

I. Operation Plan

1. Calculation of Monthly Available Water Supply and Effective Rainfall

(See Form 01 and Form 02.)

Colored boxes are automatically calculated using the Microsoft Excel function, therefore, the boxes should never be clicked, or never input the data by manual.

2. Characterization of Water Management Parameters

2.1 Typical Cropping Pattern of Paddy

Typical cropping pattern on weekly basis is shown. (see Form 03)

2.2 Type of Soil of Service Area

Soil Type : Clay

		Dry Season		Wet Season	
Saturated Capacity	(Sc)	53	%	53	%
Field Capacity	(Fc)	35	%	35	%
Permanent Wilting Point	(Pwp)	17	%	17	%
Bulk Density	(Bd)	1.25	ton/m ³	1.25	ton/m ³
Depth of Root Zone	(Drz)	300	mm	300	mm
	(Fe)		%		%
Submergence	(S)	50	mm	50	mm

2.3 Soil Saturation Requirement (Sn)

$$Sn = \frac{Sc - (Mc \times Bd)}{100} \times Drz \quad (mm)$$

where. Mc = Residual moisture content at the time of land soaking (%)

$$\text{Dry Season :} \quad Mc = \frac{Fc + Pwp}{2}$$

$$\text{Wet season :} \quad Mc = Pwp$$

		Dry Season		Wet Season	
Residual Moisture	(Mc)	26.0	%	17.0	%
Saturation Requirement	(Sn)	61.5	mm	95.3	mm

2.4 Percolation (P), Evaporation (Ev), and Evapotranspiration (Et)

(Dry Season)

		Rice		Other Crop	
Percolation	(P)	1.06	mm/day		mm/day
Evaporation	(Ev)	4.18	mm/day		mm/day
Evapotranspiration	(Et)	5.60	mm/day		mm/day

(Wet Season)

		Rice		Other Crop	
Percolation	(P)	1.06	mm/day		mm/day
Evaporation	(Ev)	4.18	mm/day		mm/day
Evapotranspiration	(Et)	5.60	mm/day		mm/day

2.5 Crop Water Requirement (CWR)

$$CWR = P + Et$$

(Dry Season)

		Rice		Other Crop	
Crop Water Requirement	(CWR)	6.66	mm/day	0.00	mm/day

(Wet Season)

		Rice		Other Crop	
Crop Water Requirement	(CWR)	6.66	mm/day	0.00	mm/day

2.6 Farm Waste and Distribution Losses (FW + DL)

$$FW + DL = 30\% \times CWR$$

2.7 Conveyance Losses (CL) (See Form 04)

$$CL = Wpa \times L \times cl / 86.4 \quad (\text{lit/sec})$$

where : Wpa : Average wetted perimeter of the canal/canal section (m)
 L : Length of canal (m)
 cl : Late of conveyance loss (m³/m²/day)

Conveyance Losses (CL) =

497.42	lit/sec	(Dry Season) (refer to Form 04)
764.48	lit/sec	(Wet Season)

Rate of Conveyance Losses (CLt):

	Dry Season		Wet Season	
Irrigation Div. Req. (Qa)	2,497.42	lit/sec	5,236.48	lit/sec
Conveyance Loss (CL)	497.42	lit/sec	764.48	lit/sec
CLt	19.9	%	14.6	%

3. Water Requirements, Turn-Out Duty and Discharge, and Irrigation Diversion Requirement

3.1 Crop Water Requirement (CWR) (refer to 2.5)

3.2 Turn-Out Water Duty (qtni)

Without effective rainfall ;

$$qtni = (CWR + (FW + DL)) / 8.64 \quad (\text{lit/sec/ha})$$

With effective rainfall ;

$$qtni = (CWR + (FW + DL) - RE) / 8.64 \quad (\text{lit/sec/ha})$$

where; RE : Effective rainfall (mm)

Turn-out water duty for both crops of rice and other crops in cases of dry and wet seasons is given in Form 04-1.

3.3 Turn-Out Discharge (qtni)

$$Qtni = qtni \times Ani \quad (\text{lit/sec})$$

where ; Ani : Programmed Ares (ha) (Based on the Annual Report of Irrigated Area)

Rice	:	2,000	ha	(Dry Season) (Oct. - Feb.)
		4,472	ha	(Wet Season) (May - Sept.)
Other Crop	:	0	ha	(Dry Season)
		0	ha	(Wet Season)

Turn-out discharge for both crops of rice and other crop in cases of dry and wet seasons is given in Form 04-1.

3.4 Irrigation Diversion Requirement (IDR)

$$IDR = Qtni / (1 - CLt / 100) \quad (\text{lit/sec})$$

where ; Qtni : Turn-out discharge (lit/sec)
 CLt : Rate of conveyance losses

Irrigation diversion requirement (IDR) is given in Form04-1.

4. Calculation of Area to be Programmed for Irrigation and Date of Initial Water Delivery (See Form 05)

4.1 Computing the Turn-out Water Duty (qtni in lit/sec/ha) during Each Month considering Normal Irrigation (procedures are same as that applied in Form 04)

4.2 Computing the Monthly Programed Area (A in ha) that could be irrigated during Normal Irrigation using following formula.

$$A = Qa \times (1 - CLt / 100) / qtni \quad (\text{ha})$$

where ; Qa : Available water supply (lit/sec)
 CLt : Rate of conveyance losses (%)

5. Computation of Weekly Land Soaking Areas during Land Soaking Period (See Form 06)

A. Dry Season Paddy

Given Data	:	Refer to Form 05	
Date of Initial Water Delivery	:	October 1	
Programmed Area (Ani)	Rice	: 2,000 ha	(Dry Season)
	Others	: 0 ha	(Dry Season)
Water Management Parameters	:	Refer to Form 06	
Available Intake Discharge	:	Qa	1,230.5 (lit/sec) (refer to Form 01-1)
Rate of Conveyance Losses	:	CLt	19.9 (%)
Soil Saturation Requirement	:	Sn	61.5 (mm) (Dry Season)
	:	Sn	95.3 (mm) (Wet Season)
Submergence for Cultivation	:	S	50 (mm)
Percolation	Rice	: P	1.06 (mm/day)
	Other	: P	0 (mm/day)
Evaporation	:	Ev	4.18 (mm/day)
Evapotranspiration	Rice	: Et	5.6 (mm/day)
	Others	: Et	0 (mm/day)
Farm Waste + DL	Rice	: FW +DL	1.68 (mm/day)
	Others	: FW +DL	1.25 (mm/day)

5.1 Computing Available Discharge at the Turn-Out (Qat)

$$Qat = Qa \times (1 - CLt / 100) \quad (\text{lit/sec})$$

5.2 Computing Net Delivery Water in the Fields (Qaf)

$$Qaf = Qat / (1 + (FW + DL) / 8.64) \quad (\text{lit/sec})$$

5.3 Computing Volumes of Net Water Delivered (Vaf) in the Field

$$Vaf = Qaf \times 86,400 / 1,000 \quad (\text{cu.m/day})$$

5.4 Computing Depth of Water (Dr) to be replenished to Land Soaking Area during Previous Weeks which are under Land Preparation to take Care of Ev and P

$$Dr = (Ev + P - RE) / 1,000 \quad (\text{m/day})$$

5.5 Computing Volume of Water (Vr) for Replenishment to Area under Land Preparation

$$Vr = Dr \times Alp \times 10,000 \quad (\text{cu.m/day})$$

where : Alp : Area under Land Preparation (Area for 2 Weeks) (ha)

5.6 Computing Depth of Water (Dni) to be supplied to Areas under Normal Irrigation

$$Dni = (Et + P - RE) / 1,000 \quad (\text{m/day})$$

5.7 Computing Volume of Water (Vni) to be supplied to Areas under Normal Irrigation

$$Vni = Dni \times Ani \times 10,000 \quad (\text{cu.m/day})$$

where; Ani : Area under Normal Irrigation (ha)

5.8 Computing Volume of Net Water (VLs) to be delivered to Field that is Available for Land Soaking (VLs)

$$VLs = Vaf - Vr - Vni \quad (\text{cu.m/day})$$

5.9 Computing Volume of Land Soaking Irrigation Requirement (VLSir)

$$VLSir = LSir \times 10 \quad (\text{cu.m/day})$$

where: LSir = $S_n + S - RE \times 7 \text{ days}$ (mm)

5.10 Computing Daily Area that could be Land Soaking (ALs)

$$ALs = VLs / VLSir \quad (\text{ha})$$

5.11 Total Land Soaked Area during the Week (7-day) (ALS)

$$ALS = VLs \times 7 \text{ days} / VLSir \quad (\text{ha})$$

5.12 Comparison between ALS and Ani (See Form 06)

If $ALS > Ani$, the same calculation procedures will be repeated with cumulative number of weeks.

5.13 Maximum Unit Land Soaking Irrigation Requirement (qtsi) (See Form 06)

$$qtsi = LSir / (8.64 \times Dn) \quad (\text{lit/sec/ha})$$

where : Dn = Number of Day for Land Soaking for Unit Area
= 7days

5.14 Projected Progress of Farming Activities (See Form 06-1)

Weekly base farming activities classified into land soaking, planting, rooting, terminal drainage and harvesting works is projected.

5.15 Land Soaking Water Delivery Schedule (See Form 06-2)

Weekly base water delivery schedule for land soaking works will be tabulated, based on calculated total land soaked area.

