	225.6	127.8	102.8	109.0	82.5	4.2	3.1	7.7	84.4	58.2	107.9	139.6	1033.0
1989	226.9	206.7	273.6	197.3	27.5	16.7	12.2	38.0	51.2	114.3	53.0	55.8	1275.2
1990	130.9	61.3	87.0	45.2	126.6	67.9	65.5	101.2	74.5	164.7	174.1	95.8	1194.7
1991	100.1	185.6	217.2	123.7	57.9	33.0	23.2	10.4	68.4	75.4	119.4	37.6	1051.9
1992	57.9	108.1	102.8	54.9	5.6	56.9	34.7	56.7	33.0	46.4	31.5	27.6	816.5
1993	129.9	150.5	109.9	88.9	39.0	8.5	20.6	45.3	111.4	61.9	138.9	221.8	1128.8
1994	170.9	185.6	131.1	153.1	20.4	16.2	11.1	6.8	45.9	142.7	77.9	59.1	1022.6
1995	103.8	143.2	177.7	56.5	16.6	52.4	22.6	12.5	62.4	117.1	105.1	137.8	1007.5
1996	156.8	145.8	224.7	122.0	38.4	10.6	7.0	27.7	46.2	68.6	75.5	71.4	992.9
1997	96.0	188.0	143.5	73.0	47.8	24.2	36.7	52.2	95.1	75.1	139.0	162.4	1133.0