B. Wet Season Paddy

Given Data	:	Refer to Form 05		
Date of Initial Water Delivery	:	May 1		
Programmed Area (Ani)	Rice	:	4,472 ha	(Dry Season)
	Others	:	0 ha	(Dry Season)
Water Management Parameters	:	Refer to Form 06		
Available Intake Discharge	:	Qa	1,230.5 (lit/sec)	(refer to Form 01-1)
Rate of Conveyance Losses	:	CLt	14.6 (%)	
Soil Saturation Requirement	:	Sn	95.3 (mm)	(Dry Season)
Submergence for Cultivation	:	S	50 (mm)	
Percolation	Rice	:	P	1.06 (mm/day)
	Other	:	P	0 (mm/day)
Evaporation	:	Ev	4.18 (mm/day)	
Evapotranspiration	Rice	:	Et	5.6 (mm/day)
	Others	:	Et	0 (mm/day)
Farm Waste + DL	Rice	:	FW +DL	1.68 (mm/day)
	Others	:	FW +DL	1.25 (mm/day)

On the basis of above given data, same calculation of 5.1 to 5.15 will be undertaken.

Form 01 Average River Discharges (Qr)

(River Name : Angat River)

(unit : m³/sec)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1951	0.22	0.04	0.04	0.04	3.17	0.69	1.05	0.93	2.74	2.43	1.16	8.18	1.72
1952	0.07	0.04	0.04	0.04	0.11	2.24	3.47	3.70	8.95	12.92	0.81	3.02	2.95
1953	0.07	0.08	0.07	0.12	0.07	1.04	0.3	1.61	4.13	0.26	0.31	0.04	0.68
1954	0.04	0.12	1.46	0.08	0.37	0.81	1.38	2.61	0.66	0.52	4.13	0.52	1.06
1955	13.22	0.29	0.15	0.08	0.30	1.62	1.19	0.67	3.47	4.67	4.28	0.34	2.52
1956	0.07	0.04	0.04	9.38	0.78	0.89	1.34	4.67	6.29	17.70	0.08	0.71	3.50
1957	2.46	0.04	0.04	0.19	0.07	0.04	9.22	13.78	0.15	1.90	0.04	0.04	2.33
1958	0.04	0.00	0.04	0.04	0.07	0.39	8.33	6.94	0.96	10.12	2.58	0.49	2.50
1959	0.04	0.04	0.04	0.77	1.49	1.00	5.08	1.98	0.58	1.38	0.69	0.52	1.13
1960	0.19	0.12	0.75	0.69	1.16	2.43	1.64	4.98	1.89	1.72	0.93	0.34	1.40
1961	0.15	0.08	1.01	0.04	1.94	1.89	2.76	1.98	1.16	3.17	0.73	0.26	1.26
1962	0.19	0.17	0.04	0.04	0.04	0.35	2.73	4.52	6.67	0.19	0.85	0.04	1.32
1963	0.04	0.00	0.04	0.19	0.07	0.15	0.34	1.05	0.93	0.15	0.04	0.37	0.28
1964	0.04	0.04	0.04	0.04	1.05	1.12	0.63	0.86	0.69	1.05	5.56	0.26	0.96
1965	0.07	0.04	0.04	0.04	0.22	1.43	3.02	0.15	1.27	1.34	0.23	0.30	0.68
1966	0.04	0.00	0.04	0.04	1.16	2.20	1.38	0.11	0.31	0.41	0.31	1.01	0.58
1967	0.37	0.12	0.07	0.04	0.04	2.39	2.58	4.85	1.27	2.28	0.31	0.07	1.20
1968	0.04	0.79	0.15	0.04	0.04	0.04	0.26	2.02	1.35	1.05	1.77	0.60	0.68
1969	0.15	0.04	0.04	0.04	0.04	0.62	4.97	3.10	1.08	3.14	1.27	0.97	1.29
1970	0.56	0.08	0.04	0.04	0.04	4.71	3.81	1.46	1.89	1.79	8.56	3.88	2.24
1971	2.54	2.48	3.55	0.35	3.92	7.52	19.38	0.26	2.55	15.42	8.22	4.67	5.91
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Average	0.98	0.22	0.37	0.59	0.77	1.60	3.56	3.07	2.33	3.98	2.04	1.27	1.73

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Form 01-1

Average Diverted Intake Discharges (Qa)

(unit : lit/sec)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1994	1,400.0	439.0	0.0	0.0	2,820.0	2,764.0	2,363.0	2,385.0	2,972.0	3,692.0	846.0	508.0	1,682.4
1995	205.0	0.0	0.0	1,073.0	0.0	288.0	3,023.0	2,631.0	1,606.0	2,894.0	0.0	0.0	976.7
1996	0.0	0.0	0.0	0.0	2,013.0	2,140.0	2,001.0	2,532.0	2,253.0	2,111.0	1,990.0	1,460.0	1,375.0
1997	622.0	454.0	0.0	0.0	2,282.0	3,837.0	1,897.0	1,211.0	3,806.0	2,995.0	1,081.0	104.0	1,524.1
1998	0.0	0.0	0.0	0.0	353.0	1,879.0	1,407.0	1,758.0	1,094.0	1,218.0	1,792.0	2,012.0	959.4
1999	868.0	646.0	1,004.0	0.0	1,931.0	1,566.0	1,138.0	856.0	1,416.0	1,734.0	1,685.0	1,548.0	1,199.3
2000	461.0	460.0	83.0	0.0	523.0	994.0	1,095.0	2,071.0	1,984.0	1,884.0	1,554.0	1,310.0	1,034.9
2001	1,388.0	739.0	0.0	0.0	1,190.0	1,608.0	2,438.0	2,235.0	2,420.0	2,032.0	2,477.0	1,858.0	1,532.1
2002	1,012.0	766.0	0.0	0.0	876.0	1,626.0	648.0	803.0	1,948.0	2,091.0	1,917.0	726.0	1,034.4
2003	486.0	132.0	0.0	0.0	265.0	1,395.0	1,415.0	1,152.0	1,977.0	1,776.0	2,475.0	764.0	986.4
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Average	644.2	363.6	108.7	107.3	1,225.3	1,809.7	1,742.5	1,763.4	2,147.6	2,242.7	1,581.7	1,029.0	1,230.5

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Designed Capacity of Main Canal(Q 8,250 lit/sec

Form 01-2

Average Diverted Intake Discharges (Qa)

(unit : m³/sec)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1994	1.40	0.44	0.00	0.00	2.82	2.76	2.36	2.39	2.97	3.69	0.85	0.51	1.68
1995	0.21	0.00	0.00	1.07	0.00	0.29	3.02	2.63	1.61	2.89	0.00	0.00	0.98
1996	0.00	0.00	0.00	0.00	2.01	2.14	2.00	2.53	2.25	2.11	1.99	1.46	1.37
1997	0.62	0.45	0.00	0.00	2.28	3.84	1.90	1.21	3.81	3.00	1.08	0.10	1.52
1998	0.00	0.00	0.00	0.00	0.35	1.88	1.41	1.76	1.09	1.22	1.79	2.01	0.96
1999	0.87	0.65	1.00	0.00	1.93	1.57	1.14	0.86	1.42	1.73	1.69	1.55	1.20
2000	0.46	0.46	0.08	0.00	0.52	0.99	1.10	2.07	1.98	1.88	1.55	1.31	1.03
2001	1.39	0.74	0.00	0.00	1.19	1.61	2.44	2.24	2.42	2.03	2.48	1.86	1.53
2002	1.01	0.77	0.00	0.00	0.88	1.63	0.65	0.80	1.95	2.09	1.92	0.73	1.04
2003	0.49	0.13	0.00	0.00	0.27	1.40	1.42	1.15	1.98	1.78	2.48	0.76	0.99
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Average	0.65	0.36	0.11	0.11	1.23	1.81	1.74	1.76	2.15	2.24	1.58	1.03	1.23

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Designed Capacity of Main Canal(Q m³/sec)

Form 02

Monthly Rainfall (R)

(unit : mm/month)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average	Total
1970	25.9	7.2	35.1	5.3	151.0	414.4	195.8	255.1	234.9	225.0	101.8	60.7	142.7	1,712.2
1971	9.2	4.1	5.6	84.0	94.2	168.8	352.3	182.4	42.6	301.3	77.4	110.5	119.4	1,432.4
1972	144.4	23.4	26.0	31.0	118.7	236.6	767.4	221.9	377.6	187.9	188.1	150.0	206.1	2,473.0
1973	3.5	20.5	2.0	12.5	0.0	120.2	392.6	533.9	480.9	272.3	483.5	161.7	207.0	2,483.6
1974	48.8	22.0	33.1	27.5	36.8	265.2	302.4	326.9	92.9	669.0	147.0	139.0	175.9	2,110.6
1975	130.5	85.7	11.1	144.9	147.1	378.5	99.5	253.6	297.7	328.2	51.4	119.5	170.6	2,047.7
1976	45.5	37.9	26.0	20.6	305.3	217.3	509.1	386.7	331.2	174.3	131.8	99.5	190.4	2,285.2
1977	38.7	60.4	21.0	0.0	8.1	247.5	224.3	281.0	545.4	73.6	77.0	21.5	133.2	1,598.5
1978	26.2	9.1	3.8	131.4	66.8	150.1	131.6	503.6	320.8	252.7	111.6	162.6	155.9	1,870.3
1979	12.5	17.7	0.0	125.3	97.0	129.5	501.5	667.4	207.6	706.4	118.6	255.4	236.6	2,838.9
1980	21.5	73.2	74.8	19.9	44.9	163.4	220.8	206.6	316.9	363.8	203.4	94.3	150.3	1,803.5
1981	30.3	5.8	7.6	80.4	30.6	423.1	203.0	328.8	283.8	117.1	127.1	84.7	143.5	1,722.3
1982	15.3	2.0	151.8	60.0	158.0	396.0	285.4	668.1	380.3	215.6	53.4	9.9	199.7	2,395.8
1983	72.4	5.0	31.2	2.4	9.4	181.7	247.5	278.5	350.2	246.6	284.9	102.1	151.0	1,811.9
1984	32.3	64.6	97.0	66.8	109.5	508.6	391.6	505.8	411.5	515.8	365.9	72.3	261.8	3,141.7
1985	37.9	54.1	35.4	267.6	59.2	460.1	271.4	161.7	341.7	470.2	182.7	90.4	202.7	2,432.4
1986	40.2	15.3	51.5	49.2	70.4	254.2	300.8	892.4	257.5	182.4	248.5	97.4	205.0	2,459.8
1987	30.1	12.0	1.0	5.7	41.9	162.4	452.7	224.5	517.0	512.0	212.3	21.8	182.8	2,193.4
1988	13.7	13.3	13.1	85.2	197.6	483.0	323.5	264.9	272.7	561.6	312.7	39.4	215.1	2,580.7
1989	94.1	32.0	58.8	68.7	253.5	323.5	308.5	672.7	160.0	138.2	37.4	8.8	179.7	2,156.2
1990	15.1	0.6	8.0	9.1	262.1	602.2	326.6	466.1	182.0	124.6	819.5	22.7	236.6	2,838.6
1991	3.1	20.0	48.4	26.4	8.2	357.9	371.5	709.3	76.7	94.1	123.4	37.8	156.4	1,876.8
1992	1.6	5.9	0.0	3.0	48.8	337.6	226.6	449.2	190.1	224.4	188.2	74.4	145.8	1,749.8
1993	17.6	5.5	49.9	47.4	26.0	175.5	287.3	540.1	120.7	319.6	131.1	320.1	170.1	2,040.8
1994	40.8	56.1	34.8	226.4	348.2	465.2	986.9	232.1	293.1	218.8	40.0	131.8	256.2	3,074.2
1995	36.6	10.4	5.3	12.2	36.2	320.4	345.6	314.3	743.4	443.3	150.4	119.6	211.5	2,537.7
Average	38.0	25.5	32.0	62.0	105.0	305.5	347.2	404.9	301.1	305.3	191.1	100.3	184.8	2,218.0

Form 02-1 Monthly Effective Rainfall (RE) ^{1/}

(unit : mm/day)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1994	2.8	2.6	1.1	1.2	8.8	8.7	9.9	8.0	6.2	5.5	0.7	4.1	5.0
1995	0.4	0.1	0.0	0.0	0.0	2.8	9.8	9.1	0.0	34.5	2.1	3.6	5.2
1996	2.7	1.5	0.1	0.1	0.9	1.5	2.8	2.7	1.2	4.6	0.7	1.4	1.7
1997	0.1	2.5	0.3	1.6	7.4	5.7	9.2	6.6	1.8	0.4	0.6	0.3	3.0
1998	0.0	0.0	0.0	0.0	2.8	6.1	1.5	3.6	4.5	9.7	4.7	5.6	3.2
1999	0.6	0.5	2.0	4.6	8.8	5.8	8.7	10.6	8.6	5.6	2.3	2.1	5.0
2000	0.1	0.2	2.0	2.6	1.8	3.4	10.5	6.7	2.7	11.4	1.6	4.0	3.9
2001	7.4	5.4	0.3	2.0	8.1	9.7	11.1	18.3	5.0	7.8	10.6	8.6	7.8
2002	3.4	0.0	0.0	0.0	0.1	5.0	20.7	11.0	5.3	3.0	1.0	0.1	4.1
2003	0.4	0.0	0.0	0.1	25.4	0.3	18.3	10.0	6.2	10.5	2.5	0.8	6.2
Average	1.8	1.3	0.6	1.2	6.4	4.9	10.2	8.7	4.2	9.3	2.7	3.1	4.5

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1/: Regarding estimation methods of effective rainfall, "Estimation of Effective Rainfall (Form RE-1) should be referred.

Form 03 Typical Cropping Pattern of Paddy

(Dry Season)

Month	Oct.				Nov.					Dec.				Jan.					Feb.				Mar.				April					May		
	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17
Date	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34

(Wet Season)

Month	May				June					July					Aug.				Sept				Oct.				Nov.							
	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27			
Date	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3			
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			

Form 04 Turn-Out Requirement/Discharge and Conveyance Losses by Diversion (without Effective Rainfall)

Dry Season

WM/WMT Division	MTO/Canal		Programmed Area (ha)	Average		FW + DL (30%of (mm/day)	Turn-Out Water Requirement		Discharge at Turn-Out Q (lit/sec)	Conveyance Losses						Irrigation Diversion IDR (lit/sec)		
				P (mm/day)	Et (mm/day)		Depth (mm/day)	Duty (lit/sec/ha)		Canal Section	Station		Length (m)	Average W. (m)	Soil Texture		Rate of C.L. d (m3/m2/day)	Conveyance CL (lit/sec)
				From	To													
I 600	MTO 1-15		321.00	1.06	5.60	2.00	8.66	1.00	321.00	A	0+000	7+263	7,263	10.40	Clay	0.29	253.53	574.53
	MTO 1-7		250.00	1.06	5.60	2.00	8.66	1.00	250.00	A-1	0+000	2+729	2,729	4.60	Clay	0.29	42.14	292.14
	MTO 1-2		29.00	1.06	5.60	2.00	8.66	1.00	29.00	A-2	0+000	0+976	976	4.50	Clay	0.29	14.74	43.74
II	MTO 1-8		312.00	1.06	5.60	2.00	8.66	1.00	312.00	Main Canal	0+000	4+563	4,563	10.80	Conc.	0	0.00	312.00
III	MTO 9-13		200.00	1.06	5.60	2.00	8.66	1.00	200.00	Main canal	5+544	7+079	1,535	7.80	Conc.	0	0.00	200.00
	MTO B1 - B6		150.00	1.06	5.60	2.00	8.66	1.00	150.00	B	0+000	2+918	2,918	12.00	Clay	0.29	117.53	267.53
656	MTO B1 - 1-5		166.00	1.06	5.60	2.00	8.66	1.00	166.00	B-1	0+000	2+840	2,840	4.00	Clay	0.29	38.13	204.13
	MTO B2 - 1-2		40.00	1.06	5.60	2.00	8.66	1.00	40.00	B-2	0+000	2+040	2,040	2.50	Clay	0.29	17.12	57.12
	MTO C1-3		100.00	1.06	5.60	2.00	8.66	1.00	100.00	C	0+000	1+174	1,178	3.60	Clay	0.29	14.23	114.23
IV	MTO 14-23		432.00	1.06	5.60	2.00	8.66	1.00	432.00	Main Canal	7+079	11+400	4,321	5.60	Clay	0	0.00	432.00
Total			2,000.00						2,000.00				30,363				497.42	2,497.42

WM : Water Master WMT : Water Master Technician MTO : Main Turn-Out

Wet Season

WM/WMT Division	MTO/Canal		Programmed Area (ha)	Average		FW + DL (30%of (mm/day)	Turn-Out Water Requirement		Discharge at Turn-Out Q (lit/sec)	Conveyance Losses						Irrigation Diversion Requirement IDR (lit/sec)		
				P (mm/day)	Et (mm/day)		Depth (mm/day)	Duty (lit/sec/ha)		Canal Section	Station		Length (m)	Average W. P (m)	Soil Texture		Rate of C.L. d (m3/m2/day)	Conveyance Loss CL (lit/sec)
				From	To													
I	MTO 1-15		542.00	1.06	5.60	2.00	8.66	1.00	542.00	Lat. A	0+000	7+263	7,263	10.40	Clay	0.29	253.53	795.53
	MTO 1-7		251.00	1.06	5.60	2.00	8.66	1.00	251.00	Lat. A-1	0+000	2+729	2,729	4.60	Clay	0.29	42.14	293.14
836	MTO 1-2		43.00	1.06	5.60	2.00	8.66	1.00	43.00	Lat. A-2	0+000	0+976	976	4.50	Clay	0.29	14.74	57.74
II	MTO 1-4		369.00	1.06	5.60	2.00	8.66	1.00	369.00	Main Canal	0+000	4+563	4,563	10.80	Conc.	0	0.00	369.00
III	MTO 5-8		203.00	1.06	5.60	2.00	8.66	1.00	203.00	Main Canal	5+544	7+079	1,535	7.80	Conc.	0	0.00	203.00
	MTO B-1-6		208.00	1.06	5.60	2.00	8.66	1.00	208.00	Lat. B	0+000	2+918	2,918	12.00	Clay	0.29	117.53	325.53
830	MTO 1-5		208.00	1.06	5.60	2.00	8.66	1.00	208.00	Lat.B-1	0+000	2+840	2,840	4.00	Clay	0.29	38.13	246.13
	MTO 1-2		64.00	1.06	5.60	2.00	8.66	1.00	64.00	Lat. B-2	0+000	2+040	2,040	2.50	Clay	0.29	17.12	81.12
	MTO 1-3		147.00	1.06	5.60	2.00	8.66	1.00	147.00	Lat. C	0+000	1+174	1,174	3.60	Clay	0.29	14.19	161.19
IV	MTO 14-23		538.00	1.06	5.60	2.00	8.66	1.00	538.00	Main Canal	7+079	11+400	4,321	5.60	Conc.	0	0.00	538.00
990	MTO 1-12		452.00	1.06	5.60	2.00	8.66	1.00	452.00	Lat. D	0+000	4+360	4,360	4.00	Clay	0.29	58.54	510.54
V	MTO B7-B21		524.00	1.06	5.60	2.00	8.66	1.00	524.00	Lat. B	3+320	8+260	4,940	4.90	Clay	0.29	81.25	605.25
	MTO B3-1-B3-7b		267.00	1.06	5.60	2.00	8.66	1.00	267.00	Lat. B-3	0+000	4+400	4,400	1.80	Clay	0.29	26.58	293.58
888	MTO B4 - B4-4		97.00	1.06	5.60	2.00	8.66	1.00	97.00	Lat. B-4	0+000	1+500	1,500	1.80	Clay	0.29	9.06	106.06
	MTO A2-1-A2-21		354.00	1.06	5.60	2.00	8.66	1.00	354.00	Lat. A-2	0+000	4+707	4,307	4.92	Clay	0.29	71.13	425.13
559	MTOA2A-1-A2A-21		205.00	1.06	5.60	2.00	8.66	1.00	205.00	Lat. A-2a	0+000	1+800	1,800	3.40	Clay	0.29	20.54	225.54
Grand-Total			4,472.00						4,472.00								764.48	5,236.48