1998	176.9	245.9	172.3	40.0	14.2	39.8	5.2	38.8	38.0	66.0	85.0	139.1	1081.2
1999	140.7	175.0	151.8	98.4	42.8	13.0	15.4	14.4	46.8	51.4	76.4	66.2	912.3
2000	128.3	195.6	174.4	90.8	36.1	34.9	27.4	31.1	49.6	47.3	77.5	149.4	1042.4
2001	225.4	165.2	149.7	64.9	43.9	17.1	39.8	27.5	59.9	96.8	100.5	132.1	1142.8
2002	74.1	168.8	122.0	36.4	37.1	8.4	76.1	50.5	92.8	122.2	114.0	114.9	1017.1
2003	101.3	113.3	183.8	59.3	60.0	6.5	14.1	61.6	68.0	44.3	54.5	163.9	956.8
2004	55.2	136.7	129.3	44.3	49.9	54.5	33.5	51.9	62.0	127.9	71.8		

I.- PRECIPITACION AREAL

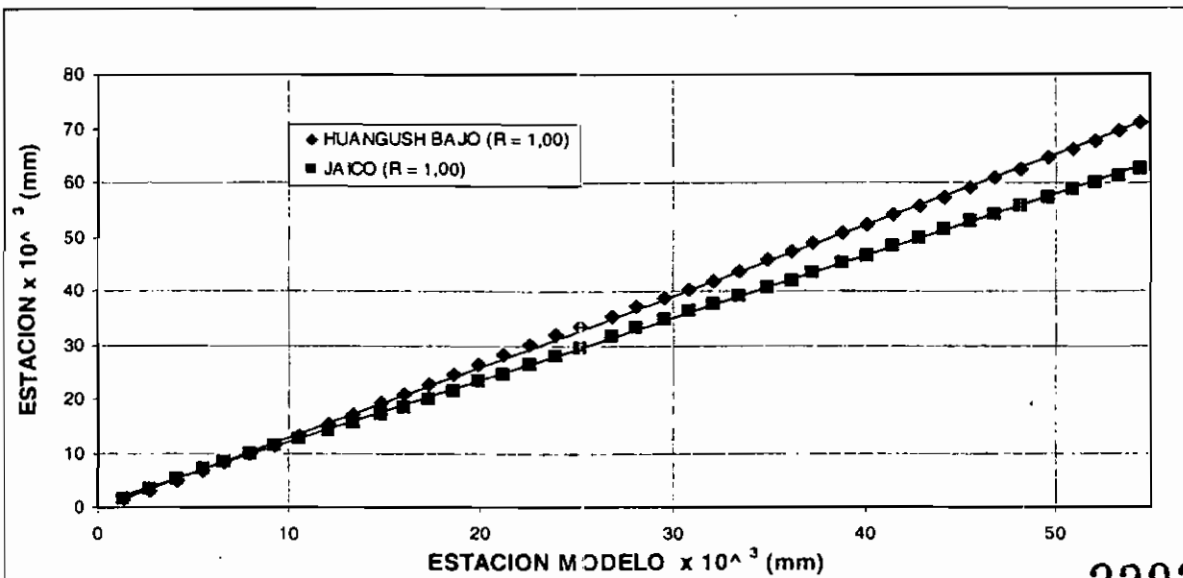
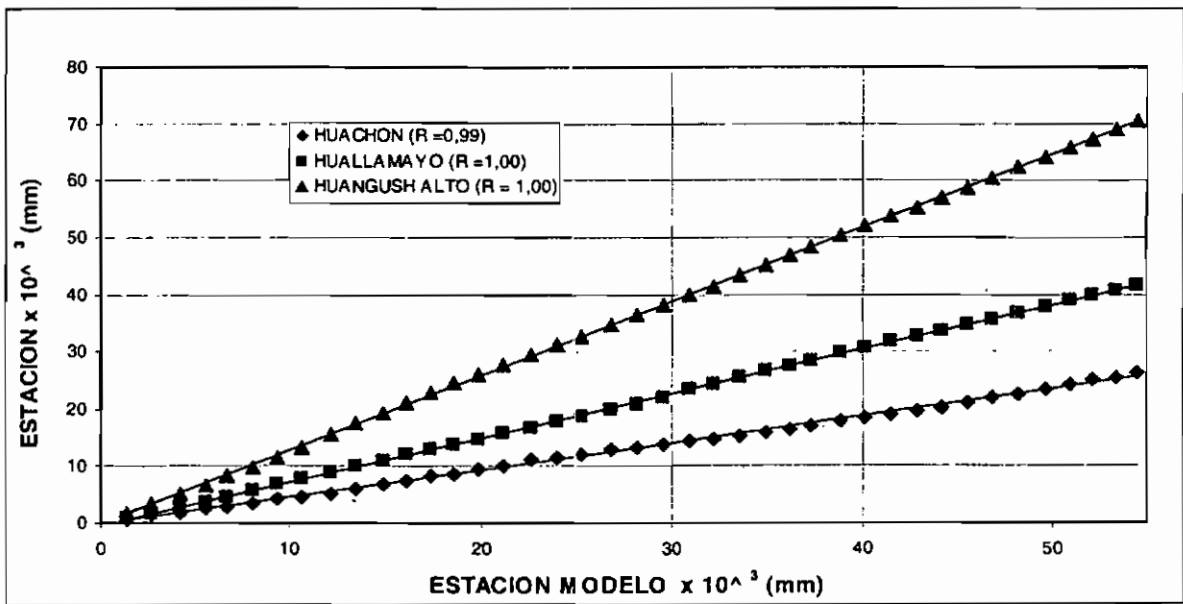
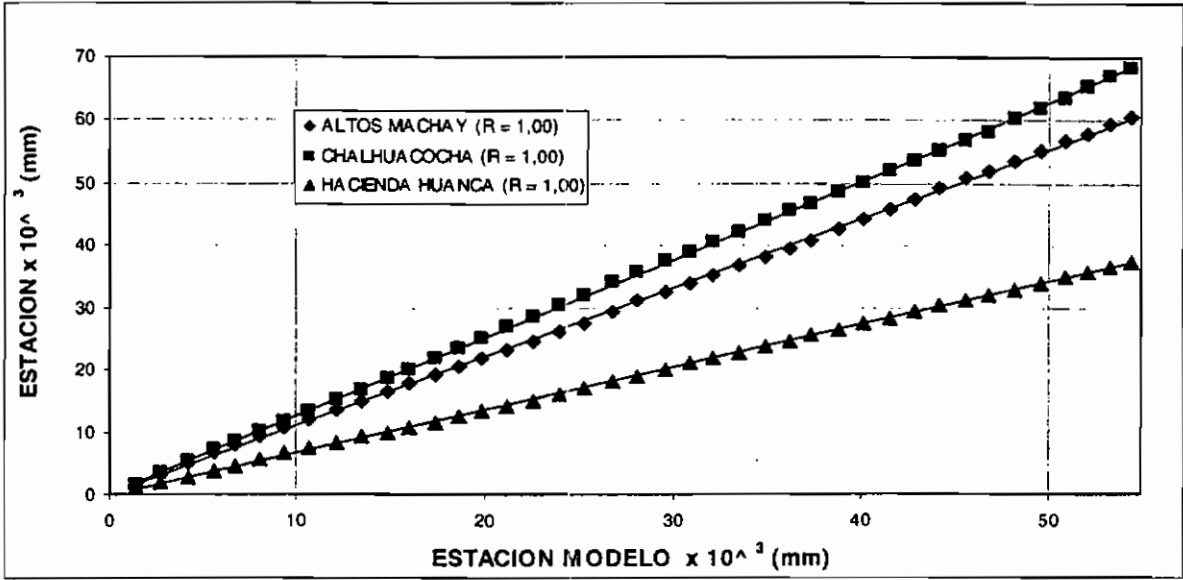
PRECIPITACION AREAL (mm)

Cuenca: RIO PAUCARTAMBO
Fuente: ELECTROANDES S.A.

ESTACION	ALTOS MACHAY	CHALHUACCHA	HUANCA	HUACHON	HUALLAMAYO	HUANGUSH ALTO	HUANGUSH BAJO	JUNCO	LA VICTORIA II	LECHECOCHA	LUXOPATA	MACHAVADO	MANTO	PACHAPATA	PAUCARTAMBO	PUAGMARAY	YUNCAN	TOTAL
AREA (Km2)	12.2	53.0	144.4	250.3	218.9	17.6	34.5	106.6	126.0	59.9	124.8	28.9	59.8	5.6	176.0	170.6	124.7	1,718.00
F. de I.	0.007	0.031	0.084	0.146	0.127	0.01	0.02	0.063	0.073	0.035	0.073	0.017	0.035	0.003	0.104	0.089	0.073	1.000
1965	1,617.5	1,720.4	1,101.9	633.9	926.7	1,701.2	1,550.2	1,681.5	1,166.8	1,632.0	1,185.8	1,291.7	1,719.3	1,670.6	911.4	1,513.7	1,194.5	1,170.7
1966	1,591.8	1,633.3	732.3	681.4	770.6	1,727.7	1,658.2	1,641.4	1,000.1	1,651.8	1,227.5	1,437.8	1,437.1	1,474.7	895.1	1,940.5	1,087.8	1,134.5
1967	1,775.7	1,690.9	884.1	454.2	1,075.4	1,707.8	1,858.0	1,812.0	1,227.3	1,796.6	1,339.7	1,698.5	1,757.4	1,751.7	1,164.4	1,497.4	1,351.8	1,230.2
1968	1,789.3	1,923.0	1,051.8	815.6	1,058.8	1,617.6	1,638.0	1,832.7	1,133.8	1,537.8	1,320.4	1,463.1	1,802.2	1,289.3	952.6	1,136.5	1,276.2	1,221.6
1969	1,180.3	1,341.0	782.5	281.9	890.3	1,462.3	1,467.8	1,340.7	1,336.5	1,366.9	1,080.4	1,657.7	1,394.8	920.6	718.3	1,574.0	863.7	987.8
1970	1,260.1	1,529.8	1,105.2	728.1	1,107.9	1,696.9	1,634.0	1,427.4	1,526.6	1,391.2	1,317.8	1,062.4	1,624.2	880.7	1,098.7	1,589.3	1,277.7	1,234.4
1971	1,401.0	1,745.5	965.0	617.4	999.9	1,659.6	1,597.2	1,582.3	1,078.6	1,584.0	1,171.1	1,288.2	1,632.8	1,490.9	1,040.4	1,149.8	1,394.9	1,137.4
1972	1,317.6	1,537.3	851.4	515.6	984.7	1,782.1	1,777.3	1,334.0	1,388.9	1,425.5	1,323.8	1,201.9	1,651.6	1,473.3	982.4	1,224.7	1,201.7	1,107.9
1973	1,624.2	1,874.6	769.1	516.4	1,264.6	2,207.7	2,224.5	1,610.3	1,329.4	1,602.0	1,474.7	1,486.4	2,253.9	1,436.9	1,343.1	823.9	1,739.4	1,255.8
1974	1,417.2	1,658.4	1,007.7	802.8	935.2	1,903.8	1,932.7	1,370.1	896.8	1,471.4	1,562.2	1,130.1	1,641.0	1,430.7	1,000.6	1,579.9	1,307.4	1,164.2
1975	1,597.1	1,801.2	738.9	774.8	893.6	1,915.8	1,939.1	1,618.7	1,008.4	1,722.4	1,303.1	1,349.5	1,634.9	1,629.6	1,060.5	1,515.8	1,305.8	1,185.4
1976	1,279.6	1,509.3	758.3	679.3	1,078.7	1,656.0	1,715.9	1,308.3	770.1	1,315.4	1,253.9	1,074.5	1,510.0	1,045.8	814.8	1,322.4	1,084.4	1,052.5
1977	1,429.2	1,739.6	720.3	756.1	917.0	1,854.5	1,904.6	1,505.7	974.8	1,492.9	1,268.0	1,194.5	1,877.3	1,099.7	893.9	1,660.2	1,272.1	1,160.2