Form 04-1 Turn-out Water Duty (qtni) and Discharge (Qtni) without/with Effective Rainfall

Without Effective Rainfall

Month	Turn-Out Water Duty (qtni)										Turn-Out Discharge (Qtni)					Irrigation Diversion Requirement (IDR)	
	for Rice					for Other Crops					Programed Area		Discharge			CLt	IDR
	P + Et	FW + DL	ER	qtni		P + Et	FW + DL	ER	qtni		for Rice	for Other Crop	for Rice	for Other Crop	Total		
	(mm/day)	(mm/day)	(mm/day)	(mm/day)	(lit/sec/ha)	(mm/day)	(mm/day)	(mm/day)	(mm/day)	(lit/sec/ha)	(ha)	(ha)	(lit/sec)	(lit/sec)	(lit/sec)	(%)	(lit/sec)
Jan.	6.66	2	0	8.66	1.00	0	0	0	0	0	2,000	0	2,000.0	0	2,000.0	19.9	2,496.9
Feb.	6.66	2	0	8.66	1.00	0	0	0	0	0	2,000	0	2,000.0	0	2,000.0	19.9	2,496.9
Mar.	6.66	2	0	8.66	1.00	0	0	0	0	0	2,000	0	2,000.0	0	2,000.0	19.9	2,496.9
Apr.	6.66	2	0	8.66	1.00	0	0	0	0	0	2,000	0	2,000.0	0	2,000.0	19.9	2,496.9
May	6.66	2	0	8.66	1.00	0	0	0	0	0	4,472	0	4,472.0	0	4,472.0	14.6	5,236.5
June.	6.66	2	0	8.66	1.00	0	0	0	0	0	4,472	0	4,472.0	0	4,472.0	14.6	5,236.5
July	6.66	2	0	8.66	1.00	0	0	0	0	0	4,472	0	4,472.0	0	4,472.0	14.6	5,236.5
Aug.	6.66	2	0	8.66	1.00	0	0	0	0	0	4,472	0	4,472.0	0	4,472.0	14.6	5,236.5
Sept.	6.66	2	0	8.66	1.00	0	0	0	0	0	4,472	0	4,472.0	0	4,472.0	14.6	5,236.5
Oct.	6.66	2	0	8.66	1.00	0	0	0	0	0	2,000	0	2,000.0	0	2,000.0	19.9	2,496.9
Nov.	6.66	2	0	8.66	1.00	0	0	0	0	0	2,000	0	2,000.0	0	2,000.0	19.9	2,496.9
Dec.	6.66	2	0	8.66	1.00	0	0	0	0	0	2,000	0	2,000.0	0	2,000.0	19.9	2,496.9

With Effective Rainfall

Month	Turn-Out Water Duty (qtni)										Turn-Out Discharge (Qtni)					Irrigation Diversion Requirement (IDR)	
	for Rice					for Other Crops					Programed Area		Discharge			CLt	IDR
	P + Et	FW + DL	ER	qtni		P + Et	FW + DL	ER	qtni		for Rice	for Other Crop	for Rice	for Other Crop	Total		
	(mm/day)	(mm/day)	(mm/day)	(mm/day)	(lit/sec/ha)	(mm/day)	(mm/day)	(mm/day)	(mm/day)	(lit/sec/ha)	(ha)	(ha)	(lit/sec)	(lit/sec)	(lit/sec)	(%)	(lit/sec)
Jan.	6.66	2	1.77	6.89	0.80	0	0	1.77	0	0	2,000	0	1,600.0	0	1,600.0	19.9	1,997.5
Feb.	6.66	2	1.27	7.39	0.86	0	0	1.27	0	0	2,000	0	1,720.0	0	1,720.0	19.9	2,147.3
Mar.	6.66	2	0.58	8.08	0.94	0	0	0.58	0	0	2,000	0	1,880.0	0	1,880.0	19.9	2,347.1
Apr.	6.66	2	1.22	7.44	0.86	0	0	1.22	0	0	2,000	0	1,720.0	0	1,720.0	19.9	2,147.3
May	6.66	2	6.41	2.25	0.26	0	0	6.41	0	0	4,472	0	1,162.7	0	1,162.7	14.6	1,361.5
June.	6.66	2	4.91	3.75	0.43	0	0	4.91	0	0	4,472	0	1,923.0	0	1,923.0	14.6	2,251.8
July	6.66	2	10.24	0.00	0.00	0	0	10.24	0	0	4,472	0	0.0	0	0.0	14.6	0.0
Aug.	6.66	2	8.65	0.01	0.00	0	0	8.65	0	0	4,472	0	0.0	0	0.0	14.6	0.0
Sept.	6.66	2	4.15	4.51	0.52	0	0	4.15	0	0	4,472	0	2,325.4	0	2,325.4	14.6	2,723.0
Oct.	6.66	2	9.29	0.00	0.00	0	0	9.29	0	0	2,000	0	0.0	0	0.0	19.9	0.0
Nov.	6.66	2	2.67	5.99	0.69	0	0	2.67	0	0	2,000	0	1,380.0	0	1,380.0	19.9	1,722.8
Dec.	6.66	2	3.06	5.60	0.65	0	0	3.06	0	0	2,000	0	1,300.0	0	1,300.0	19.9	1,623.0

Form 05

Calculation of Area to be Programmed for Irrigation and Determination of the Date of Initial Release of Water for Landsoaking

Cropping Pattern	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
PAd =		2,000		ha		Programmed Area : Paw =		4,472		ha		

With Effective Rainfall

Item			Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Average River Discharge	Qr	lit/sec	981.4	221.4	368.1	587.1	769.0	1,598.6	3,564.8	3,068.5	2,332.9	3,981.4	2,041.0	1,268.1
Average Intaked Discharge	Qi	lit/sec	644.2	363.6	108.7	107.3	1,225.3	1,809.7	1,742.5	1,763.4	2,147.6	2,242.7	1,581.7	1,029.0
Canal/Structure Capacity	Qc	lit/sec	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250
Available Water Supply	Qa	lit/sec	644.2	363.6	108.7	107.3	1,225.3	1,809.7	1,742.5	1,763.4	2,147.6	2,242.7	1,581.7	1,029.0
Total Conveyance Loss of Qa	CLt	%	Rice	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9
		%	Others	-	-	-	-	-	-	-	-	-	-	-
Percolation	P	mm/day	Rice	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
			Others	0	0	0	0	0	0	0	0	0	0	0
Evapotranspiration	Et	mm/day	Rice	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
			Others	0	0	0	0	0	0	0	0	0	0	0
Crop Water Requirement	CWR	mm/day	Rice	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66
			Others	0	0	0	0	0	0	0	0	0	0	0
Farm Waste and Distribution Losses	FW+DL	mm/day	Rice	2	2	2	2	2	2	2	2	2	2	2
			Others	0	0	0	0	0	0	0	0	0	0	0
Average Effective Rainfall	RE	mm/day		1.77	1.27	0.58	1.22	6.41	4.91	10.24	8.65	4.15	9.29	2.67
Turn-Out Water Duty	qtni	lit/s/ha	Rice	0.80	0.86	0.94	0.86	0.26	0.43	0.00	0.00	0.52	0.00	0.69
			Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Area to be Programmed	A	ha	Rice	645.0	338.7	92.6	99.9	3,774.9	3,371.1	#DIV/0!	#DIV/0!	3,308.1	#DIV/0!	1,836.1
			Others											

Without Effective Rainfall

Item				Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Average River Discharge	Qr	lit/sec		981.4	221.4	368.1	587.1	769.0	1,598.6	3,564.8	3,068.5	2,332.9	3,981.4	2,041.0	1,268.1
Average Intaked Discharge	Qi	lit/sec		644.2	363.6	108.7	107.3	1,225.3	1,809.7	1,742.5	1,763.4	2,147.6	2,242.7	1,581.7	1,029.0
Canal/Structure Capacity	Qc	lit/sec		8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250	8,250
Available Water Supply	Qa	lit/sec		644.2	363.6	108.7	107.3	1,225.3	1,809.7	1,742.5	1,763.4	2,147.6	2,242.7	1,581.7	1,029.0
Total Convetyance Loss of Qa	CLt	%	Rice	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9
		%	Others	-	-	-	-	-	-	-	-	-	-	-	-
Percolatiom	P	mm/day	Rice	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
			Others	0	0	0	0	0	0	0	0	0	0	0	0
Evapotranspiration	Et	mm/day	Rice	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
			Others	0	0	0	0	0	0	0	0	0	0	0	0
Crop Water Requirement	CWR	mm/day	Rice	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66	6.66
			Others	0	0	0	0	0	0	0	0	0	0	0	0
Farm Waste and Distribution Losses	FW+DL	mm/day	Rice	2	2	2	2	2	2	2	2	2	2	2	2
			Others	0	0	0	0	0	0	0	0	0	0	0	0
Average Effective Rainfall	RE	mm/day		0	0	0	0	0	0	0	0	0	0	0	0
Turn-Out Water Duty	qtni	lit/s/ha	Rice	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
			Others	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Area to be Programmed	A	ha	Rice	516.0	291.2	87.1	85.9	981.5	1,449.6	1,395.7	1,412.5	1,720.2	1,796.4	1,266.9	824.2
			Others												

Form 06 Computation of Weekly Land Soaking Area

(Dry Season)

Programmed Area	Ani =	2,000	ha
Available Water Supply at Intak	Qa =		(lit/sec)
Rate of Conveyance Lossess	CLt =	19.9	(%)
Soil saturation Requirement	Sn =	61.5	(mm)
Submergence for Cultivation	S =	50	(mm)
Percolation	P =	1.06	(mm/day)
Evaporation	Ev =	4.18	(mm/day)
Evapotranspiration	Et =	5.6	(mm/day)
Farm Waste + Dist. Losses	FW +DL =	1.68	(mm/day)

$Qa = \text{Available water supply (lit/sec)}$
 $Qat = Qa \times (1 - CLt / 100)$ (lit/sec)
 $Qaf = Qat / (1 + (FW + DL) / 8.64)$ (lit/sec)
 $Vaf = Qaf \times 86,400 / 1,000$ (cu.m/day)
 $Dr = (Ev + P - RE) / 1,000$ (m/day)
 $Vr = Dr \times Alp \times 10,000$ (cu.m/day)

$Dni = (Et + P - RE) / 1,000$ (m/day)
 $Vni = Dni \times Ani \times 10,000$ (cu.m/day)
 $VLS = Vaf - Vr - Vni$ (cu.m/sec)
 $VLSir = VLS \times 10$ (cu.m/sec)
 $LSir = Sn + S - RE \times 7 \text{ day}$ (mm)
 $ALS = VLS / VLSir$ (ha)
 $ALS = VLS \times 7 \text{ days} / VLSir$ (ha)

Week No	Date	Qat		Qaf	Vaf	Dr	Vr		Dni	Vni		VLS	VLSir		ALs	ALS	Ani -ALS
		Qa	Qat				Alp	Vr		Ani	Vni		LSir	VLSir			
		(lit/sec)	(lit/sec)	(ha)	(cu.m/day)	(m/day)	(ha/7day)	(cu.m/day)	(m/day)	(ha/7day)	(cu.m/day)	(cu.m/day)	(mm)	(cu.m/day)	(ha/day)	(ha/7day)	(ha/7day)
		(5.1)		(5.2)	(5.3)	(5.4)	(5.5)		(5.6)	(5.7)	(5.8)	(5.9)	(5.10)	(5.11)	(5.12)		
1	Oct.01 - Oct.07, 2004	2,242.7	1,796.4	1,504.0	129,945.6	-0.00405	0.0	0.0	0.00049	0	0.0	129,945.6	46.4	464.4	279.8	1,958.6	41.4
2	Oct.08 - Oct.14, 2004	2,242.7	1,796.4	1,504.0	129,945.6	-0.00405	1,958.6	-79,323.3	0.00049	0	0.0	209,268.9	46.4	464.4	450.6	3,154.2	-3,112.8
3																	
4																	
5																	
6																	
7																	
8																	

Maximun Unit Land Soaking Irrigation Requirement qtsi = 0.77 lit/sec/ha

(Wet Season)

Programmed Area	Ani =	4,472	ha
Available Water Supply at Intak	Qa =		(lit/sec)
Rate of Conveyance Lossess	CLt =	14.6	(%)
Soil saturation Requirement	Sn =	95.3	(mm)
Submergence for Cultivation	S =	50	(mm)
Percolation	P =	1.06	(mm/day)
Evaporation	Ev =	4.18	(mm/day)
Evapotranspiration	Et =	5.6	(mm/day)
Farm Waste + Dist. Losses	FW +DL =	1.68	(mm/day)

Week No	Date	Qat		Qaf	Vaf	Dr	Vr		Dni	Vni		VLS	VLSir		ALs	ALS	Ani -ALS
		Qa	Qat				Alp	Vr		Ani	Vni		LSir	VLSir			
		(lit/sec)	(lit/sec)	(ha)	(cu.m/day)	(m/day)	(ha/7day)	(cu.m/day)	(m/day)	(ha/7day)	(cu.m/day)	(cu.m/day)	(mm)	(cu.m/day)	(ha/day)	(ha/7day)	(ha/7day)
		(5.1)		(5.2)	(5.3)	(5.4)	(5.5)		(5.6)	(5.7)	(5.8)	(5.9)	(5.10)	(5.11)	(5.12)		
1	May 01-May 07, 2005	1,225.3	1,046.4	876.1	75,695.0	-0.00117	0.0	0.0	0.00337		0.0	75,695.0	100.4	1,004.4	75.4	527.6	3,944.4
2	May 08-May 14, 2005	1,225.3	1,046.4	876.1	75,695.0	-0.00117	527.6	-6,172.9	0.00337		0.0	81,867.9	100.4	1,004.4	81.5	570.6	3,373.8
3	May 15-May 21, 2005	1,225.3	1,046.4	876.1	75,695.0	-0.00117	570.6	-6,676.0	0.00337	527.6	1,778.0	80,593.0	100.4	1,004.4	80.2	561.7	2,812.1
4	May 22-May 28, 2005	1,225.3	1,046.4	893.6	77,207.0	-0.00117	561.7	-6,571.9	0.00337	1,098.2	3,700.9	80,078.0	100.4	1,004.4	79.7	558.1	2,254.0
5	May 29-June 04, 2005	1,225.3	1,046.4	893.6	77,207.0	-0.00405	558.1	-22,603.1	0.00337	1,659.9	5,593.9	94,216.2	111.0	1,109.6	84.9	594.4	1,659.6
6	June 05-June 11, 2005	1,809.7	1,545.5	1,319.9	114,039.4	-0.00405	594.4	-24,073.2	0.00337	2,218.0	7,474.7	130,637.9	111.0	1,109.6	117.7	824.2	835.4
7	June 12-June 18, 2005	1,809.7	1,545.5	1,319.9	114,039.4	-0.00405	824.2	-33,380.1	0.00337	2,874.6	9,687.4	137,732.1	111.0	1,109.6	124.1	868.9	-33.5
8																	

Maximun Unit Land Soaking Irrigation Requirement qtsi = 1.66 lit/sec/ha

Dry Season

Week No.	Programmed Area = 2,000 ha				
	Land Soaking	Planting	Rooting	Terminal Drainage	Harvesting
	(ha)	(ha)	(ha)	(ha)	(ha)
1	1,958.6				
2	41.4				
3		1,958.6			
4		41.4			
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16				1,958.6	
17				41.4	
18					1,958.60
19					41.4
20					
21					
22					
23					
24					
Total	2,000.0	2,000.0	0.0	2,000.0	2,000.0

Week No.	Programmed Area = 2,000 ha				
	Land Soaking	Planting	Rooting	Terminal Drainage	Harvesting
	(%)	(%)	(%)	(%)	(%)
1	97.9				
2	2.1				
3		97.9			
4		2.1			
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16				97.9	
17				2.1	
18					97.9
19					2.1
20					
21					
22					
23					
24					
Total	100.0	100.0		100.0	100.0

Wet Season

Week No.	Programmed Area = 4,472 ha				
	Land Soaking	Planting	Rooting	Terminal Drainage	Harvesting
	(ha)	(ha)	(ha)	(ha)	(ha)
1	527.6				
2	570.6				
3	561.7	527.6			
4	558.1	570.6			
5	594.4	561.7			
6	824.2	558.1			
7	835.4	594.4			
8		824.2			
9		835.4			
10					
11					
12					
13					
14					
15					
16				527.6	
17				570.6	
18				561.7	527.6
19				558.1	570.6
20				594.4	561.7
21				824.2	558.1
22				835.4	594.4
23					824.2
24					835.4
25					
26					
Total	4,472.0	4,472.0	0.0	4,472.0	4,472.0

Week No.	Programmed Area = 4,472 ha				
	Land Soaking	Planting	Rooting	Terminal Drainage	Harvesting
	(%)	(%)	(%)	(%)	(%)
1	11.8				
2	12.8				
3	12.6	11.8			
4	12.5	12.8			
5	13.3	12.6			
6	18.4	12.5			
7	18.7	13.3			
8		18.4			
9		18.7			
10					
11					
12					
13					
14					
15					
16				11.8	
17				12.8	
18				12.6	11.8
19				12.5	12.8
20				13.3	12.6
21				18.4	12.5
22				18.7	13.3
23					18.4
24					18.7
25					
26					
Total	100.1	100.1	0.0	100.1	100.1

Form 06-2 Water Delivery Schedule for Land Soaking

Dry Season

WM/WMT Division	MTO/Canal	Programmed Area	Land Preparation Period								Total	
			1	2	3	4	5	6	7	8		
			Nov. 01-07, 2004	Nov. 08-14, 2004	Nov.15-21, 2004	Nov. 22-28, 2004	Nov. 29-05, 2004	Dec. 06-11, 2004	(ha)	(ha)		(ha)
I	MTO 1-15	321.00	321.00									321.00
600	MTO 1-7	250.00	250.00									250.00
	MTO 1-2	29.00	29.00									29.00
II	MTO 1-8	312.00	312.00									312.00
III	MTO 9-13	200.00	200.00									200.00
	MTO B1 - B6	150.00	150.00									150.00
	MTO B1 - 1-5	166.00	166.00									166.00
656	MTO B2 - 1-2	40.00	40.00									40.00
	MTO C1-3	100.00	100.00									100.00
IV	MTO 14-23	432.00	390.60	41.40								432.00
												0.00
												0.00
	Total		1,958.60	41.40	0.00	0.00	0.00	0.00	0.00	0.00		2000.00
	Computed Weekly Land Soaking Area (ha)	2000.00	1,958.60	41.40								2000.00