1978	1,286.6	1,687.3	1,115.0	513.6	947.3	1,619.3	1,786.8	1,580.8	766.8	1,496.8	1,221.2	1,136.0	1,470.4	989.9	815.3	1,226.8	1,074.6	1,057.7
1979	1,353.8	1,631.0	748.3	780.9	972.9	1,591.4	1,819.9	1,610.1	945.0	1,443.5	1,143.5	1,205.3	1,873.7	1,083.8	882.6	1,497.2	1,156.8	1,129.1
1980	1,286.3	1,645.5	767.3	694.4	953.0	1,560.8	1,765.8	1,425.7	877.6	1,514.2	1,222.5	1,097.3	1,513.3	1,033.0	553.0	1,754.5	1,011.6	1,110.6
1981	1,488.6	1,819.7	861.1	687.4	1,092.3	1,793.1	1,871.8	1,722.7	1,095.9	1,781.7	1,363.2	1,277.8	1,961.1	1,659.1	1,061.4	1,139.1	1,325.3	1,225.7
1982	1,425.4	1,752.1	1,033.5	547.6	1,065.1	1,737.1	1,799.9	1,673.9	1,058.2	1,707.7	1,312.9	1,280.0	1,446.1	1,457.9	1,131.3	1,507.4	1,197.8	1,189.1
1983	1,356.9	1,720.9	1,016.1	569.1	930.8	1,520.3	1,597.1	1,565.6	1,529.1	1,676.2	1,187.7	1,287.5	1,238.2	1,238.2	979.6	1,206.2	1,246.9	1,148.3
1984	1,864.6	1,997.7	1,077.7	609.1	966.4	1,971.1	1,882.6	1,922.6	1,713.5	1,784.9	1,344.6	1,780.8	1,770.9	1,868.8	1,068.6	1,520.7	1,394.2	1,305.2
1985	1,780.8	1,754.1	817.4	504.7	951.8	1,623.3	1,660.0	1,768.3	1,371.4	1,537.2	1,316.6	1,446.1	1,324.6	1,324.6	924.2	963.5	1,216.0	1,102.6
1986	1,457.3	1,746.9	1,066.6	427.9	1,143.4	1,865.2	1,839.7	1,510.3	1,872.1	1,504.6	1,361.2	1,331.9	1,636.0	1,621.6	1,149.9	1,714.2	1,409.4	1,277.9
1987	1,336.4	1,365.7	1,068.9	598.1	1,396.9	1,581.7	1,510.0	1,322.9	1,042.5	1,493.7	1,281.7	1,101.4	1,760.6	1,245.1	1,070.4	1,481.8	1,542.6	1,212.2
1988	1,316.0	1,499.7	872.9	466.9	971.0	1,583.1	1,917.3	1,311.0	1,162.1	1,429.0	1,201.9	1,070.0	1,587.5	1,550.3	1,033.0	1,710.3	1,308.7	1,122.7
1989	1,590.5	1,789.2	828.6	390.8	1,124.1	1,841.4	1,917.3	1,618.9	1,305.3	1,571.3	1,225.1	1,441.4	1,618.5	1,667.4	1,275.2	837.6	1,522.5	1,145.3
1990	1,475.9	1,680.6	912.6	575.3	1,127.5	1,949.5	1,946.3	1,514.7	1,491.7	1,426.1	1,223.4	1,346.1	1,709.7	1,111.5	1,194.7	1,445.9	1,435.7	1,226.5
1991	1,334.2	1,630.2	998.0	649.9	924.7	1,711.5	1,744.3	1,385.7	832.4	1,414.4	1,305.7	1,176.7	1,624.8	1,381.1	1,051.9	1,369.0	1,387.8	1,128.2
1992	1,231.3	1,208.4	929.6	436.4	630.4	1,435.7	1,340.3	1,256.5	519.7	1,290.8	1,172.1	1,045.3	1,401.4	1,608.7	616.5	1,512.4	894.8	933.2
1993	1,899.9	1,921.3	906.5	877.6	1,430.4	2,097.4	2,017.6	1,970.0	1,394.2	1,566.4	1,415.5	1,653.9	1,964.9	1,571.4	1,126.6	828.5	1,556.0	1,319.2
1994	1,493.0	1,476.5	1,017.8	630.1	973.5	1,622.5	1,587.6	1,371.0	1,062.2	1,322.7	1,160.6	1,257.4	1,503.1	1,407.1	1,022.6	1,673.1	1,247.0	1,142.9