Wet Season

WM/WMT Division	MTO/Canal	Programmed Area	Land Preparation Period								Total	
			1	2	3	4	5	6	7	8		
			June 16-22, 2004	June 23-29, 2004	June30-06, 2004	July 07-13, 2004	July 14-20, 2004	July 21-27, 2004	(ha)	(ha)		(ha)
I	MTO 1-15	542.00	527.60	14.40								542.00
	MTO1-7	251.00	251.00									251.00
836	MTO 1-2	43.00	43.00									43.00
II	MTO 1-4	369.00	262.20	106.80								369.00
III	MTO 5-8	203.00		203.00								203.00
	MTO B-1-6	208.00		208.00								208.00
830	MTO 1-5	208.00		43.90	164.10							208.00
	MTO 1-2	64.00			64.00							64.00
	MTO 1-3	147.00			147.00							147.00
IV	MTO14-23	538.00			183.00	355.00						538.00
990	MTO 1-12	452.00				239.40		212.60				452.00
V	MTO B7-B21	524.00						524.00				524.00
888	MTO B3-1-B3-7b	267.00						87.60	179.40			267.00
	MTO B4 - B4.4	97.00							97.00			97.00
VI	MTO A2-1-A2-21	354.00							354.00			354.00
559	MTOA2A-1-A2A-21	205.00							205.00			205.00
	Total		527.60	570.60	561.70	558.10	594.40	824.20	835.40	0.00		4,472.00
	Computed Weekly Land Soaking Area (ha)	4,472.00	527.60	570.60	561.70	558.10	594.40	824.20	835.40			4,472.00

Table A3-6 Daily Rainfall Records (2004)

(Station : Aganan)

Months/Days	January	February	March	April	May	June	July	August	September	October	November	December
1								17.00		1.20		13.20
2						1.50				2.90		50.30
3						10.90		11.00		6.90		
4						6.20		15.00		6.50		
5						48.00		44.00		6.50		3.10
6						4.00		30.00		66.70		
7								8.90	13.00	1.00		
8	10.00				1.80			2.10				
9					11.20	95.90	2.50	21.00				
10					51.60	1.20	2.40	7.30	10.00			2.10
Sub-Total	10.00	0.00	0.00	0.00	64.60	167.70	4.90	156.30	23.00	91.70	0.00	68.70
11							32.20	18.90		4.30		
12						6.00	18.00	2.00		1.20		
13					8.00		12.00	3.50				
14					2.30		17.10	23.30	23.00			
15						8.80		2.00			7.50	
16					2.60	30.10	81.50	7.00				
17				36.00	15.50	11.00	26.90	48.70				
18			4.00		7.20	25.30	11.50	2.00				
19					2.00	42.90	8.60					4.80
20			3.20		5.90	23.50						
Sub-Total	0.00	0.00	7.20	36.00	43.50	147.60	207.80	107.40	23.00	5.50	7.50	4.80
21					13.00	10.50	17.20				36.00	
22		69.00				21.50	5.50					
23		1.20	11.20			3.00						
24							9.90		7.00		24.30	
25						13.80	2.50				24.50	
26		8.00	10.00				12.50	26.50		16.00	10.00	20.00
27						5.90	26.80	10.00		30.00		
28				3.00		15.00	19.90			29.70		
29						42.20	1.00		13.00	4.00	6.20	
30					51.00	48.90			9.00		6.10	
31					16.50							
Sub-Total	0.00	78.20	21.20	3.00	80.50	160.80	95.30	36.50	29.00	79.70	107.10	20.00
Grand Total	10.00	78.20	28.40	39.00	188.60	476.10	308.00	300.20	75.00	176.90	114.60	93.50

Analyzed Rainfall Distribution based on Every 10-Day Period in Aganan RIS (Region-VI) (1998-2004) and Estimation of Effective Rainfall

A-145

Year Rainfall Decade Month	1998		1999		2000		2001		2002		2003		2004		Average		Percentage of Effective Rainfall (%)	Average Effective Rainfall (mm/10day)	Monthly Average Daily Effective Rainfall (mm/day)	Seasonal Average Rainfall		Remarks
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)				Total Rainfall	Effective Rainfall	
	(mm/10day)	(day)	(mm/10day)	(day)	(mm/10day)	(day)	(mm/10day)	(day)	(mm/10day)	(day)	(mm/10day)	(day)	(mm/10day)	(day)	(mm/10day)	(day)				(mm)	(mm)	
Jan.	1	0.00	0	14.60	5	0.80	1	0.00	0	105.30	5	11.20	1	10.00	1	20.27	1.9	100.0	20.27	110.3	110.3	Dry Season
	2	0.00	0	1.00	1	0.00	0	14.70	3	1.00	1	0.00	0	0.00	0	2.39	0.7	100.0	2.39			
	3	0.00	0	2.90	2	1.00	1	1.20	1	0.00	0	0.00	0	0.00	0	0.73	0.6	100.0	0.73			
Feb.	1	0.00	0	0.00	0	4.90	3	7.20	1	0.00	0	0.00	0	0.00	0	1.73	0.6	100.0	1.73			
	2	0.00	0	1.40	1	1.20	1	52.70	3	0.00	0	0.00	0	0.00	0	7.90	0.7	100.0	7.90			
	3	0.00	0	11.20	2	1.00	1	0.00	0	0.00	0	0.00	0	78.20	3	12.91	0.9	100.0	12.91			
Mar.	1	0.00	0	38.50	7	18.50	2	0.00	0	0.00	0	0.00	0	0.00	0	8.14	1.3	100.0	8.14			
	2	0.00	0	1.00	1	35.80	6	0.00	0	0.00	0	0.00	0	7.20	2	6.29	1.3	100.0	6.29			
	3	0.00	0	22.80	7	8.90	3	18.60	3	0.00	0	0.00	0	21.20	2	10.21	2.1	100.0	10.21			
Apr.	1	0.00	0	25.80	5	78.00	1	0.00	0	0.00	0	0.00	0	0.00	0	14.83	0.9	100.0	14.83			
	2	0.00	0	14.50	3	0.00	0	12.00	1	1.00	1	2.60	2	36.00	1	9.44	1.1	100.0	9.44			
	3	0.00	0	93.30	4	0.00	0	10.00	1	0.00	0	1.60	1	3.00	1	15.41	1.0	100.0	15.41			
May	1	0.00	0	17.30	3	24.00	4	102.70	5	3.20	1	8.50	2	64.60	3	31.47	2.6	100.0	31.47			
	2	0.00	0	187.20	4	5.10	4	5.90	3	0.00	0	10.80	3	43.50	7	36.07	3.0	100.0	36.07			
	3	86.90	5	66.50	4	28.10	4	100.50	4	0.00	0	768.50	10	80.50	3	161.57	4.3	41.2	66.57			
June	1	65.00	4	90.20	6	69.50	2	61.70	4	7.00	2	2.60	2	167.70	7	66.24	3.9	100.0	66.24			
	2	52.60	3	13.80	2	2.40	2	77.50	2	120.60	5	1.20	1	147.60	7	59.39	3.1	100.0	59.39			
	3	66.20	3	77.00	6	30.30	6	172.90	7	28.50	2	3.60	3	160.80	8	77.04	5.0	86.4	66.57			
July	1	0.00	0	23.50	5	141.20	5	109.80	6	287.50	9	197.70	6	4.90	2	109.23	4.7	61.0	66.63			
	2	0.00	0	11.00	2	146.90	6	20.40	2	207.20	10	225.20	9	207.80	8	116.93	5.3	57.0	66.65			
	3	45.30	4	235.20	9	38.20	4	2.80	2	146.50	9	142.80	6	95.30	8	100.87	6.0	66.0	66.58			
Aug.	1	61.00	5	89.30	8	4.50	1	92.60	4	29.40	7	142.10	5	156.30	9	82.17	5.6	81.1	66.64			
	2	47.00	5	156.00	6	77.40	5	261.00	7	281.50	9	82.50	7	107.40	8	144.69	6.7	46.0	66.56			
	3	4.50	1	91.50	5	125.70	4	169.50	7	28.50	8	86.40	7	36.50	2	77.51	4.9	85.9	66.58			
Sept.	1	4.00	2	84.00	5	11.40	3	4.50	2	70.80	6	90.20	3	23.00	2	41.13	3.3	100.0	41.13			
	2	71.20	3	67.20	3	38.90	3	0.00	0	80.70	9	59.50	7	23.00	1	48.64	3.7	100.0	48.64			
	3	72.30	4	107.70	3	31.20	6	11.40	4	13.10	6	35.20	3	29.00	3	42.84	4.1	100.0	42.84			
Oct.	1	49.70	3	23.20	3	12.30	5	55.00	7	23.00	3	40.00	5	91.70	7	42.13	4.7	100.0	42.13			
	2	46.40	6	96.00	6	28.80	7	111.60	8	61.90	5	169.10	6	5.50	2	74.19	5.7	89.8	66.62			
	3	205.50	3	54.40	5	312.70	6	4.00	1	7.70	2	114.80	4	79.70	4	111.26	3.6	59.9	66.64			
Nov.	1	41.80	3	40.40	7	13.40	2	154.20	7	22.70	3	48.10	5	0.00	0	45.80	3.9	100.0	45.80			
	2	9.60	4	24.60	3	32.70	4	28.00	1	4.90	2	25.20	4	7.50	1	18.93	2.7	100.0	18.93			
	3	90.50	7	5.00	2	2.10	1	2.10	1	2.20	2	1.00	1	107.10	6	30.00	2.9	100.0	30.00			
Dec.	1	57.50	3	15.20	4	81.20	5	105.30	5	0.00	0	0.00	0	68.70	4	46.84	3.0	100.0	46.84			
	2	97.80	4	34.20	3	8.20	2	1.00	1	0.00	0	25.50	2	4.80	1	24.50	1.9	100.0	24.50			
	3	19.60	2	15.50	2	35.00	2	0.00	0	1.80	1	0.00	0	20.00	1	13.13	1.1	100.0	13.13			
Total/Ave.	1,194.40	2.1	1,852.90	4	1,451.30	3.1	1,770.80	2.9	1,536.00	3	2,295.90	2.9	1,888.50	3.2	1,712.83	3.0	91.0	1,557.87	3.7			

(A) : Total rainfall in every 10-day (mm)
 (B) : Number of rainy days (day)

Percolation (P) : 1.06 mm/day
 Evapo-transpiration (Et) : 5.60 mm/day
 Percentage of Effective Rainfall (%):
 $R10 < (P + Et) \times 10 : 100$
 $R10 > (P + Et) \times 10 : ((P + Et) \times 10 \times 100/R10)$

Analyzed Monthlt Rainfall Distribution in 10-Day

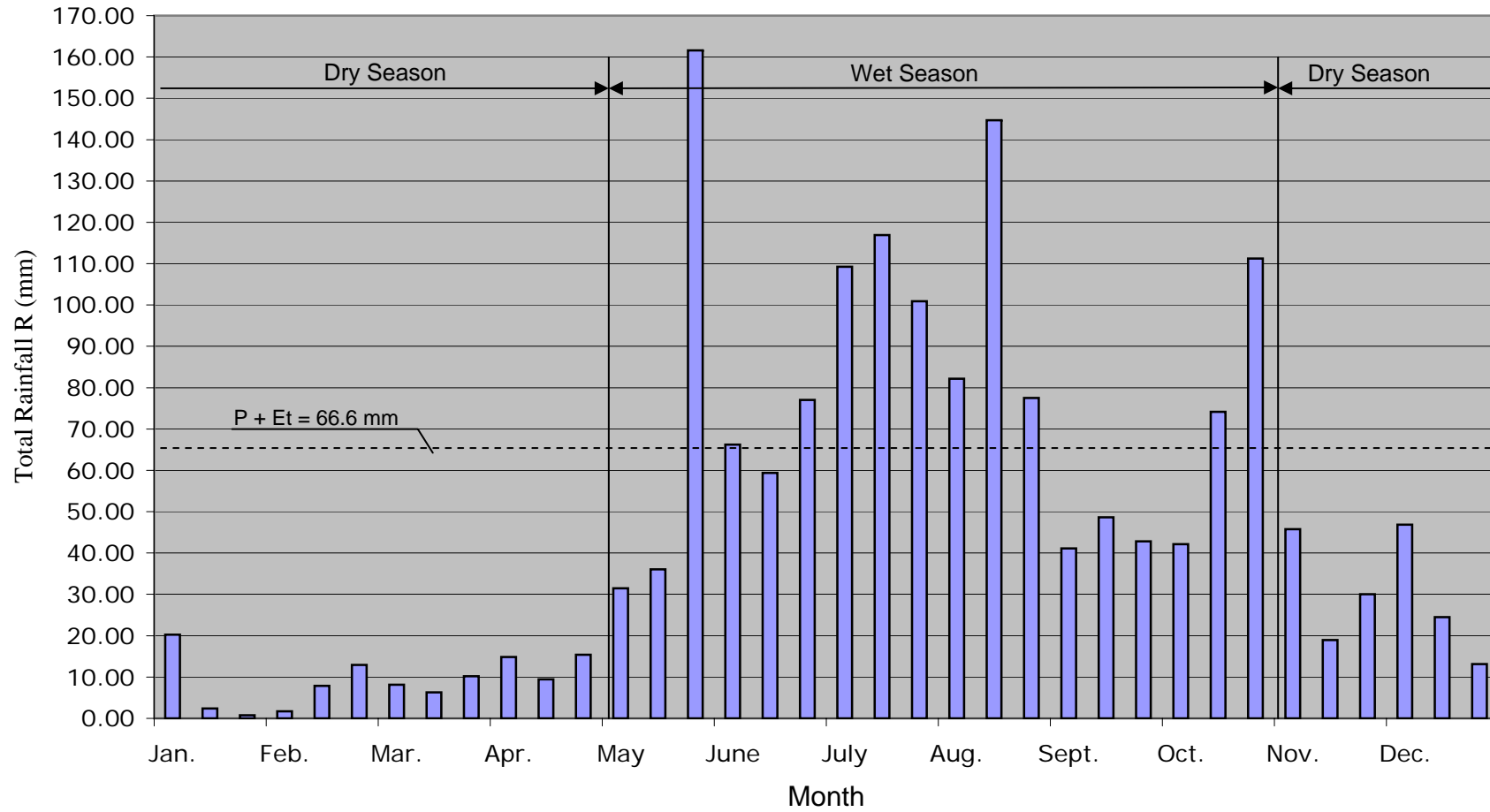


Table A3-7 (1) Classification of NIS Facility Scale for the Sector of Functionality of Irrigation and Drainage Facilities

NO.	Region	NIS	Diversion Dam Name	Service Area (ha)	Intake Discharge (m³/sec)	Flood Discharge (m³/sec)	Diversion Dam		Spillway (weir, gate)			Sluice Way (gate)			Intake (gate)			Protection Dike		Protection Side-wall		
							Width (m)	Height (m)	Width (m)	Height (m)	Length (m)	Width (m)	Height (m)	No. (set)	Width (m)	Height (m)	No. (set)	Length (m)	Height (m)	Length (m)	Height (m)	
				Maximum	29,846	62.52	6,940	757.54	14.70	747.54	14.70	100.00	15.00	6.20	16	6.00	5.74	12	3,000.00	15.00	1,181.20	20.00
				Mean	2,784	6.60	2,366	98.43	4.57	67.26	2.90	26.92	3.33	2.66	2	1.84	1.66	3	164.31	5.46	62.55	6.49
				Minimum	42	0.28	4	1.50	0.90	0.80	0.90	1.00	1.00	1.00	1	0.50	0.60	1	2.14	1.00	2.14	1.60
Large-scale	Maximum			30,000	63.00	50,000	760.00	50.00	750.00	15.00	200.00	15.00	7.00	16	15.00	15.00	12	3,000.00	15.00	1,200.00	20.00	
	Minimum			4,001	10.01	4,001	150.01	7.01	100.01	4.01	40.01	5.01	4.01	4	3.01	2.01	6	250.01	8.01	90.01	10.01	
Medium-scale	Maximum			4,000	10.00	4,000	150.00	7.00	100.00	4.00	40.00	5.00	4.00	3	3.00	2.00	5	250.00	8.00	90.00	10.00	
	Minimum			1,001	3.01	1,001	50.01	2.01	30.01	1.01	10.01	2.01	1.01	2	1.01	1.01	3	80.01	3.01	30.01	3.01	
Small-scale	Maximum			1,000	3.00	1,000	50.00	2.00	30.00	1.00	10.00	2.00	1.00	1	1.00	1.00	2	80.00	3.00	30.00	3.00	
	Minimum			0	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00	0.00	0	0.00	0.00	0.00	0.00	
1	CAR	Upper Chico	Chico	Large	Large	Large	Large	Medium	Large	Large	Medium	Medium	Large	Medium	Large	Large	Small	Small	N/A	Medium	N/A	
			Talaca Catch	Large	Large	Small	Small	Medium	Medium	Large	Medium	Medium	Medium	Medium	Medium	Large	Large	Medium	Large	Small	Large	
																		Small	Large	Medium	Large	
2		Hapid																				
3		West Apayao Abulog																				
4	Region I	Bonga PIS-1	Bonga # 1																			
5		Bonga PIS-2	Bonga # 2																			
6		Bonga PIS-3	Bonga # 3																			
7		Laoag Vintar	Vintar	Medium	Medium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8		Nmc Pasuquin	N/A	Small	Small	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9		Dingras	Dingras Int.	Medium	Small	Medium										Medium	Medium	Medium	Small	Medium	Medium	
10		Bolo	N/A	Small	Small	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Medium	Large	Small	N/A	N/A	N/A	N/A	
11		Cura	Cura Int.	Small	N/A	N/A										Medium	Medium	Small				
12		Nueva Era	Nueva Era	Small	Small	N/A	N/A	N/A	N/A	N/A	Medium										Medium	Small
13		Madongan Area	Madongan	Medium	Medium	Large	Medium	Medium	Small	Medium	Medium										Medium	Small
14		Solsona Area	Solsona	Medium	Small	Medium	Medium	Medium	Medium	Medium	Medium	N/A	N/A	Medium	N/A	N/A	Medium	Medium	Medium	Medium	Medium	
15		Labugaon Area	Labugaon	Medium	Small	Medium	Small	Medium	Small	Medium	Medium	Medium	Medium	Medium	Medium	Small	Medium				Medium	Small
16		Papa Area	Papa	Medium	Small	Small	Large	Medium	Medium	Medium	N/A										N/A	N/A
17		Sta. Maria-Burgos	Sta. Maria-Burgos	Small	Small	Small	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Medium	N/A	N/A	Medium	N/A	N/A	Small	N/A	N/A
18		Sta. Lucia-Candon	Sta. Lucia-Candon	Medium	Medium	Small	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Medium	Medium	Medium	Small	N/A	N/A	N/A	N/A	N/A
19	Tagudin	N/A	Medium	Medium	N/A																	
20	Amburayan	Amburayan	Medium	Medium	N/A	Small	Small						Small	Medium	Medium	Medium	Medium	Large				
21	Ambayoan	Ambayoan Int.	Large	Small	Small	Small	Small						Medium	Medium	Small	Medium	Large	Medium	Medium	Small	Large	
22	Ambayoan-Extension																			Small	Small	
23	Dipalo	Dipalo	Medium	Small	N/A	Medium	Large	Medium	Medium	Large	Small	Medium	Medium	Medium	Small	Small	Large	Medium	Small	Small	Medium	