1995	1,748.8	1,768.1	630.0	689.5	949.3	1,710.2	1,676.7	1,659.3	1,496.6	1,664.0	1,369.0	1,516.4	1,428.2	1,733.6	1,007.5	1,369.3	1,310.0	1,194.8
1996	1,663.3	1,856.8	1,078.8	600.4	937.3	1,529.7	1,514.5	1,591.9	1,275.5	1,386.4	1,320.8	1,427.4	1,131.5	1,561.2	992.9	1,873.8	1,059.9	1,178.9
1997	1,645.6	1,814.7	949.3	621.8	1,028.0	1,773.2	1,685.8	1,537.1	1,040.9	1,518.3	1,082.8	1,371.2	1,942.7	1,441.5	1,133.0	1,277.2	1,385.0	1,146.1
1998	1,695.6	1,671.8	891.6	796.8	969.8	1,653.1	1,704.3	1,549.3	1,010.2	1,737.0	1,168.4	1,448.8	1,596.0	1,552.1	1,081.2	749.6	1,442.0	1,132.9
1999	1,178.1	1,318.6	789.9	746.6	1,038.5	1,824.0	1,803.2	1,244.7	1,111.2	1,596.4	1,118.3	1,317.6	1,820.6	1,066.9	912.3	1,300.5	1,212.4	1,109.2
2000	1,568.3	2,019.4	832.3	727.9	1,028.6	1,884.5	1,990.2	1,515.4	1,139.6	1,414.6	1,460.6	1,252.4	1,460.6	1,325.2	1,042.4	1,369.7	1,429.0	1,191.5
2001	1,635.5	1,835.4	989.2	936.8	1,136.8	1,733.9	1,903.7	1,549.5	1,242.7	1,670.0	1,348.4	1,539.8	1,629.6	1,244.6	1,142.8	1,574.0	1,407.3	1,297.6
2002	1,420.6	1,457.5	945.3	791.1	1,090.1	1,614.3	1,580.8	1,417.3	910.8	1,550.9	1,083.9	1,264.2	1,856.4	1,498.6	1,017.1	1,502.3	1,343.6	1,169.0
2003	1,223.5	1,841.0	903.0	695.2	919.0	1,562.8	1,775.1	1,287.5	404.2	1,219.3	1,165.7	1,171.9	1,464.6	1,188.9	956.6	1,513.0	1,147.7	1,057.0
2004	1,522.8	1,763.5	876.7	498.4	881.8	1,663.8	1,736.1	1,353.7	734.8	1,207.4	1,003.6	1,296.0	1,547.4	1,442.6	949.8	1,398.8	1,418.2	1,050.8
2005	1,166.9	1,303.4	787.4	718.3	866.1	1,408.0	1,489.5	1,231.9	1,057.6	1,277.7	687.8	1,203.4	1,493.6	1,189.8	780.9	1,189.5	1,237.7	986.7
PROMEDIO	1,481.5	1,670.0	914.1	640.0	1,013.9	1,716.5	1,733.4	1,525.7	1,134.2	1,529.8	1,231.8	1,314.4	1,522.4	1,389.8	1,002.3	1,391.8	1,260.8	1,154.2
DES. EST.	200.1	191.2	121.0	146.3	133.6	169.9	172.4	185.9	298.9	156.2	133.2	181.4	192.0	239.9	144.9	263.1	176.4	65.0
MAXIMO	1,899.9	2,019.4	1,115.0	936.6	1,430.4	2,207.7	2,224.5	1,970.0	1,721.1	1,796.6	1,474.7	1,780.8	2,253.9	1,868.8	1,343.1	1,940.5	1,739.4	1,319.2
MINIMO	1,166.9	1,208.4	720.3	281.9	770.6	1,408.0	1,340.3	1,231.9	404.2	1,207.4	687.8	1,045.3	1,131.5	880.7	616.5	749.6	663.7	933.2

J.- GRÁFICOS DE DOBLE MASA DE PRECIPITACIONES

**GRAFICOS DE DOBLE MASA
PRECIPITACION CORREGIDA Y EXTENDIDA**



**GRAFICOS DE DOBLE MASA
PRECIPITACION CORREGIDA Y EXTENDIDA**