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NO.	Region	NIS	Diversion Dam Name	Service Area (ha)	Intake Discharge (m ³ /sec)	Flood Discharge (m ³ /sec)	Diversion Dam			Spillway (weir, gate)			Sluice Way (gate)			Intake (gate)			Protection Dike		Protection Side-wall		
							Width (m)	Height (m)		Width (m)	Height (m)	Length (m)	Width (m)	Height (m)	No. (set)	Width (m)	Height (m)	No. (set)	Length (m)	Height (m)	Length (m)	Height (m)	
122	Region V	Barit																					
123		Rida																					
124		Buhi-Lalo																					
125		Mahaba	Mahaba	Small	Small	Large	Small	Small	Small	Medium	Medium	Small	Medium	Large	Small	Small	Small	N/A	N/A	N/A	N/A		
126		Nasisi	Nasisi	Small	Small	Small	Medium	Small	Medium	Medium	Medium	Small	Medium	Small	Medium	Medium	Small	N/A	N/A	N/A	N/A		
127		Ogsong	Ogsong	Small	Small	Large	Small	Medium	Small	Medium	Medium												
128		Hibiga	Hibiga	Small	Small	N/D	Small	Small	Small	Medium	Medium												
129		San Francisco	San Francisco	Small	Small	N/A	N/A	N/A	N/A	N/A	N/A												
130		San Ramon	San Ramon	Small	Small	N/A	N/A	N/A	N/A	N/A	N/A												
131		Region VI	Aklan	East Intake	Medium	Small	N/A																
	West Intake			Medium	Small	N/A																	
	Dunga			Small	Small	Small	Small	Medium	Small	Medium	Small												
132	Panakuyan		Panakuyan	Small	Small	Small	Medium	Small	Medium	Medium	Medium	Small	Medium	Medium	Medium	Medium	Small	Small	Medium				
133	Sibalom-San Jose		Tipuluan	Medium	Medium	Large	Large	52.03	Small	Medium	Large	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Large	Small	Large		
134	Mambusao		Mambusao	Medium	Small	Medium	Medium	Medium	Medium	Large	Medium	Medium	Medium	Small	Medium	Medium	Small	Small	Medium	Medium	Large		
135	Jalaur-Proper		Jalaur	Large	Large	Medium	Large	Large	Small	Medium	Medium	Medium	Medium	Large	Medium	Medium	Large	Small	Large	Medium			
136	Jalaur- Extension		Jalaur	Medium	Medium	Medium	Large	Large	Small	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Small	Small	Large				
137	Suague		Suague	Medium	Medium	Medium	Large	Medium	Large	Medium	Medium												
138	Sibalom-Tigbuan		Sibalom	Medium	Small	Medium	Medium	Small	Large	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Small	Medium					
139	Aganan		Aganan	Large	Medium	Small	Medium	Large	Medium	Large	Large												
140	Sta. Barbara		Sta. Barbara	Medium	Medium	N/A	Medium	Small	Medium	Medium	Large	Medium	Medium	Small	Medium	Medium	Large	Small	Large				
141	Barotac Viejo		Barotac Viejo	Small	Medium	Small	Small	Medium	Medium	Medium	Medium												
142	Bago		Bago	Large	Large	Large	Medium	Medium	Medium	Medium	Medium												
143	Pangiplan	Pangiplan	Medium	Small	Small	Small	Medium	Small	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Small	Small	Small					
144	Region VII	Bohol	Malinao	Large	Medium	N/A	846.00	Large	Small	Large	Large												
145		Capayas																					
146	Region VIII	Mainit	Mainit	Medium	Medium	Small	Medium	Small	Medium	Medium	N/A	Small	Medium	Medium	Medium	Small	Medium	N/A	N/A				
147		Pongso	Pongso	Small	Small	N/A	N/A	Small	N/A	Small	Medium	Small	Medium	Small	Medium	Small	Medium	N/A	N/A				
148		Bao	Bao	Medium	Medium	Medium	Small	Small	Small	Small	Large	Medium	Medium	Medium	Medium	Medium	Small						

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NO.	Region	NIS	Diversion Dam Name	Service Area (ha)	Intake Discharge (m ³ /sec)	Flood Discharge (m ³ /sec)	Diversion Dam		Spillway (weir, gate)			Sluice Way (gate)			Intake (gate)			Protection Dike		Protection Side-wall		
							Width (m)	Height (m)	Width (m)	Height (m)	Length (m)	Width (m)	Height (m)	No. (set)	Width (m)	Height (m)	No. (set)	Length (m)	Height (m)	Length (m)	Height (m)	
191	Region XII	Lambayong	Lambayong	Large	Large	Small	Medium	Medium	Medium	Medium	N/A	-	-	-	-	-	-	Large	Small	Large	Small	
192		Tacurong (Dumaguil)	Dumaguil	Medium	Medium	Small	Small	Small	Small	Medium	Large	-	-	-	-	-	-	Large	Medium	Large	Medium	
193		Allah-1	Surallah	Large	Large	Small	Medium	N/A	N/A	N/A	N/A	Large	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	-	-
194		Allah-2	Sto. Nifio	Large	Large	Small	Medium	N/A	N/A	N/A	N/A	Large	Medium	Large	Large	Medium	Medium	Medium	Medium	Medium	-	-
195		Banga	Banga	Medium	Medium	Large	Medium	Medium	Medium	Medium	Medium	Small	Large	Large	Medium	Medium	Large	Large	Small	N/A	N/A	
196		Marbel-1	Marbel-1	Medium	Small	Medium	Medium	Medium	Medium	Large	Medium	Medium	Medium	Medium	Medium	Small	Small	-	-	Medium	Medium	
197		Marbel-2	Marbel-2	Medium	Small	Small	Medium	Small	Medium	Medium	Medium	Medium	Medium	Large	Medium	Small	Medium	-	-	Medium	Medium	
198		Siluyay	Siluyay	Medium	Small	Small	Medium	Medium	Medium	Medium	Large	Medium	Medium	Medium	Medium	Medium	Small	Small	Medium	Medium	Medium	
199		Buayan	Tinagacan	Small	Small	Small	Medium	Large	Medium	Small	Small	-	-	-	-	-	-	-	Small	Medium	Medium	Medium
200		Region XIII	Cabadbaran-Taguibo	Cabadbaran	Medium	Large	Small	Medium	Small	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	-	-
201	Cantillan		Cantillan Int.	Medium	Medium	Small	-	-	-	-	-	-	-	-	-	Medium	Large	Small	-	-	-	
202	Tago		Sagbayan	Medium	Large	Large	Large	Medium	Large	Large	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Large	Medium	Medium	
203	Andanan		Andanan	Large	Medium	Small	Medium	Small	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Small	Medium	Medium	-	
204	Gibong		Gibong	Medium	Medium	Medium	Medium	Large	Medium	Large	Medium	Medium	Medium	Large	Medium	Medium	Medium	Small	Large	Small	Large	
205	Simulao		Simulao	Medium	Medium	Medium	Large	Medium	Large	Medium	Medium	-	-	-	-	-	-	-	Small	Medium	-	

No. of Diversin Dam

(unit: No.)

Scale of Diversion Dam	Service Area	Intake Discharge	Flood Discharge	Diversion Dam		Spillway (weir)			D/S Apron	Sluice Way (gate)			Intake (gate)			Protection Dike		Protection Side-wall	
				Width	Height	Width	Height	Length		Width	Height	No.	Width	Height	No.	Length	Height	Length	Height
Large-scale	34	27	8	22	14	20	19	15	17	13	12	8	21	20	15	17	24	20	
Medium-scale	85	64	28	55	71	57	93	77	80	118	73	123	98	54	36	97	52	99	
Small-scale	62	70	59	56	37	48	10	16	39	1	74	22	31	106	83	27	63	19	
Total	181	161	95	133	122	125	122	108	136	132	159	153	150	180	134	141	139	138	

Percentage of Diversion Dam

(unit: %)

Scale of Diversion Dam	Service Area	Intake Discharge	Flood Discharge	Diversion Dam		Spillway (weir)			D/S Apron	Sluice Way (gate)			Intake (gate)			Protection Dike		Protection Side-wall	
				Width	Height	Width	Height	Length		Width	Height	No.	Width	Height	No.	Length	Height	Length	Height
Large-scale	19	17	8	17	11	16	16	14	13	10	8	5	14	11	11	12	17	14	
Medium-scale	47	40	29	41	58	46	76	71	59	89	46	80	65	30	27	69	37	72	
Small-scale	34	43	62	42	30	38	8	15	29	1	47	14	21	59	62	19	45	14	
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	